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Denise Gayou Lima Reis Esteves

Reading Beyond the Written Lines of Human Rights:
Collaborative Learning Communities and Learning Schools
as Drivers for Educational Change

Tese no âmbito do Programa de Doutoramento em
Direitos Humanos nas Sociedades Contemporâneas
orientada pelo Professor Doutor Paulo Jorge Marques
Peixoto, coorientada pela Doutora Cláudia Pato Carvalho,
apresentada ao Instituto de Investigação Interdisciplinar
da Universidade de Coimbra.

December 2020



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Orientador: Prof. Doutor Paulo Peixoto

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Para a minha filha Leonor

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Abstract

Education as a right has become a crucial issue in restructuring Western democracies' educational systems. The growing tendency to discuss education from a rights-based approach makes it necessary to consider education in social transformation and claim more democratic learning territories. Collaboration, solidarity, empathy, engagement and critical thinking are rare and are increasingly difficult to establish, as reported by several authors and underlined by this study's interviewees. The school is one of the institutions of public life where common collective life practices can be built.

This research aims to understand how collaborative learning communities and learning schools broaden the notion of education as a Human Right in practice and drive educational change. We suggest that learning communities contribute to the quality of the learning process and the knowledge produced within these groups should be considered a valued contribution to the learning experience. Hence, expanding groups of agents contributing to the diversification of the learning process and changing schools from teaching institutions to learning organisations contributes to thinking education as an emancipatory process.

The point of departure for the discussion is the *Institute for Education and Citizenship* (IEC) - an institution of non-formal education that works as an intermediary between schools, universities, research centres, and *Oliveira do Bairro* municipality. The IEC claims for a new structure for community-based learning and research, leveraging schools-community-university partnerships' democratisation. The IEC's central role in facilitating relationships among institutions and people unrelated before, and forming a collaborative learning community, is worthy of being considered an essential educational enterprise.

Methodologically, we have triangulated different data generation methods and data sources, including participant observation, semi-structured interviews, a literature review and document and thematic analyses.

We argue that the collaborative learning community is a bottom-up response developed collaboratively by local agents to the challenges identified locally in the educational field. This bottom-up strategy is one under which mutual engagement and reflection processes happen at different learning system levels. Findings also suggest that a knowledge-exchanging dynamic has been created and have ensured successful outcomes in its members' learning experience. Simultaneously, mechanisms for developing collaborative strategies amongst the members of the learning community were established. Both are giving the support needed to schools for taking risks to redesign their relationships with other schools, with universities and, in some cases, with broader community-based services. Research also highlights the importance of connecting the learning community's members, mainly through partnerships among schools and research centres. Indeed, the study demonstrates that the established partnerships between IEC, the schools and the research centres provide an appropriate context for rethinking and reinventing public schools and higher education institution, so they become dynamic

places for developing and sustaining students' learning practices; providers of opportunities for the continued development of practising professionals and conductors of research and inquiry more open to society.

The effects of this collaborative learning community's action are much greater than the sum of its parts. Overall, we analysed the influence of collaborative learning community and of the transformation of schools from teaching institutions to learning organisations around three central axes: in creating conditions for improving students' learning and enhancing the overall learning experience of individual members of the community; in the implementation of collective learning mechanisms within the collaborative learning community; and in creating collaborative partnerships between schools and research centres. We demonstrated that agency, collaboration, and knowledge-exchange issues become a firmly rooted reality at schools incorporating collaborative learning into the school organisational dynamic. Creating conditions for knowledge-exchange, collaboration, reflection, and agency must be considered as crucial for the definition of public policies in the area of education if we want education as a right to become not only a real significant statement but, above all, a meaningful practice.

Keywords: Collaborative Learning Community; Learning Schools; Education; Human Rights; Educational Change; Institute of Education and Citizenship.

Resumo

Entender a educação como um direito é uma questão crucial na reestruturação dos sistemas educativos das democracias ocidentais. A tendência crescente de se discutir a educação a partir de uma abordagem dos direitos torna necessário considerar o papel da educação na transformação social e na reivindicação de territórios de aprendizagem mais democráticos. Colaboração, solidariedade, empatia, engajamento e pensamento crítico são raros e cada vez mais difíceis de estabelecer, conforme sublinhado por diversos autores e destacado pelos entrevistados deste estudo. A escola é uma das instituições de vida pública onde se podem construir práticas comuns de vida coletiva.

O objetivo principal desta tese é compreender de que formas as comunidades de aprendizagem colaborativa e as escolas aprendentes ampliam a noção de educação como um direito humano na prática, e impulsionam uma mudança educacional. Sugerimos que as comunidades de aprendizagem contribuem para uma abordagem holística e heterogénea da qualidade do processo de aprendizagem e do conhecimento produzido dentro desses grupos que deve ser considerado uma contribuição valiosa para a experiência de aprendizagem. Assim, a ampliação de grupos de agentes que contribuem para a diversificação do processo de aprendizagem e de transformação das escolas de instituições de ensino em organizações de aprendizagem mostra-se uma valiosa contribuição para pensar a educação como um processo emancipatório.

O ponto de partida da discussão deste trabalho é o Instituto de Educação e Cidadania (IEC) - instituição de educação não formal, localizada no município de Oliveira do Bairro que funciona como intermediário entre escolas, universidades e centros de investigação e a comunidade na qual se insere. O IEC reivindica uma nova estrutura para aprendizagem e de investigação baseadas na comunidade, alavancando a democratização das parcerias escolas-comunidade-universidade. O papel central do IEC é o de facilitar as relações entre instituições e pessoas que não estavam conectadas anteriormente, formando uma comunidade de aprendizagem colaborativa.

Metodologicamente, triangulamos diferentes métodos de análise de dados e de diferentes fontes de informação, incluindo observação participante, entrevistas semiestruturadas, revisão de literatura e análises documentais e temáticas.

Argumentamos que a comunidade de aprendizagem colaborativa é uma resposta ascendente (*bottom-up*) desenvolvida de forma colaborativa por agentes locais aos desafios identificados localmente no campo educacional. Essa estratégia envolve processos mútuos de engajamento e de reflexão que acontecem em diferentes níveis do sistema de aprendizagem. Os resultados também sugerem que uma dinâmica de troca de conhecimento foi criada e garantiu uma melhoria na experiência de aprendizagem dos membros da comunidade de aprendizagem colaborativa. Simultaneamente, foram estabelecidos mecanismos para o desenvolvimento de estratégias colaborativas entre os membros da comunidade de aprendizagem. Ambos os processos dão o apoio necessário para que as escolas arrisquem em novas formas de redesenhar relações com outras

escolas, com universidades e, em alguns casos, com serviços e instituições comunitárias mais amplas.

A pesquisa destaca ainda a importância da conexão dos elementos da comunidade de aprendizagem, particularmente visível através de parcerias entre escolas e centros de investigação. De fato, o estudo demonstra que as parcerias estabelecidas entre o IEC, as escolas e os centros de investigação fornecem um contexto apropriado para repensar e reinventar as escolas públicas e as instituições de ensino superior, enquanto parte integrante de um sistema de aprendizagem aberto e interconectado na sociedade.

Os efeitos da ação dessa comunidade de aprendizagem colaborativa são maiores do que a soma das suas partes. No geral, analisamos a influência da comunidade de aprendizagem colaborativa e da transformação das escolas em organizações de aprendizagem em torno de três eixos centrais: na criação de condições para melhorar a aprendizagem dos alunos e melhorar a experiência de aprendizagem geral dos membros individuais da comunidade; na implementação de mecanismos de aprendizagem coletiva dentro da comunidade de aprendizagem colaborativa; e na criação de parcerias colaborativas entre escolas e centros de investigação. Demonstramos que as questões de agência, colaboração e troca de conhecimento se tornam uma realidade firmemente enraizada nas escolas, incorporando a aprendizagem colaborativa na dinâmica organizacional da escola. A criação de condições de troca de conhecimento, colaboração, reflexão e agenciamento deve ser considerada crucial para a definição de políticas públicas na área da educação, se quisermos que a educação seja um direito que se transforme não apenas numa afirmação fundamental, mas, sobretudo, uma prática significativa.

Palavras-Chave: Comunidades de Aprendizagem Colaborativa; Escolas Aprendentes; Educação; Direitos Humanos; Mudança Educativa; Instituto de Educação e Cidadania

List of acronyms

ACES	Advanced Courses in Experimental Sciences
CMOB	Câmara Municipal de Oliveira do Bairro
CRC	Convention on the Rights of the Child
CV	Ciência Viva
EMA	Estímulo à Melhoria das Aprendizagens
IEC	Instituto de Educação e Cidadania
IEE	Innovative Educational Environment
LC	Learning Community
LO	Learning Organisation
LS	Learning School
MESPOB	Municipal Educational Strategic Plan of Oliveira do Bairro
OB	Oliveira do Bairro
OECD	Organisation for Economic Co-operation and Development
PACF	Project for Autonomy and Curricular Flexibility
PIPP	Pilot Projects for Pedagogical Innovation
PISA	OECD's Programme for International Student Assessment
PLC	Professional Learning Community
SLO	Schools as Learning Organisations
UDHU	Universal Declaration of Human Rights
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund

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Introduction

We are experiencing a time of uncertainty, wherein people live in an expression of a global era of fast communication across the planet that has, paradoxically, led to a deficit in forms of coexistence; the fragility of human bonds and the establishment of relationships mediated by the feeling of fear which inevitably opened up space for new forms of exclusions (Beck, 2000; Castells et al., 2004; Freire, 2004; António Nóvoa, 2009). The uncertainty generated in these “liquid times”, to paraphrase Bauman (2006), of rapid changes and great doubts brings with it the need for a profound transformation of ourselves as human beings. Besides, it also requires a profound transformation of our realities into a *locus* of dialogical learning. This understanding means that we would benefit from living in environments open to collaboration, whether face-to-face or mediated by new technologies, in the certainty that only by collaborating we might overcome the challenges posed by the present and the future. This collaboration has the purpose of providing people with conceptual and analytical tools to answer contemporary challenges, namely: in the protection of the environment; in the preservation of cultural heritage; in the respect for cultural, religious and social alterity; in the education for sustainable consumption; in the education for citizenship and human rights.

Nevertheless, collaborative actions between various educational and social agents are increasingly difficult to establish, as reported by this study's interviewees. The school is one of the institutions of public life where common collective life practices can be built. Creating an open learning system depends on a jointly responsible society, including schools, families, local communities, work entities, museums, scientific organizations, and higher education institutions towards children and adolescents' education. António Nóvoa (2009) 's proposal of building a public space for education co-created by a set of entities and institutions, with schools playing an important, but not an exclusive one, matches the results presented in this study. In the current scenario, we argued that it is necessary to think of schools as a public space for education, taking advantage of all educational partners' potential. This is a space for the democratic construction of knowledge, a space for participation, negotiation, collaboration, dialogical dialogue under the assumption that all partners have something to learn and to teach according to their understanding and experience of the world. We believe that this is a fundamental element of an education that is a right of everyone.

We are also experiencing a time of profound fragility of humanity's achievements, such as the Universal Declaration of Human Rights. Those that seemed to be irreversible advances in society are called into question in the most varied contexts. We have also seen a setback in the living conditions of the most vulnerable social groups; the increase in inequalities and new forms of exclusion (Lúcio, 2013); the return of dangerous political phenomena that jeopardize democracy and human rights and which only culture and education seem to be able to struggle against it. Portugal is not any different from the international scenario. It is a context where injustices persist, inequalities are emphasised, and where increasingly extremist voices gain political and media stage, attracting followers seduced by xenophobic speeches, and where fear and disinformation are common ground. In this scenario, we cannot think about education out of its emancipatory character. Education is the tool in a rapidly changing world, where rights have been heard in the streets, increasingly loudly, and in many spheres of human life. Many times, changes have their first impulse from bottom-up movements. The examples of globalized struggles against climate change; the struggle against racism; the struggle for women's rights and the struggle against homophobia (just to give a few examples) have been their significant boost on the streets.

The contribution of this study is expected to be on the expansion of the debate about the right to education through the inclusion of learning practices, social actors, and educational contexts that can make the difference in practical terms, so that the right to education becomes not only a real significant statement but, above all, a meaningful practice. A reconceptualization of the notion of education is then required. We argue, therefore, that the right to education, as a whole, must also include collaborative learning involving different learning environments (of formal and non-formal learning), collective knowledge production, and broaden educational processes, such as learning and teaching; collaboration, and participation in educational endeavours.

This research stands for the democratic emancipatory construction of collaborative learning communities as learning systems opened to the world, where this transformation can happen. Education for everyone is due to democratic rights and the demand for social justice and a need for social transformation; emancipation and participatory democracy; and alternative thinking. Also learning throughout life is not as an economical and professional imperative, but because the right to education, it must be

the right to learning, being committed, participating in education as a public cause, and because well-being individual and social justice demand it.

At the same time, this education is placed in a world that requires a more qualified population, in constant learning, who learns from itself and from others; who can contribute, regardless of the area of knowledge, to the transformation of the world in an open and interconnected learning system. How can we expand our learning environments? How can different agents make a difference in this endeavour? How the 'public good' aspects of education need to be recast to enable a shift towards placing the learner at the centre of policy approaches? Answering all these questions is a big challenge, and implies a significant transformation in education and school.

We do not want the school to adapt to the needs of economic development. We want it to contribute to an ecological and social development to a more egalitarian, fair, and inclusive society that contributes to each person's "empowerment" as an active agent in transforming your surroundings and your life. For this to happen, it is necessary to rethink education and the school as an engine of change. However, if changing is difficult, changing alone is almost impossible.

This study shows us the emancipatory features of educational initiatives that aim at opening the school to the public space of education (Nóvoa, 2009). This educational space's configuration implies a broad interconnection of society in educational issues (families, associations, non-formal education institutions, higher education institutions and research centres, local government). This network of actors and institutions are, in fact, a socio-educational response, a bottom-up approach, to a set of problems and challenges identified by the actors and whose answers were found together.

This study is an example of a group of educational institutions (formal and non-formal) joined as a collaborative learning community, and whose effects are felt not only concerning the learning of students and their teachers. This is a collaborative learning community between university teachers, school teachers and students that have been essential in the production and dissemination of pedagogical knowledge, through the recognition and validation of different types of expertise that each group brings to the learning community. This learning community's effects are transforming schools into more reflective, more collaborative, and democratic organisations. We know that the public school has been an important place for building up democracy. In this case, this

area of democracy has been built upon dialogue with all local agents linked to the school, namely universities and research centres.

The creation of this collaborative learning community has been crucial to the intermediation of the Institute for Education and Citizenship (IEC). The IEC works as a facilitator of the dialogue between the different educational agents. Based in a rural area in Portugal's central region, the IEC is an institution of non-formal education, an interface between universities; research centres; and schools. The IEC works along with schools, their students, families, school directors and teachers. As an interface institute, its action consists in creating a learning and collaborative network in which actors and institutions meet, interact regularly, and learn collectively from each other. This kind of actions is especially relevant in contexts where it is particularly challenging to establish such partnerships, as the study participants witnessed it. Indeed, Portugal is giving the first steps towards creating “learning communities” and envisioning the educational policies nationwide.

An example of this is the recent implementation of national policies and programs to increase curriculum flexibility and school autonomy and grant schools' voluntary autonomy over a proportion of curricular and pedagogical areas. It is a broad-based reform that is open to all schools. Within this context, schools can be given tailored learning experiences to students. For instance, schools can target lessons and practices for non-native Portuguese speakers or students at risk of dropping out, addressing key policy aims like equity and retention (OECD, 2018: 17). Also, schools can choose extra-curricular activities adapted to the specific needs of each school and context. In this context, partnerships between schools, universities, and the Institute for Education and Citizenship were created.

The impact of the collaborative learning community's educational activities on students, teachers, schools, and universities is much greater than the sum of its parts. The benefits are much more significant than those that can be quickly measured through rankings, students' school grades, or teachers' summative assessment. There are intangible outcomes not able to be objectively measured. This group of actors dared to question institutionalized practices and dared to do things differently. Collaborative Learning Communities between universities, schools, students, and teachers are seen, in this context, as a strategy for empowering its members and for transforming individuals and institutions under an understanding of their protagonists as political actors (in a

Freirian accession) with the capacity to transform social and educational contexts in which they operate. It is a local strategy for overcoming the countless referred “school dilemma” between being collaborative as an organisational norm, or being competitive and attract students, under the “terrors of performativity” (Ball, 2003). Besides, being collaborative allows broadening the circle of those who co-construct possible futures and democratise knowledge. Such an achievement is far from insignificant in a society based increasingly on the pressure of a “knowledge economy”. As we discuss here, knowledge's democratisation can have resounding effects on both the academic and the community front (Vaillancourt, 2007). We know that knowledge has gained a renewed role in public policy and functions as a source of legitimacy for public decisions. Based on this, the emergence of new actors, spaces for the production of knowledge, reflection, and systems of influence that inform political decisions must be considered for the definition of public policies in the area of education.

In the book *Pedagogy of the Oppressed*, Paulo Freire (1974) lamented that we are surrounded by a pragmatic discourse that makes us adapt to reality's facts. “Dream and utopia are called not only useless but positively impeding” (Freire, 1974: 1). We hope this thesis provides a vision for the future of education that encourages us to dream about what may seem like an utopia yet is grounded in some existing practices and policies. Although these practices are not dominant nationwide; we hope this study can inspire others to follow the same aspiration.

Thesis' structure

This thesis is structured around three parts and seven chapters. Part I is the theoretical framework and comprehends three chapters. Chapter one calls upon three main premises: a) collaborative learning practices and collaborative processes are better considered as integrative parts of education as a Human Right; b) educational processes and experiences comprise participation; collaboration; teaching practices and individual and collective learning processes; relations between members of the school community and relationships with the external environment; c) Collaborative Learning Communities (CLC) and Learning Schools (LS) provide this study with analytical insights to be seen as an innovative insight for a wider envision of education as a Human Right. Chapter two attempts to go deep into the understanding of “learning communities”, and it also aims to

discuss its contribution to creating an *open learning system*, which is much more than enhancing individual learning experiences. Throughout chapter three, we explore a common understanding of the “schools as learning organisations” founded in the literature and are widely recognized by students, families, policymakers, and education practitioners.

Part II encompasses the research strategy and methodology and comprehends two chapters. Chapter four introduces the methodological research strategy and guided data collection, analysis, and theory development. Chapter five intends to demonstrate how a single-case study can be the basis for significant explanations that can be useful in other contexts.

Part III of the thesis encloses the empirical evidence and is composed of two chapters. In chapter six, we undertake an analysis of the Portuguese educational policies and governmental initiatives carried in 2017/2018 as to verify which ones are contributing to schools’ transformation into learning organisations and in facilitating the creation of learning communities or, whether they are working as an obstacle to this endeavour. Chapter seven analyses the dynamics of the collaborative learning community (CLC) and its effects at the school setting and the referred community members. Hence, we detail further CLC’s significant contributions for improving school’s learning dynamics’; enhancing teachers’ and researchers professional learning, and enriching students’ learning experience. We analyse the extent to which the key characteristics of a learning organisation integrative model already exist in the schools that are part of the collaborative learning community under study. The thesis ends with recommendations for recasting contemporary education policy discourses and educational practices moving forward through collaboration, reflexive practice, and collective action.

Part I – Theoretical Framework

Chapter 1 – Reframing the Discussion: Embracing educational processes, including new agencies and widening learning spaces for extending the notion of education as a Human Right

Introduction

The 21st century's challenge is to establish a new Human Rights perspective from outside of the bowels of international law and governance. This perspective takes education to be a vital Human Rights object that is significant to an individual as is food or freedom, but that is also significant to society as an indispensable means of realizing sustainable development, prosperity, and permanence. It is not enough simply to defend the child's right to access education, which is focused on the need to develop the child's autonomy and potential for independence and individual action both within the immediate society to which the child belongs and within the global society in which the child will interact. (Lee, 2013: 8).

The present chapter calls upon three main premises: a) collaborative learning practices and participatory processes are better considered as integrative parts of education as a Human Right; b) educational processes and experiences comprise participation; collaboration; and learning processes; and relationships with the external environment; c) Collaborative Learning Communities (CLC) and Learning Schools (LS) are innovative insight towards a wider envision of education as a Human Right.

We expect our contribution may help to eliminate obstacles to the exercise of this right, whether the obstacle is the structure and scheduling of the school day; the narrow divisions of subjects; the arbitrary separation of learners by age; or the lack of collaboration between schools or even the gap between schools and universities in sharing and co-producing knowledge by integrating collective arrangements in their daily routines and strategic planning. We stand for learners' right to learn through the collective process of constructing knowledge with peers and teachers. Indeed, the emphasis is more on discussing who controls the learning process than about the content. It is also about expanding the potential of learning, by putting schools, universities, and research centres working along with dialogic and horizontal learning dynamics. Furthermore, it is about connecting to an unlimited resource of people, institutions, ideas and conversations and questioning how they might collaborate to influence their world and their lives.

Overall, and concerning the forms, content, or experiences of education involved, the questions that need to be posed are what does it mean to understand education as a Human Right? Does it only mean the right to schooling? Is this the same as the right to learn? In what ways (if any) are bottom-up approaches being successful in struggling for the right to a meaningful and democratic learning experience?

1. The rights-based approach to education

The rights-based discourse prioritises the intrinsic value of education regardless of the economic return for Nation-States. Thus, the rights-based approach to education highlights the non-conditional nature of education. This approach means, it does not matter whether education contributes to raising countries' GDP (Gross domestic product) or making some significant contribution to society overall (McCowan, 2013:12). Human capital stresses efficiency considerations; the rights-based approach highlight justice-as-rights considerations. This difference has consequences for how human beings are viewed: human capital ultimately sees human beings as input factors for economic production and growth, whereas a rights discourse sees human beings as the ultimate ends of moral and political concerns. As a consequence, people whose economic productivity is unlikely to benefit much from education, such as mentally disabled children, are, nevertheless, equally entitled to education as people who are expected to have a high economic return on education (Robeyns, 2006: 75, 76).

A second feature is the rights-based approach's positioning of people as agents rather than beneficiaries (McCowan, 2013: 12). Understanding and agency are developed progressively over life, rather than being achieved in a particular moment of life. Thus, it cannot be limited to a particular learning phase during life. These features are an all-encompassing vision of learning, including formal education and non-formal provision and personal development (McCowan, 2013: 65). Third, only the rights-based approach to education is attentive to processes and outcomes, showing some concerns on whether participation and collaborative processes are being considered when claiming the right to education and achieving the desired result (McCowan, 2013: 12). Last, framing education in a right-based approach highlights the importance and urgency of the task: universal access is not a desirable goal to be reached if time and resources allow. It is a requisite of justice, an immediate responsibility, and implies all human beings, directly or indirectly (McCowan, 2013: 13). According to McCowan (2013), the rights-based framework is specially endorsed by the United Nations organisations concerned with children and education, such as UNESCO and UNICEF. A child is entitled to decent education, even

when one cannot be sure that this education will pay off in human capital terms (Robeyns, 2006). As Katarina Tomasevski¹, writes:

Education should prepare learners for parenthood and political participation; it should enhance social cohesion and, more than anything, it should teach the young that all human beings – themselves included – have rights (Tomasevski, 2004: 33).

At a policy level, the rights-based approach to education is, perhaps, most directly associated with the Education for All (EFA) movement. Under this approach, the global commitment of “Education for All” clearly mentions the importance of learning, not schooling, to struggle for more and better education globally. The EFA movement is probably one of the most important examples of an instrumental approach to justifying the rights. In the declarations formulated within the EFA framework, the international community has committed itself to have all eligible children attending fee-free primary schooling by 2015 (UNESCO, 2003/4). The programme is primarily concerned with the achievement of universal access to compulsory education and consists of six measures: statistical follow-up of school attendance and school dropout; social mobilisation for schooling; social initiatives to promote schooling; monitoring of the internal factors for success at school; monitoring of the external factors for success at school; resource centres for schooling. EFA movement has failed to achieve the Education for All goals. We can confirm this envisioning mirrored in the World Declaration on Education for All:

Therefore, basic education's focus must be on actual learning acquisition and outcome, rather than exclusively upon enrollment, continued participation in organised programmes, and completion of certification requirements. Active and participatory approaches are particularly valuable in assuring learning acquisition and allowing learners to reach their full potential (World Declaration on EFA, article 4. 1990).

McCowan (2010) highlighted that there are two main justifications for rights. Status-based justifications are founded on deontological positions that view specific moral duties as essential, independent of consequences. These justifications claim that people have rights based on specific attributes they possess as human beings. For example, based on rational thought, all people should have the right to make choices about their lives, or based on each person's inherent dignity, no one should be subjugated to another's will. This approach is associated with Kant's emphasis on treating people as ends in themselves, rather than means to other ends (McCowan, 2010: 69). On the other

¹ Tomasevski, an independent rights-based advocate and former special rapporteur on the right to education (1998 – 2004), developed the language of the “4 As” (Tomasevski, 2006), under the intention of making Education Available, Accessible, Acceptable and Adaptable.

hand, instrumental approaches, which are often linked to utilitarianism, view rights as being justified based on individuals and society (Idem). EFA follows this understanding and, despite the relevance of this statement, this strategy has proved to be limited in its application and has been anchored in wrong justifications (Christie, 2010; McCowan, 2015; Unterhalter, et al., 2009).

Consequently, education's struggle has followed the logic of results/outcomes, objectives, and hardly reachable goals. Besides, most EFA activities have focused on primary education access instead of their unconditional existence throughout a lifetime. At the same time, McCowan (2013) suggests that depicting the right to education as a right to educational processes, rather than inputs and outputs seems not to be evident in EFA. The Jomtien Declaration too places emphasis primarily on learning outcomes (Article IV): “The focus of basic education must be on actual learning acquisition and outcome, rather than exclusively upon enrolment, continued participation in organised programs and completion of certification requirements”.

What is more, the right to education cannot stipulate universal learning outcomes due to the subjective values, the unpredictability of education, and the need for spontaneity and freedom in learning. The declaration does pay attention to processes but subrogates them to the outcomes (McCowan, 2013: 86). At the same time, UNICEF/UNESCO (2007) give due attention to processes within schools with principles of Human Rights applied to curriculum, pedagogy, and assessment on the basis that “A rights-based approach to education calls for simultaneous attention to outcome and processes” (United Nations Children’s Fund, 2007, p. 15).

The rights-based approach recommends that citizens should be included as active, participating agents in the educational reforms. Such an approach requires a model for institutional change that compels us to reflect upon social institutions' design and compels us to reflect on the capabilities each one has to contribute to institutions. Amartya Sen is an important voice in this regard. She contended that, while it is correct to have concern for how specific institutional structures can deprive individuals of their fundamental rights, it is equally important to look to achieve certain levels of essential capabilities, below which people count as “scandalously deprived” (Sen, 1992: 41). According to Sen, having a right is only significant if it enables you to do something you value. By focusing on Sen’s notion of capability as part of the content of rights in this regard, it is possible to deepen our understanding, in particular, of education as a Human

Right because Sen develops an essential understanding of human capabilities and translates this understanding into a capability- sensitive educational framework. In this regard, Sen & Anand (1996) underlined that:

One of the human agency characteristics is scrutinising and re-examine our values and priorities in light of new information and new understanding. The process of institutional reform depends on such scrutiny and critique. (Sen & Anand, 1996: 25, in Walker and Unterhalter (ed.), 2007).

Sen recommended the additional stipulation that, while having these rights is essential to our well-being, they only effectively influence our standard of living, whether individuals themselves are in a position to do something with those rights.

As put it by the author, the key issue here is that in education, processes and outcomes ought to enhance freedom, agency, and well-being by “making one’s life richer with the opportunity of reflective choice” for a life of “genuine choices with serious options”, and enhancing “the ability of people to help themselves and to influence the world” (Sen, 1992: 41).

1.1.The Right to Education in international law and the UN documents – a critical overview

Rights can relate to education in different ways. First, there is a right to education, as in the right to have access to educational experiences or institutions. Second, education is commonly seen as a prerequisite to exercising and defending oneself and others’ rights. Third, there are rights that individuals hold within the educational experience or institution. “As education is crucial to the forming of free conscience, the ability to make free decisions, and the capability of gaining the competence necessary for political participation, it can therefore be seen as a social right in itself, as well as upholding civil and political rights (Grover 2006, in Englund et al., 2009: 136)”.

In legal terms, rights-based conceptualizations of education are specially endorsed by the United Nations organisations concerned with children and education, such as UNESCO and UNICEF. Many existing international laws and UN documents² have been

² The complete list of UN documents can be consulted here: http://www.right-to-education.org/sites/right-to-education.org/files/resource_attachments/RTE_International_Instruments_Right_to_Education_2014.pdf

created to promote and to protect education as a Human Right. The Universal Declaration of Human Rights (UDHR), adopted in 1948 (December, 10th) states in its Article 26: “Everyone has the right to education”. Since then, the right to education has been reaffirmed in various international treaties including:

- UNESCO Convention against Discrimination in Education (1960)
- International Covenant on the Elimination of All Forms of Racial Discrimination (1965)
- International Covenant on Economic Social and Cultural Rights (1966)
- Convention on the Elimination of All Forms of Discrimination against Women (1979)
- Convention on the Rights of the Child (1989)
- Convention on the Protection of the Rights of All Migrant Workers and Members of their families (1990)
- Convention on the Rights of Persons with Disabilities (2006)
- UN Resolution on the Right to Education in Emergencies (2010)

The right to education has not only been recognised in international humanitarian law but also regional treaties such as the European Convention for the Protection of Human Rights and Fundamental Freedoms (Article 2 of the First Protocol), the American Convention on Human Rights (Article 13 of the Additional Protocol to the American Convention on Human Rights in economic, social and cultural rights) and the African Charter on Human and Peoples’ Rights (Art. 17).

Other initiatives were also developed as part of the World Conference on Education for All in 1990. The World Education Forum in Dakar in 2000 under which the Education for All program, driven by UNESCO, had most countries committing to achieving universal enrolment in primary education by 2015. These documents have helped establish legal mechanisms from which nation-states can and have implemented, supported, and assessed the structures necessary to provide everyone with appropriate educational opportunities.

This section's idea is not exhaustive in listing and examining Treaties and Conventions and its incompletes in protecting and safeguarding education as a Human Right. We do not discuss the use of law in claiming rights, either. Both contributions can

be read elsewhere³. Instead, we want to shed light on the fact that the language of the law has been frequently used to protect education as a fundamental right because it is considered a viable instrument of struggle for the right to education worldwide, as reflected in the General Comment 11 of the United Nations, “the right to education illustrates the indivisibility and interdependence of all Human Rights”. According to this logic, the right to education is a right to empower individuals and emphasise all human rights' unity and interdependence. We also want to shed light on the fact that these documents helped to establish viable legal mechanisms from which Nation-States can and have implemented, supported, and assessed effective responses to provide appropriate educational opportunities in different contexts and for different groups of people, whether they are minorities, migrants, refugees or displaced people (Lee, 2013: 2). There are way too many examples worldwide where millions of children and adults remain deprived of educational opportunities, many due to social, cultural, and economic factors. In this regard, Unesco released an extensive list wherein we can have a broad overview of the challenges that many children, teachers, families, and schools still have to face to have their fundamental rights taken into account. Even in Portugal, we still can find examples wherein the fundamental right of education in what it is concerned with the fulfilment of dimensions of the right to education (structured around the scheme of 4As’) still has much room for improvement. If, as an example, we take a closer look at schools in the suburban areas of Lisbon or Porto, or in rural areas of the country, one can say that equity is still a nationwide structural issue. Although the main idea of most of the policies in Portugal in the last decades was to democratize and compensate, to create a fairer education system, equality of access to education did not lead to greater justice in education because it did not translate into equal opportunities for all (Feijão & Freitas, 2017: 55). Indeed, inequalities and injustices arise in all areas and tend to worsen when they are interconnected. The inequalities, which arise in one area, create inequalities and injustices

³ Esteves, Denise (2017), “Educação para Todos”: Contributos, Limitações e Desafios do Discurso do Capital Humano e da Linguagem do Direito na salvaguarda da Educação como Direito Humano, in Saulo Rodrigues; Bruno Martins (org.), *Os Direitos Humanos e as Linguagens da Dignidade: Debates e Perspetivas*, Rio Grande: Editora da Universidade Federal do Rio Grande (FURG), 103-124. ISBN: 978-85-7566-496-4.

Esteves, Denise (2016), *Repensar a Educação enquanto Direito Humano: Processo Colaborativos, Contextos Plurais e Práticas Inclusivas para a Transformação*, in Neto, H.; Coelho, S. (ed.) (org.), *Movimentos Sociais e Participação*. Porto: Civeri Publishing, 214 – 238. ISBN 978-989-99378-2-6.

in another (Idem). An example of this is when inequalities within schools have led to inequalities in accessing employment opportunities.

This study entails a critical understanding of the right to education, which underlines how education has been designed, advocated, and pursued in international law and conventions in practical terms presents conservative features. These conservative features would hardly produce emancipatory knowledge and are not oriented towards a learner's empowerment for social transformation. This fact means that it does not contribute, neither to the recognition of connections between individual problems and its links to social contexts, nor for creating conditions for people to overcome internalized oppression, reducing inequality and the redistribution of resources (Tibbitts, 2017).

Several authors (McCowan, 2013; Spring, 2000b; Unterhalter et al., 2009; Verheyde, 2006) have been critically thinking about education as a Human Right. These authors have been shedding light on the fact that the instruments of protection of this right are narrow in scope, despite the significant advances. Also, they have proved too many times to be limited to scaling their implementation capacity worldwide. By and large, these authors claim that in the way it has been postulated, education as a Human Right is limited to a narrowly framed policy agenda which is concerned more in meeting international targets for enrolment and universalisation than with overcoming inequalities in terms of learning experiences. This fact takes place mainly due to three reasons: i) an abstract view of education in all its forms; ii) mismatching education with schooling; iii) and they give way to much attention to students outcomes and lack attention to educational processes.

Although the most recent international documents are not soundless on non-formal education (such as was the UDHR), they are limited in guaranteeing the right to non-formal education. Indeed, there is an abstract view of what education should be and a narrow understanding of the various forms that education could take. In general, as mentioned by (Rabin, 2007), (Spring, 2000a) or (Unterhalter, 2013), the above documents favour an abstract notion of what are (and should be) the most appropriate configurations that best guarantee the right to education without problematizing if there are other schemes more suitable to transform learners' reality within the school, or the many obstacles to the fulfilment of the right to education even when schools provide places.

Secondly, they also lack evaluation of the learning environments that could better guarantee education's right to education and, consequently, mismatching education with schooling. The way education policies in Portugal have been implemented, adopting the language of Human Rights in their demands are simultaneously influenced by human capital theory, supporting the right to education in a cost-benefit analysis. This approach has proved ineffective in Portugal, failing to reduce social and educational inequalities (Stoer and Magalhães, 2003; Teodoro, 2001). In theory, strategies and policies to fill this gap are being designed by politicians and have been carried out by educators. The overall result is the existence of policies that paradoxically seek to defend each and every group's interests, but almost always confer advantages to certain major interest groups (Oakes, 2008). Indeed, the study *Equity and Quality in Education* (OECD, 2015) reveals that in the way education systems are structured can exacerbate inequalities and can have (in most cases) adverse effects on student motivation and schools. Eventually, this helps to explain higher levels of school drop-out, mainly in less socio-economically disadvantaged contexts.

It is not our aim to demonstrate that school should not be understood as an essential element in realising the right to education. The OECD's Education Today Report (2013) confirms that consistent formal education contributes to creating democratic societies and building sustainable economies, which, in turn, are less vulnerable to possible economic recessions and social crises. However, we argue that school cannot be thought of as such, without considering the contradictions that it contains, nor should it be the only context for realising and implementing the right to education in whole its amplitude. We cannot forget that it neglects the conditioning effects of power relations and that education has crucial effects on citizens' position in any prevailing social relations hierarchy.

Hence, we argue that educational experiences in non-formal contexts are rarely considered as certification that offers a competitive advantage to their students according to the "success" parameters established in the formal system. According to this logic, "abyssal cartography" (Santos, 2007) is designed to create strangeness from non-formal practices of education, delegitimizing processes, and excluding agents. Authors like (Apple; Ball; Gandin, 2009) or (McCowan, 2011, 2013) argue that in this scenario students are no longer seen as active citizens with the capacity to change, build and rebuild the social, educational, political, and economic future, but rather as consumers.

There are, however, more democratic processes of learning and participatory models of schools more in agreement with Human Rights principles. The aspiration to a standardized education cannot be overlapped by the sociopolitical contexts that fundamentally shape how the rights are implemented in practice. Thus, the objectives and goals designed in the context of the analysed documents are generally lacking a bottom-up approach.

Lastly, there is a predominance of educational outcomes, rather than special attention to educational processes. The normative context for safeguarding the right to education as a Fundamental Human Right favours a system whose logic prioritises educational outcomes, defined and classified at different levels, based on a formal education model, not considering the learning process fullest extent. Indeed, the introduction of the rhetoric of goals and objectives in education replaces education from the narrative of rights to the market of education. Thus, education is no longer seen as a public good. Instead, it becomes to be understood as an essential tool for the development of human capital. In a context of strong relations between states and international institutions, whose background is economic globalization, changing language means removing education from the social rights structure and including it in states' exclusive services (Christie, 2010; Rabin, 2007).

The transition to standardized and compulsory education, as Candeias (2001) and (Afonso, 2020) reminds us, was made progressively during the nineteenth and twentieth centuries, representing the supremacy of the Nation-State vision, and has become a place of symbolic violence (and sometimes of physical) which replaced individual and group strategies by other collectives, national, decided by groups of power and imposed on the general population (Candeias, 2001: 30). The schooling model (or the schools it controls) becomes how curricula are defined and assimilated (assimilation guarantees positive results), becoming a more widespread model in the West since the nineteenth century (Candeias, 2001). Not attending this school, not to be submitted to their own rules, such as the standardization of certain age levels; not to assimilate their curricula; not to be successful through their forms of evaluation; to ignore their mechanisms of control and discipline mean the exclusion from the system. This system creates categories of educated and educable children and, simultaneously, entry into a universe of ineligible voices

allocating rights because they are not recognisable by the education system⁴. Most schools follow a model of knowledge transmission that has been expanded throughout the world (either by conscious adoption or by colonial imposition), through state-defined curricula to many students who become eligible in a system.

Although we identify critical issues mentioned above, authors such as Lee has the opinion that the UN recognizes that the right to education "goes beyond formal schooling to embrace the broad range of life experiences and learning processes which enable children, individually and collectively, to develop their personalities, talents, and abilities and to live a full and satisfying life within society" (UN, 2001, "Appendix," p. 2). Besides, we cannot forget to mention that both articles 28 and 29 of the Convention of the Right of the Children (CRC) are directly associated with education, and four other articles in this document stress the need to establish an educational environment that respects the rights and that is child friendly. Article 2, for instance, specifies the importance of respecting and ensuring the rights of all children regardless of background, ability, sex, or any other factor that might distinguish one child from the next. Article 3 states that the child's best interests should be the central concern of all actions and decisions. Nevertheless, to ensure that educational decisions are made in the child's best interests, it is "necessary for the child to be a participant in that decision-making process, not necessarily as an equal participant but as an age-appropriate contributor". Article 5 addresses the need to consider the significant role parental guidance can play in influencing the child's development. Article 6 stipulates that the child has an inherent right to life and development. These four articles, in conjunction with Articles 28 and 29, suggest that to accomplish their rights, a child is entitled as a person of full rights, and a holistic approach must be taken that recognizes the interconnected nature of this convention and, above all, what conditions allow a child to live a minimally decent life. For our analysis, the essential elements of the CRC would be to complement the need to establish an educational environment that is child-friendly, additional articles of CRC support the child's right to an educational setting that is also empowering. Article 12, for

4 The same system that creates the category of educable children excludes, to take as an example the Portuguese case, children with special educational needs.

It was not until 1991 that disabled children were granted the right to enter in the formal educational system, through the decree of law 319/91 of August 23, 1991. This decree regulates the integration of these children into the formal education system, granting them the right to equal opportunities in access to the Portuguese education system.

example, Article 12, stresses the rights of those children capable of having their views and expressing those views when they are relevant to decisions that affect them directly. Under appropriate consideration of the child's age and maturity, adults should allow children to participate in school life, including involvement in creating student councils, peer-mentoring programs, and creating curriculum materials meaningful and relevant to them. The CRC also recognizes that having a voice is a meaningless entitlement if there is no corresponding entitlement for children to access information freely. Article 17, for example, Article 17 highlights both the importance of accessing information, which remains open and flexible. Sustaining these goals implies providing children with a child-centred and empowering educational environment.

2. Contributions for an emancipatory approach to education as a Human Right

We accept the importance of legal strategy in mobilising social groups from different parts of the world or reducing their relevance to social groups' political awareness. Legal enforcement is effectively an essential part of the political strategy. It is important to create a political identity among groups that remain non-formal/marginalised under the Human Rights legal process. However, this discourse, at the same time that is producing legal citizens, reflects a homogenising discourse and a simplistic view of subaltern social groups.

Another limitation in using the language of the law concerns the understanding of its exclusive character, in which the demands of social justice and emancipation are expressed, marginalizing other “emancipatory vocabularies” (Kennedy, 2004). In its national or international application, the law is nothing more than an essential procedural technique that establishes forms of access to goods by society. Flores (2009) argues that these forms are not neutral, nor are they exhausted by their norms' enunciation. These techniques are part of a dominant value system that sacralize and delegitimize the positions that both occupy in social systems (Flores, 2009: 18). If the law is not a neutral technique, it is the only instrument through which the dominant social relations are legitimized or transformed. In this sense, the law is a technique, among many others,

through which some social groups resort to claim or claim their struggles and social interests, both at the national and international levels (Flores, 2009: 18).

Based on this understanding, critical theory demands a new perspective on Human Rights, taking into account emancipatory social practices—quoting (Gallardo, 2011), a proposal that "does not reduce Human Rights enforcement to its legalisation" (Gallardo, 2011: 46). One that analyses their weaknesses and recognises that Human Rights also arises from a complex form of social struggle and conflict. We suggested that education as a Human Right could only be a significant achievement with meaning if we undertake an understanding of participation and an active commitment of all the interested parties on the educational project as a constitutive part of it, and an understanding of learners as active agents in the educational process. Hence, we follow the same understanding of learner that Freire used, i.e., "learner is someone who is an active agent on its learning process and respectively, an agent in political processes (Freire, 1970: 43)".

For Flores, alternative use of the law must be driven in a double sense: either from a bottom-up perspective, through NGOs, unions, and social movements; as in a top-down movement of national and international mobilization. Santos and Garavito (2005) also reflect on the law's limitations, proposing to consider counter-hegemonic globalization as an alternative that deserves to be seriously considered in achieving greater social justice. The authors propose to expose the potential and limitations of strategies centred on the law to improve counter-hegemonic political struggles in the context of globalization (Santos and Garavito, 2005). This strategy implies broadening the voice of those victimized by neoliberal globalization, being recognised as a bottom-up approach that Santos called "alternative cosmopolitan legality" (Santos and Garavito, 2005: 4). The author considers it necessary to decentralise and democratize institutions to bring power to local authorities and to involve all relevant stakeholders at a local scale. In this sense, it is understood that Human Rights doctrines and institutions, with their liberal origins and legacy, have often been closed to non-Western conceptions of "human dignity" and collective rights. However, organisations and social movements challenge these conceptions and the separation between different "generations" of Human Rights, striving to articulate the claims for civil and political rights, on the one hand, with the protection of socio-economic and collective rights, on the other hand.

These issues contribute to a continuous reconfiguration of Human Rights in the direction of social justice.

In the current context, the balance between regulation and emancipation, and considering the political and social reality, the probability of excessive state regulation to deregulate (which may translate into more privatization and the reconfiguration of a State authoritarian) necessarily implies a deep retreat from emancipation, which according to Afonso (2019), “will induce forms of creative resistance in the sense of restoring the balance between the pillar of regulation and the pillar of emancipation (Afonso, 2019: 12)”. The author proposes that the new social movements that emerge or redefine their strategies cannot fail to incorporate in their agenda the struggle for the re-democratization of the State itself, that is, the struggle for more just forms of regulation.

For Santos (2005), emancipation is not immutable. Following the changes in the conditions of domination, the challenge is to reinvent emancipatory possibilities: “[...] emancipation is nothing more than a set of procedural struggles, with no well-defined end” (Santos, 2005: 238). In this sense, the author highlights the New Social Movements (NMS) 's emancipatory potential as they modify the regulation-emancipation relationship. This aspect means they question the forms of social ordering in modern times. For the author, NMS are the protagonists of the socio-historical transformation of emancipation in contemporary times. Through them, experiences of resistance are empirically documented, demonstrating their potential to subvert hegemonic ideologies and institutions. Privileging the excluded actors and the beneficiaries of the new forms of legality is the aim of the new cosmopolitan subaltern legality.

In this sense, we understand learning communities and learning schools as approaches that bring educational experiences, the experience of resistance to hegemonic practices and be configured as emancipatory possibilities in the educational field, given their capacity to transform the regulatory/emancipation relationship in education. A learning community is in our viewpoint a counter-hegemonic educational model that is no more than a local stand for the right to learn in collaboration with others and for the right to participate actively in the educational process. “To be a learning community means to be a community of relationships, for it is through relationships and connections that people learn (Sackney, 2011: 60)”. We underline the potential of collaboration and engagement over education and on people’s capacity-building towards enhancing learning as a powerful tool of reflection and transformation.

Building a learning community entails putting learning at the centre of everything that happens in schools. It positions a learning community as a group of people who take an active, reflective,

collaborative, learning-oriented, and growth-promoting approach toward the mysteries, problems, and perplexities of teaching and learning. In a learning community, the educators' learning and the environment within which they learn receive the same attention as does the learning of the students. (Sackney, 2011: 12).

These learning communities' constitution allows the development of a more democratic school, participative, critical, and embedded with the local community in local issues. Because these topics have a close relationship with those concerning knowledge democratization, notions based upon postcolonial perspectives on alternative knowledge-systems (Apple, 2012; Santos; Filho, 2008; Santos, et al., 2004) are deeply explored as useful thinking tools to an understanding of an emancipatory education conceived as a Human Right (Janmaat, Rao, & McCowan, 2016; McCowan, 2013, 2015).

Indeed, one of the main challenges of this research is to look at education as a right beyond its legal framework. We suggest that we cannot think through education as a Human Right if we do not consider Human Rights emerging and being expanded through a process of continual and constant societal struggle—a struggle where rights are contested, and the real substance of these rights change over time. In this way, Human Rights are built upon and expressed in the school's broader deliberations and experiences. These struggles have been paying off. There are several examples worldwide spread of more democratic school models because they have developed participatory methodologies, that we are confident can help schools become closer to a Human Rights approach of education. We believe the Collaborative Learning Community and Learning School are both approaches of this kind.

Indeed, we entail a more comprehensive understanding of the right to education and how it is realised. Our understanding implies conceiving the right to education far beyond the issues listed in the conventions on the right to *acceptability, availability, accessibility, and adaptability*, also known as the “4As” of the right to education⁵. Despite the importance of these elements, we claim a more inclusive notion of the right to education.

⁵ The 4 A's were developed by the first UN Special Rapporteur on the Right to Education, Katarina Tomaševski, and adopted by the Committee on Economic, Social and Cultural Rights in its General Comment 13 on the Right to Education. To be a meaningful right, education in all its forms and at all levels shall exhibit these interrelated features:

Available— Education is free and there are adequate infrastructure and trained teachers able to support the delivery of education.

Accessible— The education system is non-discriminatory and accessible to all, and positive steps are taken to include the most marginalized.

Thus, this broader view of education proposes to discuss more widely issues related to the quality of the educational experience, as well as, issues interconnected to the production and sharing of knowledge and with the agency of several actors, who do not have a voice in this process very often. For this understanding, a reflection about agency and relations between members of the school community must be done. Indeed, expanding groups of agents who contribute to the diversification of the educational process (through collaborative learning communities) would be a valuable contribution to problematise the meaning of education as a Human Right. To this end, not only individuals but also learning communities should be considered an integral part of the collaborative learning process and the knowledge produced by these groups should be legitimized. This approach implies claiming the right of each educational agent to participate in the learning process. As previously mentioned, it entails in this case, looking at education from a bottom-up perspective from the experiences in the field, as it is lived by schools, from the perspective of all partners involved in the learning community, namely: students, school teachers, school directors, researchers, IEC staff, municipality and local institutions (local museums; local associations; social organisations). Indeed, education as a right has become a crucial issue in restructuring Western school systems. The increasing tendency to view and discuss education from a perspective of rights makes it necessary to consider schools' democratic purpose. According to Englund (2005):

Schools should aim to develop their students' capacities to understand different perspectives, communicate their understandings to other people, and engage in the give-and-take of a moral argument to make mutually acceptable decisions. (Englund, 2005: 140).

In this context, learning is assumed (and expected) to be empowering and transformative. It is though, empowering people to make changes in their own lives, as well as, in their families, communities, and institutions. As an empowerment process, the learning practice is intended to foster agency over learners through specific leadership development, knowledge production, and informed decision-making. As an example, (Sen, 2004), (Lee, 2013) and (Tibbitts, 2017) suggested that not only is formal education

Acceptable– The content of education is relevant, non-discriminatory and culturally appropriate, and of quality; schools are safe and teachers are professional.

Adaptable– Education evolves with the changing needs of society and challenges inequalities, such as gender discrimination; education adapts to suit locally specific needs and contexts.

necessary for political participation, but it is also essential for accessing a wide variety of public services. According to both authors, being educated can translate into understanding issues about one's health such as risk factors associated with different forms of contraception, the effects of climate change in one's country, and how governments reported on its work to combat poverty. This understanding makes people more capable of using, more extensively and more knowledgeable, the available public health services or the proceedings and services of the court of law. As put it by Lee (2013) in the example of the health system:

While providing free public education is a significant public burden, maintaining a society's general health and well-being is an equally significant encumbrance. If the observable correlation between the level of education and level of general physical well-being is recognized, the indispensable influence that educational opportunities (especially those directed toward women) can have on preventative health care can go a long way to achieving general sustainable social well-being and to alleviating a significant portion of the public health burden. (Lee, 2013: 7).

But the education of low quality is a disadvantage and one that can persist throughout a lifetime. Our positive and negative formal education experiences affect our choices and how we dream and pursue our goals. Such experiences include curriculum, pedagogy and assessment, and the culture of the school. On the other hand, a narrow understanding of education is, in itself, an obstacle to learning for all. i.e., mastering basic literacy and numeracy skills is not the same as learning. Confusing these skills with learning, end up fostering unimaginative teaching and teacher education, reinforcing hierarchical and non-participative classroom practice, and providing little incentive to innovate, at any level, or for being creative and challenge usual teaching as usual practices.

2.1.A holistic approach to educational processes

Several authors (Lee, 2013; McCowan, 2013; Freire, 1987; Sen, 2004; Tomaševski, 2001) have been suggesting that the principles of autonomy, independence, and agency along with an urgency of looking from a holistic approach to education should be a fundamental part of the right to education. Other authors (Lee, 2013; McCowan,

2013; Spring, 2000a) emphasised the educational experience itself, instead of on the achievement level on specific subject or skill, as numeracy or literacy. "I intend to provide the right to an education that maximizes the opportunity for all people to engage in this quest [for the good life] (Spring, 2000a: 156)". McCowan defines education as a Human Right as the following: "All people have the right throughout life to engage in educational processes that are intrinsically, as well as, instrumentally valuable, and that embody respect for Human Rights" (McCowan, 2013: 173). This research follows the same understanding.

Also, as previously mentioned, several international law documents recognize that a right to education "goes beyond formal schooling to embrace the broad range of life experiences and learning processes which enable children, individually and collectively, to develop their personalities, talents, and abilities to live a full and satisfying life within society (UN 2001⁶, "appendix: 2"). The educational processes are those "consistent with Human Rights principles and practices (McCowan, 2013: 87). Following general Human Rights-based programming for development, participation (of children and communities) is one of the key processes in question and the prohibition of physical punishment and generally respecting the "identity, agency, and integrity of children within the school". Assessment as a formative task rather than a summative task is also mentioned. Monitoring and evaluation, in turn, need to address processes, as well as outcomes. However, this kind of approach in practice is far from universal among development agencies, with the momentum following the World Bank's attention to measurable learning outcomes, and national governments are vying for success in international tests such as PISA. What is more, education needs to be conducted in manners that do not infringe on other Human Rights (learner's physical integrity, freedom of thought (indivisibility of rights)).

Furthermore, Spring (2000) proposes considering educational processes the use of imagination, with learners developing visions of society's alternative organisation. Spring has a particular justification for the right to education (the predicament of indigenous groups in a globalized world) and processes that link in with the need to be grounded in one's own culture and understand and influence the global system. Another author aligned with this vision is McCowan (2015). His approach is an example of establishing a

⁶"The aims of education" full document can be consulted [here](#).

consonance between the overarching ideals of the education undertaking (in this case, moral agency and human dignity) and its day-to-day working. In addition to proposals concerning knowledge, the author argues that the "hidden curriculum" must be imbued with Human Rights, through democratic values and a fair rule-set. McCowan (2015) emphasised the incorporation of Human Rights in pedagogy, school management, and the community's broad involvement in educational decision-making. He also states that the basic principles of participation are a Human Right and a fundamental aspect of learning. The European Council emphasizes this element:

Member States should promote democratic management in all educational institutions, both as a desirable and beneficial method of governance in their own right, as well as a practical means of learning and experiencing democracy and respect for Human Rights (Council of Europe Charter on Education for Democratic Citizenship and Human Rights Education, 2010)⁷.

Overall, the right to education encompasses the right to participate in meaningful learning processes, rather than a specific level of acquisition of learning. Furthermore, participatory pedagogy is often justified based on its efficacy for learning. As McCowan (2013) states, the "interactive pedagogical approach" is "[...] more strongly linked to the change of attitude or behaviour than to a pure transmission approach." (McCowan, 2013: 160). According to McCowan (2013), the implementation of changes towards the reconceptualization of education as a Human Right urgently requires paying attention to educational processes and experiences. As put it by the author:

A focus on processes is then desirable, but at a deeper level can also be seen as inevitable: there are no resting points in life that we can meaningfully describe as 'outcomes'; experience is constant movement, so processes in this sense lead not to results but further processes. The purpose of educational processes, therefore, is to lead to ever enhanced future processes of learning. (McCowan, 2013: 83).

McCowan (2013) synthesises particularly well what other authors (Biseth & Holmarsdottir, 2013; Englund et al., 2009; Tomaševski, 2001) have claimed too: that is educational processes, i.e., educational experience as a whole become of the utmost importance when we stand for the right to education. So, defining the right to education cannot be left to a small group of law formulators. Instead, it is a discussion between all those involved in the educational endeavour and entails participation, collaboration, teaching practices, relations between members of the school community, the learning process, and practices (McCowan, 2013: 81). Thus, for the right of education to be

⁷ A full version of this document is available [here](#).

imbued with real meaning, we need to create conditions for people's participation in determining their educational requirements. Without the cooperation of teachers, students, principals, and policymakers, the educational process cannot live up to expectations (Janmaat et al., 2016). Thereby, throughout this study, we stand for the validation of “agency” (Sen, 2004), and for collaboration (J. and W. E. Lave, 2003), not only as a Human Right but also as a valuable practice to produce collectively new knowledge, so that we can seriously talk about innovative educational practices and policies.

Thus, education as a Human Right can only be a significant achievement with meaning if we take a) an understanding of participation and an active commitment of all the interested parties on the educational project as a constitutive part of it and b) learners as active agents in the educational process. Therefore, we follow the same understanding of learner that Freire used, i.e., “learner is someone who is an active agent on its learning process and respectively, an agent in political processes” (Freire, 1987: 43). This learner might be a child, an adolescent, or an adult. No matter their age, they are considered social actors, active agents, and autonomous, independent human beings constructing their lives in their own right (Reynaert, et al., 2009; Lúcio, 2013). This is a fundamental step to reinvent citizenship, one can read in Freire’s book “Pedagogy of Hope: Reliving Pedagogy of the Oppressed” (1992). Freire highlights the importance of the relationship between educators and students, stressing that both are learners and struggle against the ‘banking model of education’. As suggested earlier in this chapter, notions of agency and participation, and collaboration in the educational process are crucial to this reflection, as these elements correspond to Freire’s dialectic of reflection and action within the concept of praxis:

In problem-solving education, people develop their power to critically perceive the way they exist in the world with which they find themselves; they come to see the world not as a static reality, but as a reality in process, in transformation. Hence, the teacher-student and the students-teachers reflect simultaneously on themselves and the world without dichotomizing this reflection from the action and thus establish an authentic form of thought and action (Freire, [1970] 1987: 41).

Although an exercise of involvement in decision-making, participation directly correlates to progressive educational practice if the educators who realise it are coherent within their discourse. As stated by Freire (2004):

It constitutes a glaring contradiction, a loud incoherence, to conceive of an educational practice that intends to be progressive but that is realised within such rigid, vertical models as to leave no

room for the slightest doubt, for curiosity, criticism, suggestion, for a living presence, with a voice; an educational practice in which educators are subjected to packages; an educational practice whose learners are limited to studying without questioning, without doubting, subject to their teachers; an educational practice in which the school's other personnel—groundskeepers, cooks, security guards—are not also educators with a voice; an educational practice in which fathers and mothers are invited to the school only for end-of-year parties, or to hear complaints about their children, or to become involved as volunteers in repairing the school facilities, or even to "participate" in collections for the purchase of school materials (Freire, 2004: 88).

Democratising knowledge and power is to recognise the right of students and teachers to have a voice (Jones & Bubb, 2020), to decrease the personal power of principals, and to create new venues of power, such as School Councils, which played both decision-making and a consulting role and through which, first of all, mothers and fathers could gain involvement. Secondly, the school community could engender a sense of ownership of the school in the local community and make it active in implementing educational policy within the school. Indeed, Hargreaves and Shirley (2012) and Zhao (2011) propose students as ‘partners of change’ suggesting that a partnership means that both teachers and students are working towards a shared goal: students’ learning’.

Again, as Freire highlighted, a democratic school implies the participation of all those implied in the learning process. In his words:

(...) a greater level of democratic participation on the part of students, teachers, mothers, fathers, the local community, on the part of a school that, while public, intends to become popular continually, requires light structures, adaptable, de-centralized structures, which allow for quick and effective government action. (...) Democracy requires democratizing structures, rather than structures that inhibit civil society's active presence in command of public things. (Freire, 2004, pp. 89, 90).

Indeed, there have been widespread calls for greater student participation in the school setting, although not all from the perspective of children’s rights (McCowan, 2012). A large part of the justification for this participation is, in fact, instrumental, the experience of involvement in decision-making being seen as an opportunity to develop knowledge, skills, and values relating to subsequent democratic citizenship. Participation is perhaps the most distinctive (and most controversial) aspect of the CRC's rights (McCowan, 2012; Reynaert, et al., 2009). According to Cavet and Sloper (2004) ‘There is a growing body of information describing and analysing innovative practices in the field, with evidence of the employment of a wide range of participative means, including unconventional approaches.’ (Cavet and Sloper 2004, in Reynaert, et al., 2009, p. 522). However, these scholars demonstrate that the extent of involvement has been limited.

Problems raised include tokenism, unresolved power issues, being consulted about relatively trivial matters, and some children's inclusion, leading to others' exclusion. Thus, the question is how these ideas about collective knowledge construction 'fit' within our present models of schooling? Is this something that extends what we currently do in school, or is there possibly a very different framework based on our new perspective for what 'schooling' could and should be?

We agree with Samoff and Carrol (2013) when they state that "without changing schooling model, learning for all remains an unattainable goal" (Samoff and Carrol, 2013, p. 416). Incorporating these issues implies a concern for the quality of one's own learning experience - protecting the freedom of expression of its stakeholders, their physical integrity - rather than subordinating or sacrificing the learning moment for a supposed benefit in the future.

Some contemporary examples of initiatives aim to embody Human Rights – those of participation and others –to enhance pupils' learning based upon Human Rights principles. Much of this activity is focused on integrating the Convention on the Rights of the Child (CRC) into schools' activities, as promoted by UNICEF's Rights Respecting Schools Award scheme in the UK, and more broadly across the world Amnesty International's Human Rights Friendly Schools and UNESCO's Associated Schools Project Network. A nationwide example is the pilot project "Human Rights Friendly Schools", which the Portuguese Section of Amnesty International intends to launch in Portugal, is an initiative inspired by the organisation's experience in other countries.

In the case under analysis, the example of the relationship between schools and universities, and the Institute of Education and Citizenship (IEC), reveal a democratic learning experience for all the implicated parties, the mutual learning experience, and an expansion of a whole collaborative learning community. We argue that this learning experience is a counter-hegemonic proposal that transforms the regulation/emancipation relationship in education, using the voices of those who constitute the collaborative learning community.

2.2.Learner's Agency

Agency, according to McCowan, involves the “freedom of individuals to pursue their life goals (freedom in a non-interference sense, but also involving positive provision in society), but can be a collective, as well as an individual notion (McCowan, 2013: 63). Contrary to autonomy, agency expresses the processes involving in political and civic participation. Curren (2009) adds that children have the right to revise one's conception of how to live a good life, and reflect critically on one's family and local belief system. This includes the political agency needed to be an active and critical citizen, subject authority to scrutiny, and influence decision-making (McCowan, 2013: 64). The ability to act in the world under one's purposes is strongly linked to the possession of knowledge, reflective capacity, and critical thinking. Thus, an agency has also been defined in terms of capacity to make informed choices about actions to take and how to do them and assume responsibility for the consequences (Torres & Reyes, 2010, p. 192). In Griffin's view (2008), an essential part of the agency is that one's choice must be real; one must have at least, a certain minimum education and information so that we move from having the potential for agency to exercising agency (Griffin, 2008, in McCowan, 2013: 63-64). Pursuing aims also require other skills and knowledge and the ability to deliberate and scrutinize.

Further, the agency deserves our attention on how it potentially enables us to imagine and act toward new ways of being. Unterhalter et al. (2009) consider that to be actively involved in shaping one's own life, and having opportunities to reflect on this is critical for positive social change. Agency is intrinsically crucial for individual freedom, he argues, but also instrumental for collective action and democratic participation. We exercise our agency individually and cooperate with others, and through educational opportunities and appropriate processes, we might learn to do both (Unterhalter, et al., 2009: 6). Agency is also a critical dimension of human well-being, as (Sen, 1992, 2004) argues, and can further expand or advance our well-being in ways we deem worthwhile. Like learning, thinking of oneself as an agent whose actions and contributions count in the world of education does not happen overnight. It is a process of both being and becoming. By embracing agency in and through our educational practices, we open the

possibility to interrupt a pervasive relationship in education that tends to link learners' origins and outcomes (Sen, 2004).

The capacity to learn and understand is the one which should be enabled and protected at all costs for all people: at least the freedom to exercise these capacities must be available to all people, even if they decide not to exercise them (McCowan, 2013: 64). So, all people should have the capacity to reflect on and pursue their goals, and they should have the opportunity to develop their understanding and talents and interests. Even having some innate capabilities, all of them require education so that they may be fully exercised. "Education, however, is not just a pathway that leads to these capacities as if separate entity; both understanding and agency are internal to education and have education as an inherent component. The effects of such an education are not external to it; they are expressions of it (McCowan, 2013: 64, 65)".

Over the next two theoretical chapters, we are going to consider the possibility of thinking both collaborative learning community and learning schools as a strategy for driving educational change by putting in place strategies for knowledge democratization, developing collaborative mechanisms and enhancing learner's agency? We argue that those elements are crucial to revisioning education as a Human Right.

Chapter 2 – Learning Communities: Reading Change through Collaboration, Teamwork and Knowledge-exchange

Introduction

As the concept of learning underwent important developments during the 20th century, we start this chapter by discussing learning, i.e., as a social and situated activity significantly shaped by the context and actively developed through collaboration with others (Section 1). We deconstruct the approach of learning as an unproblematic process of absorbing, as a matter of transmission and assimilation. Hence, we focus our attention on learning as an evolving, continuously renewed set of relations; this is consistent with a relational view of people, their actions, and the world, typical of a social practice theory. Overall, we entail an ecological approach to learning. In section 2, we unfold the open learning system concept, wherein the learning community and learning school have their roots. It is extensively discussed that the best quality learning opportunities come from developing whole learning systems, which are much more than enhancing individual learning experiences and need to be connected to the broader context, including diverse partners, networks and learning communities. We follow with a discussion on different perspectives on educational change towards improving everyone's learning experience over time. Our goal is to understand which strategies sounds more promising for meaningful and lasting change for students (Section 3). We continue the discussion by presenting different perspectives of learning communities that have emerged from the literature. (section 4). The discussion aimed at informing the reader of the commonalities and differences of different understandings of the learning community. We also delineate the differences and commonalities between communities of practice, communities of learners and learning communities. In the same section, we elaborate on the knowledge-exchange and collaborative learning process as an essential practice to understand the learning community framework.

The literature search (i.e. books, academic articles, and dissertations) on “schools as learning organisations” and on “learning community” is conducted in English and Portuguese languages. Search in the English language was made through 1) Books; scientific articles 2) focused search of six electronic databases – ERIC, SAGE, Google Scholar, JSTOR, Springer Link, Google Scholar – using the search terms ‘professional learning community’ and ‘learning community’, ‘school as learning organisation’ and

‘learning school’; and 3) contact with leading experts in this knowledge field which have led to the identification of additional literature⁸.

The first approach has led to selecting the most frequently found publications on learning schools and learning communities. The second approach led to the identification of additional publications that enrich the analysis.

As this study focuses exclusively on the Portuguese context, it was essential to find out what has been done in this field nationwide. The search for literature in the Portuguese language using the search terms (*escola aprendente; escola reflexiva; comunidades de aprendizagem*) was carried out mainly through 1) Books; scientific articles, PhD thesis and master’s dissertations 2) focused searches of 3 electronic databases – RCAAP (Repositório Científico de Acesso Aberto de Portugal; Catálogo Integrado SIBUC; Google Scholar. This approach has led to academic writing analysis published over the last ten years on these topics.

This study draws heavily from “schools as learning organisations” literature, but also from other relevant literature in interlinked fields of knowledge so we could build bridges between concepts, namely the established literature on “learning communities” (Bolam, et al., 2005; Hargreaves, et al., 2007; Stoll and Louis, 2007; Stoll, 2010; Haironet.al., 2019; Dogan, et al., 2016; OECD, 2016; Talbert, 2010); schools as learning communities (OCED, 2015; Harris & van Tassell, 2005; Sackney, 2011; DuFour & Eaker, 1998; Stoll, et al., 2003); learning environments (Keefe & Jenkins, 2013; OECD, 2015; OECD, 2013b, 2016b); communities of practice and situated learning (Lave J. and Wenger, 1991; Wenger, et al., 2002; Wenger, 1998; Wenger-Trayner, Etienne, 2015); school change (Fullan, 2007a; Stoll, 2009; Hargreaves, 2005; Fink and Stoll, 2005). As learning communities and learning schools are interwoven topics, several authors write about both concepts, namely (Bolívar, 2000; Fullan, 1995; 2007; Giles & Hargreaves, 2006; Schechty, 2009; Stoll, 2010; Kools, Stoll, et al., 2020; Fred, et al., 2019; OECD, 2015; Sackney, 2011). More recently, authors such as (Kools, M.; Pont, 2018; Kools, George, & Steijn, 2020a; Kools & Stoll, 2016; Pedler & Burgoyne, 2017) have been contributing to test the implementation possibilities of learning schools to thrive and sustain.

¹ The expert’s meeting held in Paris (February 2017) at the OECD-Directorate for Education and Skills was part of the OECD pilot-project entitled *Transforming Schools into Learning Organisations* (2016). Equally relevant was the stay at the Faculty of Education in the Complutense University, as visiting researcher with the *cultura cívica y políticas educativas* research group.

1. An ecological approach to learning

Learning is a process that takes place in a participation framework, not in an individual mind. This means, among other things, that it is mediated by the differences of perspective among the coparticipants. It is the community, or at least those participating in the learning context, who "learn" under this definition. Learning is, as it were, distributed among coparticipants, not a one-person act. (Hanks, W., 2003 in, Lave and Wenger, 2003: 15).

Over the 20th century, the concept of learning has experienced important developments with different schools of thought and diverse disciplinary traditions, shaping the way we understand the learning process. In the first part of the 20th century, behaviourism has conceived learning as a response-strengthening through reinforcements and have dominated the knowledge produced about learning. For their followers, learning consisted of a change of behaviour based on reacting to stimuli from the environment and observable responses of the individual (de Corte, 2010, p. 36). In the late 50s, psychology brought fundamental change by focusing on information processing, which led to the view of learning as the acquisition of knowledge in relatively passive ways. Thus, learners are seen as no longer an empty vessel, but rather as sense-makers. During the 70s and the 80s, we assisted to the emergence of the idea that learners are not passive agents; instead, they actively construct their knowledge and skills through interaction with the internal and external environment and by the reorganisation of their mental structures (De Corte, 2010: 39). Indeed, the end of the century brought an understanding of the importance of the context in which cognition and learning occur. Thus, the socio-constructivist understanding of learning entails “participation” and “social negotiation” with the broader context. The importance of context became the foundation for studying situated cognition and learning paradigm (de Corte, 2010; Lave and Wenger, 2008; Lave and Wenger, 2003; Wenger-Trayner, 2015). This aspect constitutes the current and dominant view of learning and the one we have chosen to follow in this study. The educational research community widely held that learning should be preferably studied in context, i.e., the social, cultural environment upon which these processes are embedded.

In this approach, both psychological processes evolving the learner, and social and situational aspects impacting learning are considered equally important and reflexively related to learning. Despite this fact, we are focusing on the social and situational features of learning. This situated view of learning stresses that learning is

enacted essentially in interaction with, and primarily through participation in an *activity system* (Lave and Wenger, 2003): “Participating is essential to our learning. It is at the very core of what makes us human beings capable of meaningful knowing (Wenger; McDormott; Snyder, 2002)”. Lave and Wenger situate learning in certain forms of social co-participation. According to the authors, learning is always based on situated negotiation and renegotiation of meaning in the world. This process implies that understanding and experience are in constant interaction. They are mutually constitutive. They ask what kinds of social arrangements and networks provide the proper context for learning to thrive.

This study relies on a social-constructivist view of human development rooted in the principles of “living systems”. Thus, it works within an ecological understanding that everything is intimately connected with and embedded in everything else; “that different elements are unique manifestations of the same underlying reality; and that any change in one element eventually leads to some sort of change in many others elements” (Sackney, 2011: 147).

From an ecological perspective, being connected is not a choice: any individual's actions (and inaction) always affect others who share an educational space. Senge et al. (2005, p. 8) explain this concerning the nature of wholes and the interrelationship of parts and wholes: ‘Apart is a manifestation of the whole, rather than just a component of it. The whole exists through continually manifesting in the parts, and the parts exist as embodiments of the whole.’ Earlier, we applied this concept to schools and school systems, but it also describes the deep connections and reciprocal impacts among people, and between people and events. Awareness of one’s inescapable presence within the system paves the way for people to recognise their roles (whether passive or active) and the consequences of their actions. Based on that knowledge, they can act in ways that inform and sustain the system's health. As Senge et al. (2005: 13, 14) put it, ‘If our awareness never reaches beyond superficial events and current circumstances, actions are reactive. If, on the other hand, we penetrate more deeply to see the larger wholes the source and effectiveness of our actions can change dramatically.’ Skills in understanding the impact of one’s presence, seeing larger systemic realities, and working across boundaries enable people to integrate their thinking, doing and being. This kind of integration describes the character of learning in a living system (Capra, 2002), and

when it becomes embedded as the way of working throughout the school, teaching and learning can grow within natural and sustainable conditions. (Sackney, 2010: 152, 153).

As recalled by Lave and Wenger (2003), “the organisation of schooling is based on claims that knowledge can be decontextualized, and yet schools themselves as social institutions and as places of learning constitute particular contexts” (Lave and Wenger 2003: pp 40). Nevertheless, understanding “situated learning” means that learning cannot be dissociated from the historical, cultural, and social context in which it occurs; therefore, it is a relational practice. On the other hand, it is an understanding of the school as just one of the institutions that contribute to meaningful learning, but it is certainly not the only institution. It means that it is in the school's interstices, concerning “others”, in its borders that emancipatory learning occurs. Thus, analysis of school learning as situated requires a multi-layered view of how knowing and learning are part of social practice - a major project in its own right (Lave J. and Wenger, 2003: 40, 41). This understanding means that learning involves the individual, others in the learning environment, and the resources, tools, and technologies available. This understanding is essential to socio-constructivist, and despite the almost idiosyncratic process of knowledge building, individuals nevertheless acquire shared concepts and skills. It suggests that a shift toward more social interaction would be a worthwhile move from a traditional emphasis on individual learning since individual and distributed learning interact during the process of learning.

Although there is strong support from literature, the constructivist perspective has also come in for criticism. Mostly this criticism comes out of the fact that this perspective relies excessively on discovery learning and provides minimal guidance to students, ignoring the structure of human cognitive architecture and resulting in a cognitive overload of working memory (de Corte, 2010). However, one can say that learning, as an active and constructive process does not imply that teachers and peers should not guide student’s construction of their knowledge, and skills. The active learning process requires a balance between discovery and personal exploration and systematic instruction and guidance (de Corte, 2010).

While the concept of learning experienced significant developments, schools have faced a steady stream of new challenges and ambitious demands. Several authors (Bentley, 2012; Castells et al., 2004) stress we are passing through another period of drastic changes with an unprecedented socio-technological revolution stepping in

everyone's lives. The same kind of revolution happened in the 18th century that accelerated the industrial revolution, which brought profound economic, social, and political life changes in western societies. Institutions, political, economic, and social structures worldwide appear, once again, to be changing or under pressure to do so. It would be hard to imagine a couple of months ago that the education system would support teachers, students, and parents in homeschooling so fast. It is incredible to imagine that teachers would run the academic year smoothly despite the ageing teachers' staff and the lack of advanced digital skills.

On the other hand, who would wonder that families would be so available to participate actively in the educational process? Maybe part of the answer to the lack of parents' participation in school issues might be digital with a proper incentive from the government. This results from a complex, diverse, confusing, and for some called chaotic post-modern era (Stacey, 1995 in Fink and Stoll, 2005: 18). Would we imagine the educational system to be so fast in adapting to the challenges posed by the pandemic in such a short period?

As so, the twenty-first century brought with him the debates around the "information society" (Castells, 2010); the "knowledge society" (Sachs, 2008); and the "network society" (Phelps, et al., 2012). Common to all these debates are notions of the complexity and the implications of living in a world of fast technological change with resounding effects on the politics, economics, social and cultural lives of people and institutions' practices (Sachs, 2008). These debates have been highlighting issues of power under the regimes of accountability and surveillance by and large. All in all, they underline how information/ knowledge' flow is distributed and applied by people and institutions. The link to the education realm is to know how to prepare pupils to challenge this changing time and create organisations to prepare them to engage with this uncertain world and transform it for the better. One thing that helps facing this concern is the fact we learn in interaction with others, in an open system because learning is a relational and a social phenomenon. Despite this being true, it is not often that we see it applied in the school structure and functions. Over the past decades, we have seen the emergence of an understanding of a learning community that is rooted in an ecological approach of learning that is grounded in concepts that embrace the ideas of wholeness and connections, diversity and complexity, relationships and meanings; reflection and inquiry; collaboration and collegiality (M. Sackney, 2011: 11, 12). There is no

active/passive dichotomy because members of the learning community are engaged actively in work, identifying the problem at hand and the best possible solutions to overcome it. They are all agents of change. In living systems, the community provides connections, affections, and obligations that bind together individuals. “To be a learning community means to be a community of relationships, for it is through relationships and connections that people learn (M. Sackney, 2011: 60)”.

2. Learning systems

A learning system is very much an *open system*, as many scholars have pointed out (e.g. Clarke, 2000; Senge, 1990; Schechty, 2009; Silins, Mulford, & Zarins, 2002) and need to be connected to the broader context which includes diverse partners, networks and learning communities⁹. Open systems' characteristics are their relation to and interaction with the environment and the ability to scan and discover changes in that environment (Kools and Stoll, 2016). The innovative character of this framework relies on the idea of seeing schools as complex and interdependent open systems wherein learning occurs well beyond its wall, through connections that go way beyond conventional partners and structures.

We need models that embrace the horizontal, as well as, the vertical, the non-formal as well as the formal, the unsponsored collaboration, as well as, the regulated. It is not about neglecting schools and their organising systems but rather, integrating them into more comprehensive concepts and systems (OCED, 2015: 17).

This statement from the OECD (2015) *Schooling Redesigned Towards Innovative Learning Systems* report emphasises the imperative of collective learning within and between and *beyond* schools. Besides extending the notion of a learning

⁹ Our preference for the term *learning community*, instead of the term *professional learning community*, as suggested by Stoll and Louis (Bolam et al., 2005; Stoll, L.; Louis, 2007; Stoll, 2009) lies on the recognition of its expanded character and supports the learning of all members of the learning community. From this perspective, teaching and learning unfold within a wide array of events, experiences, activities, interactions, and interests (Sackney, 2011). In the case study under scrutiny, for example, teachers are taught important and interesting lessons by their students, by the broader community, by each other, and by the parents of their students. Students learn with peer students, teachers and scientists. Researchers, on the other hand, learn with teachers, students and parents. Combinations are immense and tremendous powerful considering the length of the learning community.

community, research evidence has shown the value and contribution of community involvement (parents and other community members) to the learning process, not only for schools but also for the transformation of that community (Flecha, 2015).

At the same time that scholars agree on the need to include schools as part of a learning system, most of these academics, educators, and practitioners share the opinion that schools are not being exactly performing well as to build a learning system in the broadest sense of the term (Clarke, 2000). Research has demonstrated that stand-alone schools are not being effective in thriving learning systems, nor are functioning as high capacity learning communities. There is very little sense of collective learning going on in most schools. As Clarke put it:

Schools are still modelled on modern structures that assume hierarchical, sequential, linear, and technical understandings of learning which promote instruction and efficiency and excellence, but within a context that will inevitably fail as the new paradigm weighs in (Clarke, 2000: 20).

Research has shown that most schools' anachronistic way of acting is not suitable in the new contemporary society demanding's. Nor the education policies meet new requirements of learning depicted as a system. Overall, it is widely agreed that this schooling model does not answer the challenges posed by the information and knowledge society (Hargreaves, 2003; Sackney, 2000).

Knowing this, several authors (Benjamin, 2009; Harris & van Tassell, 2005; Moloji, et al., 2006; Retna & Tee, 2006) claim for a new direction to be established either at the system and school levels, one that must be focused on strengthening learning capacity within a broader learning community. Following this line of reasoning, Clarke (2000) portrays the schools of the future by focusing on the ability of the school to collectively transform and learn from outside and from inside its walls:

[...] schools are operating in the ecological paradigm as places of choice, places of security where it is OK to dream; civilizing places, oases, spiritually nourishing places, places where students and adults focus on things that matter to them and to their deepening understanding of the world and where they collectively explore and deepen that understanding; places which take on important issues and take the high ground rather than seeking the populist solution, places which function as advocates for a better world (Clarke, 2000: 21).

The question is knowing whether other models are more in tune with this vision. To such a great extent, literature and research evidence has confirmed this possibility.

In compliance with these guidelines, critical *Innovative Learning Environment* (ILE) principles (OCED, 2015; OECD, 2013b) are founded on the social and

collaborative nature of learning; on making learning central, and encouraging engagement and recognising learners as active participants in the educational process. These principles are very much attuned to the learners' motivations and the critical role of emotions in achievement, providing a setting sensitive to individual differences and including prior knowledge, with a strong emphasis on formative feedback to support learning (OECD, 2013b). This report strongly proposes horizontal connectedness across areas of knowledge and subjects, as well as, to the community and the wider world as well (OECD, 2013b). The update report on ILE (OCED, 2015) also adds the importance of *partnering*. It is recognised that isolation within a world of complex learning systems is to limit potential seriously. It also recognises the importance of schools becoming a “*formative organisation*” (that needs to be informed about the learning process taking place within it) with strong *learning leadership*. Overall, it is assumed that learning environments and systems do not just change by themselves, but need a robust design with vision and strategies (OECD, 2015). The third and last principle added in the upgrade report is ensuring that the core aims, practices, and dynamics are innovated to match the ambition of learning principles. By and large, it is about innovating both the core elements (learners, educators, content, and learning resources) and the dynamics that connect those elements (pedagogy and formative evaluation, use of time, and the organisation of educators and learners) (OECD, 2015: 19). At the same time, it evolves a more collaborative notion of professional development, developing skills and knowledge through sharing experiences and capacities with peers and staff (Fred et al., 2019; Nóvoa, 2017).

Besides, other educational projects than learning environments have in the last years emerged. It is the case of learning communities (LC) that aim to build interactive and inclusive learning spaces, based on exchanging knowledge and experiences among its members (Angehrn, et al., 2003; Cheng, 2012; Sutton, 2011). Learning becomes a process of knowledge co-creation in collaborative environments based on social interaction and collective action. In this sense, building a learning community is to promote the proactive learning capacity of its members. But what does it mean exactly to belong to a learning community? How do we know whether learning capacity is being built within, between, and beyond a broader learning community?

3. Perspectives on educational change

From the 70s onwards, research-based reformers have responded to competing forces of change and continuity by developing and disseminating solutions to schools and school systems to assist their change efforts. It has been claimed that forces for change, such as government directives, economic pressures, and technological issues are countered by such equally strong forces for continuity as teacher reluctance about and distrust of the purposes of change, inertia and resistance can ensue (Fink and Stoll, 2005: 21).

Four basic movements have emerged in the literature on educational change: school effectiveness; school improvement; restructuring and reculturing (Fink and Stoll, 2005; Fullan, 2007b; Fullan, 2007). The so-called movements have approached school change differently.

3.1.School effectiveness

School effectiveness research focused mostly on students' outcomes with an emphasis on achieving equity in terms of outcomes. In this sense, school effectiveness stands for all students (regardless of the socio-economic background) achieving their academic goals. The concept of progress is crucial for this movement. An effective school is one in which "students' progress further than might be expected from consideration of its intake" (Fink and Stoll, 2005: 22). The "value-added" describes the boost given by the school to students' achievement over and above what they bring in terms of prior attainment and background factors (Fink and Stoll, 2005: 22). On the other hand, the consistency factor raises awareness that some schools, departments, or divisions within schools are more effective than others. Influenced by this expanding area of research, during the 80s, many schools have introduced effective school projects, but few have survived (Fink and Stoll, 2005: 22). According to Fink and Stoll, this has happened mainly because of two methodological problems. First, effective schools research has

become dated due to its “here and now” concern, reflecting a lack of orientation to the complex and fast-changing world.

School effectiveness research provided few answers regarding teaching and learning approaches, which help prepare students for a changing world. The reason might be the chosen outcomes measuring instruments selected. Indeed, as global citizens, students have to demonstrate creativity, problem-solving skills, confidence with ITC and to be able to cooperative learning (OCED, 2015), and the instruments chosen to measure outcomes did not have into account these skills and behaviours. School effectiveness concern with standardization, measuring, and rationality put aside creativity in many approaches to change and has not addressed non-rational aspects of education. Secondly, not enough policies focused on the concepts of equity, differential effectiveness, and students’ progress (Fink and Stoll, 2005: 23).

According to Fink and Stoll (2005), we need “very rich, multidisciplinary, multi-levelled descriptions of schools and their communities as complex, interrelated non-linear systems that can help to inform educational change efforts” (Fink and Stoll, 2005: 24). What this means is that students, teachers and parents differently perceive schools. Effective schools result from these different groups' interactions in a particular economic, political, and social context.

3.2.School improvement

Progressively, researchers on school effectiveness concluded that change strategies should be tied to the second branch of research “school improvement” to achieve an effective school outcome. This branch resulted from a reflection on failed change efforts (in the 60s and 70s) with little lasting effects (Fink and Stoll, 2005: 25). By the 1990s, scholars suggested that change occurs in a “bottom-up, top-down” approach, in which the larger system provided direction and support, and the change process was left to schools through the school-based decision making and school development planning (Fink and Stoll, 2005; Fullan, 2007). The significant contributions of school improvement literature are the focus on process, i.e., what needs to be changed

to turn schools more effective and offered guidance on how to do it. Since then, we have a clear picture of the change process's different phases: mobilization, implementation, and institutionalization (Berman, 1981 in, Anderson, 2010). Berman defines these *sub-processes* as non-linear, coexistent with each other, and can overlap in time and interact in mutually meaningful ways (Anderson, 2010).

Mobilization activities include developing an image of the desired change, planning for implementation, and lobbying internally and externally for support (political support, commitment, and resources). Implementation includes two broad functions that educators need to engage in so that programs and activities can be put into practice: clarification and adaptation. The first one is linked to professional development activities so that professionals can know precisely how to do the change. Adaptation refers to activities that lead to modifications in the content and design of the change and the changes in behaviours and knowledge that they experiment as a result of the process. Institutionalization means that the system stabilised into a changed state of routine behaviours. It is manifested through activities that mirror the assimilation of new practices into the ongoing behaviours of organisational members affected by the change and incorporate these new routines into associated organisational decision-making processes (budget, staffing, support services) (Anderson, 2010, p. 73). For Berman, Anderson recalls, organisational change is more appropriately conceived as a change of state in an organisational system of behaviours, arrangements, and processes that occur as a result of actions taken within different sub-processes of the system but not as a predictable progression through developmental stages or phases over time (Anderson, 2010).

The school improvement approach to change gives us also an orientation towards action and on-going development with an understanding of schools as dynamic institutions subject to changes. Furthermore, school improvement emphasises the role of teachers in change efforts and ownership of the process. Simultaneously, the school improvement movement concluded that schools are at the centre of change that cannot be separated from the context around it. There is a sense of urgency to see schools on a broader context, networking with other schools, community, higher education institutions, and business and an increasing acknowledgement of the power of school culture (Fink and Stoll, 2005: 26). In Anderson's opinion, Berman's ideas foreshadowed

much of the contemporary thinking about schools and schools' systems as complex and adaptive systems, but these ideas did not catch attention at the time (Anderson, 2010: 73).

3.3.School restructuring

In recent years, scholars have advocated the restructuring or reform of schools to improve schools. The term restructuring and reform have, however, many understandings. There is no stable meaning for neither concepts, and both were used interchangeably depending on the context: it can refer to changes that are empowering and self-regulated, or to ones that are externally imposed. We use it to describe a pattern of events and activities in which governments have mandated changes through “top-down” directives (Fink and Stoll, 2005: 28). Fink and Stoll (2005) recalled these initiatives work at two levels: at the classroom level (design a centralised curriculum); and at a broader context such as the school, or the school district and its broader jurisdiction. Course coverage and test preparation replace innovation and risk-taking.

To a great extent, being overly rational, deny teachers and students' agency. Teachers lost ideological and technical control over the change agenda because they are not consulted about change initiatives and must conform to these rules' requirements in their classrooms. The rhetoric of business efficiency dictates what that useful learning outcomes for all students would be, which must be aligned with teaching strategies to meet these goals, and ensure their achievement through proper governance and accountability procedures (Fink and Stoll, 2005: 29).

So far, we have attempted to describe some of the forces that promote change in schools. We have started with school effectiveness, focusing on equity and students' outcomes and its impact on showing what makes a school effective. Even if the major problem with this perspective is that it lacks a vision for schools' future, it was a good starting point.

School improvement focused on change as a process and the importance of careful planning and school-based change. They presented “rational” tools like school development planning to promote schools' growth and has identified outcomes broader

than the narrow students' results. Risk-taking; confidence in using technologies, problem-solving skills, and creativity are an example of these intangible outcomes.

In Fink and Stoll's (2005) words, reform or restructuring has influenced teaching-learning processes. To date, the authors continue; none of these approaches has proved to be sufficient to change the fundamental "grammar of schooling".

3.4.School reculturing

Progressively and over the past few years, the school improvement literature has evolved from an emphasis on structures and formal processes such as school developing planning to a focus on less tangible and ultimately more impactful aspects of schools as the school culture (Fullan, 2007a; Hargreaves, Lieberman, Fullan, & Hopkins, 2009; Schechter & Qadach, 2012). This shift has been described as reculturing (Hopkins, 2005; Pilkington, 2004; Stoll, Fink, & Earl, 2003). Reculturing appears within the school improvement tradition and relies on the notion that "schools are complex networks of interrelated and interconnected forces that help define each school's uniqueness (Fink and Stoll, 2005: 32)". Improving schools, according to the reculturing movement, means that teaching staff share values and goals, joint efforts towards collaborative work, continuous improvement and learning, risk-taking and mutual support, and distributed leadership (Fullan, 2006; Hargreaves & Fink, 2008; Harris & Jones, 2010, 2018).

Altogether, the change approaches have taught us that educational change comprises a non-tangible and non-linear dimension that sounds more promising for meaningful and lasting change. We now know that there are four core ideas on educational change:

1) change is a non-linear organisational process over time and a continuous process of learning;

2) this process is described and explained in terms of three broad phases: mobilisation; implementation and institutionalization;

3) these phases are interactive and not necessarily linear nor sequential in time;

4) schools, as a whole, are the units of change.

Indeed, the focus of change in complex and knowledge-using societies is placed on the role of schools on facilitating the process of learning both at the individual and the organisational levels for dealing with the changing external environment, for facilitating organisational change and innovation, and even effectiveness, i.e., improving students' outcomes and other outcomes (Kools and Stoll, 2016: 12).

With these notions in mind, it is widely agreed that a more holistic concept of teaching and learning is needed, being imperative to find “ecological connections among the purposes of education, the organisational values of schools, its structures, cultures, leadership and the work and lives of teachers (Fink and Stoll, 2005: 34)”. The challenge we have ahead is knowing whether an educational model is more closely aligned with these ecological principles. Several educational theorists and researchers, educators, and policymakers firmly believe so. However, we need to change pathways in analysing learning and schools as an integrative part of an open learning system for this to happen.

4. Learning community – Definitions and meanings

In the educational field, the idea of a learning community is not new. However, it has gained strength particularly recently due to a growing scepticism against educational policies, top-down movements, and successive reforms that have proven not to provoke sustainable change nor help improve equity, quality, or effective learning through schooling, as we have discussed in the previous section.

The learning community's theoretical framework has its ideological roots in authors such as Freire, Habermas, and Vygotsky in distinguished fields of knowledge such as education, sociology, and psychology. There is also evidence of several sharing notions (inquiry, reflection, and self-evaluation schools) in Dewey's work (1929). However, it was not until the late 70s and early 80s that these ideas gained greater prominence among scholars and educators. The notion of the “reflexive practitioner” from Stenhouse (1975), the “thinking school” (Bolam, 1977) and the “Creative school” (CERI, 1978) and, later in time, the idea of “self-evaluating school / self-reviewing

school” (Stoll, et al., 2006) were the building blocks of what is known today as a learning community. They mirrored a systemic vision of change that most of these movements on educational change relied upon.

From our literature review, we can say that there is a reasonable consensus on a definition of the learning community even with some variation amongst authors. From all the definitions we have crossed by, we believe the following can summarize how Professional Learning Community is being defined:

[professional learning community] is *an inclusive, reflective, mutually supportive, and collaborative group of people who find ways inside and outside their immediate community to investigate and learn more about their practice in order to improve all students' learning* (Stoll, 2010: 469).

More references to “learning community” can be found, but they are related to learning through community service, ICT, and other community learning schemes (Stoll, et al., 2006: 224). By contrast, a body of research started in the 80s, specifically devoted to studying “professional learning communities” and schools' role as contexts for teaching (Louis, et al., 1995; Talbert, et al., 1993, in Stoll et al. 2006). This is possibly the kind of collaborative community most studied in the educational field because professional learning communities are collaborative cultures which deal with change more effectively (Fullan, 2003; Hargreaves, 2007; Stoll et al., 2006), commit to the vision the organisation is pursuing, as well as, pursuing tasks of analysis and improvement together (Giles & Hargreaves, 2006; Hargreaves, 2003).

Such collaborative, connected learning can be compelling, as common understandings and shared knowledge are co-constructed, but this depends on serious and equal participation of members of diverse communities. (Stoll, 2010: 481).

Schechty (2009) adds that: “The members of the group have developed clear norms and procedures to ensure that their interactions go forward in a way that honours the ideas of mutualism, collegiality, trust, loyalty, and friendship while showing a bias for hard-nosed analysis and concrete action (Schechty, 2009: 114)”.

In both definitions, the community is at the centre of the concept, which gives us the sense of collective endeavour for learning, with the focus not being on individual learning but learning within a community context with the ultimate goal of improving students' learning experience, as recalled by Fred, et al. (2019). These features of learning communities have been underlined by several authors, namely, Bolam et al. 2005; Bolívar

2000; Schechty 2009; Stoll 2010, OECD, 2012). What is more, Kruse, Louis, and Bryk (1995) underline five learning communities' features: sharing a vision on students' learning; taking collective responsibility for student learning; reflective professional inquiry, including dialogue; collaboration, and the promotion of learning. Stoll et al. (2006) added to these features, three additional ones: mutual trust, respect, and support among staff members; inclusive membership – the community extending beyond teachers and school leaders to support staff, and it is a school-wide community; openness, networks, and partnerships – looking beyond the school for sources of learning and ideas (Stoll, et al., 2006).

According to (Caldwell, 2012) the establishment of professional learning communities is a consequence of team learning, in which members focus on the learning of students, rather than on teaching, work collaboratively, and hold themselves accountable for results. Collective responsibility is a crucial characteristic of professional learning communities (King, 2001; Kruse, Louis, and Bryk, 1995; Stoll et al., 2006).

Building a learning community entails putting learning at the centre of everything that happens in schools. It positions a learning community as a group of people who take an active, reflective, collaborative, learning-oriented, and growth-promoting approach toward the mysteries, problems, and perplexities of teaching and learning. In a learning community, the learning of the educators and the environment within which they learn receive the same attention as does the learning of the students. (Sackney, 2011: 12).

As accurately developed by Stoll, et al. (2006) and illustrated by Hargreaves (2003) (Bolívar, 2000), the collaborative nature of these groups does not deny the existence of micropolitics. In other words, to be collaborative does not mean that these relationships are not conflictive, or carry a dimension of conflict within it. Conflict does exist but is more manageable in some PLCS (Bolívar, 2000; Hargreaves, 2003).

Other authors such as (Mitchell, Walker, & Sackney, 2005) suggest that PLC involves all stakeholders in building vision but, according to the author, those primarily evolved are those in school. The problem with this designation is that it only considers teachers and school leaders to be members of LCs. Stoll, et al. (2006) pointed out the limitations of this designation and suggested extending the way we see professional learning communities. In particular, we need to rethink the issue of “membership”, i.e., deciding who belongs to the community.

Learning communities are a call for challenging the status system of whose knowledge has been accepted and legitimised. In this sense, shaping newer approaches to learning communities and membership implies hearing from school staff, students and families, and the whole community, higher education institutions, vocational institutions, external consultants, and policymakers (Stoll, L.; Louis, 2007). Stoll describes these processes as supported practice, collaborative inquiry, knowledge animation, joint planning and review, and meta-learning (Hargreaves et al., 2009:).

Nonetheless, as with any boundary, expanding the idea of “who belongs” presents challenges. Extending our understanding of learning communities implies to be open to the *learn of the community* (where parents are taught how to help their children’s learning and may help to promote community development); *learning from the community* through exchanging knowledge with the school; *learning with the community* with examples of comprising students, teachers, parents and community in intergenerational dialogue; *learning for the community* to enhance relationships; and *learning as a community*, that is profoundly inclusive and broadly connected and based on deep respect, collective responsibility, appreciation of diversity, a problem-solving orientation and positive role modelling (Stoll, L., Fink, D., & Earl, 2003: 135-136).

The literature very profoundly explores the issue of belonging to a particular community in anthropology and sociology. The present research share with authors such as (Sackney, 2005; Stoll, Fink, & Earl, 2003) the inclusive notion that only through broadening the concept of membership and widening who is considered a legitimate member within the learning community we can progress for an effective learning system, based on the fairest knowledge management system.

The diversity of perspectives on “community” is visible in the different ways of defining it. (Santos, 2000) speaks of “amoeba communities” and “fortress communities” to distinguish the community’s porosity and openness to the exterior and its internal inclusion policies. The “communities-fortress” are exclusive communities, and they base their identity policies upon the separation from the outside (Santos, 2000). On the opposite side, we can find the “amoeba communities” whose identity is, in the author’s words, “always multiple, unfinished, always in the process of reconstruction and reinvention: an ongoing identification” (Santos, 2000: 314). Bauman (2006), on the other hand, distinguishes “aesthetic” communities from “ethical communities” to highlight the superficial and episodic nature of the bonds created between the members of the

“aesthetic communities” and the opposed “ethics communities”, where commitments between members are long-lasting; are based on inalienable rights, and inalienable obligations, where commitments based on fraternal sharing are established” (Bauman 2006). Bauman explains that the members of an “aesthetic community” do not constitute a network of “ethical responsibilities” as it implies participation in long-term commitments.

For his part, Castells (2002) elaborates on “virtual communities” to highlight the fact that we are in the presence of a new culture, composed of new spaces, new networks, and new modes of communication, interaction, freedom of expression, social organisation. Thus, we are facing “real communities that are structured in the virtual space”. The author argues that we are facing a new culture of ‘real virtuality’. Nevertheless, and as recalled by Ferreira and Flores (2012: 203), this pluralization has been crossed by several tensions, namely between the closing and opening of communities; between their ephemeral character or their permanence; between its physical contours and the fluidity of virtual spaces.

The ideas of decentralization, participation, and autonomy and the claim for local engagement start to become part of the educational discourse, seeking to respond to criticisms over the school system's administration's bureaucratic centralisation. The *local* - local territory, local actors, and their initiatives - became part of the educational policies' narrative. Nevertheless, bringing the local to the spotlight did not reinforce the community's importance instead of the State or the market principles (Ferreira; Flores, 2012: 215).

In this context, belonging to a community implies sharing beliefs and understandings, interaction (face-to-face or virtually) and participation, interdependency, caring and meaningful relationships, and collaboration (Schechty, 2009). What is more, to Lave and Wenger, community implies necessarily participation in an *activity system*.

The term community does not mean necessarily co-presence, a well-defined, identifiable group, or socially visible boundaries. It does imply participation in an activity system about which participants share understanding concerning what they are doing and what that means in their lives and for their communities (Lave, 1991: 98).

Should parents, the community, universities, school staff, and non-formal institutions operating at the community be left out of discussions on schools' improvement and being excluded on the task of building learning capacity in schools and beyond them? The answer is straightforward: no. Research evidence shows more

extended relationships should be considered, as the school works with and through community and other partners: contributing to the community and strengthening community links, but also revitalising community (OECD, 2013; Flecha, 2015). This is particularly important especially if we share the same standpoint as Senge et al. (2000) that “a community of people is a place, rooted in the biosphere, rife with activity, mutual respect, and the recognition that everyone in that place is responsible for, and accountable to one another because the lives of all are interdependent” (Senge, et al. 2000: 461). Hence, the authors suggest that if each of these groups is viewed as a system, developing a learning community offers the potential for positive change within any of these systems.

Thus, only when learning communities cross any institution's border is that systemic change on a broad scale is most likely to happen (Stoll, 2010: 472). Stoll suggests that to meet all students' educational needs in a fast and changing world is possible when different stakeholders or institutions work alongside, suggesting that a learning community should include *systemic extensions*, with broader inclusive membership and involving a wide knowledge-bases and other collaborative arrangements toward issues that school cannot address alone (Stoll, 2010: 472).

Cheng's study (2012) has suggested that widening knowledge basis is the most crucial knowledge process for enhancing schools' learning capacity. Cheng's findings reveal that the most crucial element of knowledge management is to encourage exchanging knowledge. Knowledge strategies are usually depicted as the knowledge process of retrieval, sharing, using, storing, and generating (Cheng, 2012). In this context, knowledge exchange refers to the extent to which people put into practice shifting from a knowledge hoarding culture to a knowledge exchange culture. This is to say, producing information flow and transmitting knowledge to everyone who needs it (Cheng, 2012). Sharing, dialogue, and collaboration are essential to construct new and meaningful knowledge. In fact, by sharing individual experiences and comparing their opinions and ideas with those of their colleagues, Organisation members can achieve an improved understanding of the causal mechanisms intervening between the actions required to execute a specific task and the performance outcomes produced (Schechter & Mowafaq, 2013).

4.1. Communities of practice, communities of learners and learning communities

The dissemination of learning communities has occurred worldwide, covering projects ranging from small learning groups, communities of practice, academic learning communities, learning organisations, learning regions, cities, and neighbourhoods, learning communities of place to global virtual learning communities (Alston & Jernigan, 2017; Mutamba, 2017).

Evidence pointing out learning communities in different educational system levels (Watkins, K. E.; Marsick, 1999). Examples include students collaborating with fellow students, teachers, and researchers, schools operating collaboratively with universities. There are many configurations of this kind of learning community. As the literature shows us, these are sometimes called *communities of practice*, particularly for workplaces (Lave and Wenger, 1991). Lave and Wenger (2003) emphasise that in a community of practice, every practice is dependent on social processes through which it is sustained and perpetuated and that learning takes place through the engagement in that practice (Lave and Wenger, 2003).

Wenger (2000) defines communities of practice as social learning systems in which knowing, learning, and practical competence are socially defined and collectively negotiated, and wherein experience, learning, and competence are in constant interplay. This understanding is reflected in Sergiovanni's (2005, p. 131) contention that 'at the point where communities of practice bubble up and collaborative cultures trickle down, learning communities emerge'. Wenger's framework of *communities of practice* stresses the importance of collaborative learning among teachers and the contribution of knowledge exchange for improving learning. The notion implies that just as students learn from and with one another, so too teachers construct their knowledge not only upon their practice but also upon those they obtain from their colleagues', students' and researchers' practices. If knowledge exchange via interpersonal interaction is a knowledge strategy (Schechter, 2008) that aims to help teachers develop learning capacity, improve their teaching practice and curriculum implementation, then the interaction function of the community of practice is essential. With the development of a community of practices as knowledge strategy, teachers can manage their pedagogical knowledge, and their professional competency is enhanced; schools enabled to interact with its policy

environment and know how to develop human capital for the knowledge society within the competitive global economy (Schechter, 2008; Wenger; McDormott; Snyder, 2002).

Although other communities within the educational system can be found, as the research communities, they have different historical routes, and traditions often focus on individual achievements in a competitive and outcome-oriented environment. Indeed, entire school faculties are more likely to be communities of learners than they are to be learning communities. Communities of learners are collections of individuals joined together to share what they have learned or sharing a shared learning experience (Schechty, 2009: 114). Moreover, unlike learning communities, communities of learners work together only coincidentally on problems, issues, or questions, though they may have strong social bonds, share a common identity, and benefit from other members' work to reach their potential. Learning communities are distinguished from learners' communities primarily through the presence or absence of joint research and action agenda (Schechty, 2009: 114).

Indeed, having a system where learning community is a norm with bridges to other learning communities does not happen spontaneously. Instead, it needs the right condition to happen, i.e., capacity building is necessary. According to Stoll (2006) “capacity is a complex blend of motivation, skill, positive learning, organisational conditions and culture, and infrastructure of support”. By holding these elements together, the authors sustain that “it gives individuals, groups, whole school communities and school systems the power to get involved in and sustain learning over time” (Stoll, et al. 2006: 221).

To these features, Fullan (2007) adds that a system with capacity is the result of “adaptations and decisions made by users as they work with particular new policies or programs, the policy or program and the user’s situation mutually determining the outcome” (Fullan, 2007c: 31). Overall, it can change and produce new outcomes according to new conditions from the internal and external environment. As so, it is also transformative of reality. Besides, according to the author, capacity building has also been *multifaceted* because it involves everything you do that resounds on the new knowledge produced, the skills and competencies developed; on the enhanced resources; and more substantial commitments (Fullan, 2006). Stoll states that capacity building's crucial issues are the interconnection of community members and strengthening the synergies between them, showing capacity building multifaceted dimension (Stoll, 2010: 471).

4.2. Influence systems: collaboration and knowledge-exchange

For a community to act effectively, the various elements must recognise the influence that exists between them. It is necessary to cross the formal boundaries of school (students, teachers, staff, leaders) and consider the relations existing between all the people and institutions that directly or indirectly exert some type of influence. Families, institutions (health centres, religious institutions, social institutions, museums), the media, government (which legislates and sets standards for action), and globally, the whole context surrounding the community, are typical examples of members of “influence systems” (Wheatley & Frieze, 2009). A school may, for example, establish relationships with neighbourhood schools, with schools in other parts of the world, with companies/high-tech research centres of international scope, higher education institutions, or with family members and community and cultural services in the region. This *influence system* should be used for the community's benefit since they can be valuable resources for learning processes. This is only possible if boundaries become increasingly and deliberately blurry. In LCs continuous learning among staff is not limited to the physical boundaries of the school.

Instead, teachers and school leaders expect to engage in collaborative work and learning with peers in other schools by establishing networks or school-to-school collaborations (Harris & van Tassell, 2005; OECD, 2013b; Paletta, 2011; Schechty, 2009). These collaborations take a range of forms, enabling schools to “upload” knowledge from their school-based professional learning communities into their networks and “download” knowledge from networks back into the individual school professional learning communities (Earl, et al., 2006). Therefore, such networks hold the potential for forming an essential supplement to situated, school-based learning (Lave and Wenger, 2003) and learning through formal programmes and courses. Networks can be “vibrant motors for change” (Conner & Sliwka, 2014) because these networked schools pay attention to developing and maintaining trusting relationships and are flexible and adaptable to changing community members and environmental needs (Kools and Stoll, 2016). Two-way relationships are established, as the school work with and through community and other partners: contributing to the community and strengthening community links and revitalising community (OECD, 2013a).

Due to the relevance of the term “collaboration” assumes in our study, it is now time to elaborate on this concept's meaning and the distinguishing from cooperation. Researchers such as Dillenbourg (1996) and Roschelle & Teasley (1995) agree that it is crucial to distinguish between cooperation and collaboration. While cooperative learning can be defined as “working together to accomplish shared goals”, collaborative learning is “a method that implies working in a group of two or more to achieve a common goal, while respecting each individual’s contribution to the whole” (McInnerney and Robert 2004: 205). Roschelle and Teasley (1995) describe cooperative work as a task that is accomplished by dividing it among participants, where “each person is responsible for a portion of the problem solving,” and they see collaborative work as “the mutual engagement of participants in a coordinated effort to solve the problem together” (Roschelle and Teasley, 1995: 70). The critical difference between these approaches to group work is that cooperation is more focused on working together to create an end product, while successful collaboration requires participants to share in the process of knowledge creation (Dillenbourg, 1996; Roschelle and Teasley 1995). In other words, cooperation can be achieved if all participants do their tasks separately and bring their results to the table; collaboration, in contrast, implies “direct interaction among individuals to produce a product and involves negotiations, discussions, and accommodating others’ perspectives” (Kozar, 2010: 17). Students build new understandings and visions by challenging others’ ideas and defending their own while working together. In collaborative work, we have a “redistribution of ownership and authorship of the work being done between those involved, which includes the products and benefits resulting from this work” (Costa, 2013: 3). In this sense, authority and responsibility are redistributed. There is no dichotomy between active/passive because all participants are engaged in the work being done and identifying the challenges to overcome.

As so, by collaboration, we mean an “intensive interaction that engages the learning community in opening up their beliefs and practices to investigation and debate. When colleagues engage in a dynamic process of interpretation and evaluation of practice, they enhance their practice and that of the profession” (Katz & Earl, 2007: 3). This kind of collaboration allows people to address challenges, build commitment through group understanding, solve issues of mutual concern (Earl, et al., 2006: 6).

As we hope to make it clear, this discussion's relevance lies in the type of collaboration here considered, which includes not only researchers but also teachers, school directors, students, parents, and the local community broadly speaking. Therefore, the focus of attention was necessarily directed to the problematisation of the conditions necessary for a learning experience that would not reproduce an unbalanced power/knowledge hierarchical relations. This problematisation was inspired by the theoretical proposal for North/South epistemic relations of Santos (2006) for an “Ecology of Knowledge” that proposes the equal capacity of all to produce knowledge about the world. This means that the epistemological parity earlier mentioned does not come as a final goal, as a product of a pedagogical process by which someone who possesses knowledge transmits it to someone completely deprived of it. Instead, it is an initial assumption for creating this collaborative device: all involved could produce rationality about the issue at stake and learn mutually by participating in this learning community (Costa, 2013). All of the involved have something relevant to teach and to learn about the issue at stake, i.e., everyone is a learner and a teacher, depending on the circumstances, and is transforming not only the way the learning community experience and understand science courses and other learning activities, but also transforming researchers’ activities within but also outside the community.

SLO literature holds on the importance of seen knowledge as a dynamic process, faded by social interactions amongst individuals and organisations. As (Karen Seashore Louis, 2012: 481) notes: “Knowledge is not ‘transferred’ like a piece of paper”. Only through sharing, exchange, dialogue, and collaboration can new and meaningful knowledge be developed. Under this understanding, learning is portrayed as knowledge-creation that brings the collective meaning to organisational learning (Kools and Stoll, 2016). By exchanging experiences and ideas with colleagues, school members can achieve an improved understanding of the causal mechanisms between their actions and the outcomes produced (Schechter & Mowafaq, 2013).

One of the arguments of this work is the idea that new knowledge, subjectivities, identities (individual and collective) and practices are built through the practice of knowledge exchange, which is used not only within the classroom and the school, as they serve as a platform for launching these actors and the knowledge co-created outside school settings. To build, in this perspective, as Santos, et al. (2004) means to relate in interaction, ways of doing, thinking, creating something that did not exist previously, with

new features and that cannot be reduced to the sum of the elements mobilized for its creation. It is established in this sense, a dialogic action that underlies the learning community's concept (Flecha, 2015) that is established under the principles of horizontality of dialogue, by valuing the various actors and their knowledge and experiences. Spaces of mutual learning are created where all the participants have something to teach and to learn (university - IEC - schools – courses). It is consensual among the respondents that actions, classes, courses, or seminars are profitable spaces of teaching and learning, calling into question hierarchies (teacher VS student, learning VS teaching, academic knowledge VS tacit knowledge), distinctions, and the relationships that establish them, to promote the transformation.

Shared knowledge and networking became more than a commodity and established a group identity (Clarke, 2000). According to Clarke (2000), it allows us to move from the individualized view of schooling, where learners experience their education as a product-driven along with efficiently managed schools that see results in the form of outcome performance, to a “new type of school, one that can learn from its actions and develop ways of working that re-norm the school to develop more ecologically compatible systemic practice” (Clarke, 2000: 5).

4.3. Learning communities around the world – research evidence of its implementation

The interest in learning communities is growing fast and goes way beyond the academic sphere. Implementing projects based on the principles of learning communities has been disseminated and reported pretty much everywhere at different levels of the educational system. The validation of educational procedures carried out in various parts of the world as successful educational activities is only possible due to the international scientific community's rigorous research processes.

In 2010, the *Canadian Council on Learning* reported more than 300 Learning Communities worldwide, mostly in Europe and Australia. Simultaneously, the international academic community has never been as interested in this subject as it is

nowadays. Out of curiosity, a quick google scholar database's search on LCs releases around 4.190.000 references.

The UK was one of the first western countries developing a learning community network nationwide to promote learning cities' development (Catela, 2013). In Australia, Victoria often acknowledges its boldness for its education policies, has created the Learning Towns Network – and the Melbourne-based PASCAL Observatory on Place Management, Social Capital, and Learning Regions (Catela, 2013).

At the same time, in the last decade, Organisations such as United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the Organisation for Economic Co-operation and Development (OECD) have raised considerably its projects and publications based on notions similar to those of the LCs (Bayer, Klieme, Kaplan, & Vieluf, 2012; Dumont, H., 2010; Hasan & Wagner, 1996; Kools & Stoll, 2016; Noguchi; Guevara; Yorozu, 2015; OCED, 2015; OECD, 2009, 2013a, 2013c, 2013b; Pimparé, 2005; UNESCO, 2012).

In 2001, the OECD published the paper “Cities and Regions in the New Learning Economy” (OECD, 2001: 23, 24) through which they endorse the development of learning regions as a model to respond effectively to a learning economy. In recent years, OECD and Unesco still released working papers and reports on the importance of constituting Learning communities and learning schools as part of an efficient and open learning system (Kools & Stoll, 2016; OCED, 2015; OECD, 2012; UNESCO, 2012).

In 2016 the UNESCO's *Global Network of Learning Cities* (GNLC) expanded broadly reaching almost 50 new members from 22 countries, including Portugal. For the first time, three Portuguese Learning Cities, Cascais, Mação, and Câmara de Lobos, became new Unesco's GNLC.

Additionally, and supported by the Erasmus+ program, the European Commission has launched the *School Education Gateway* (a platform for anyone interested in school education) that hosts schools' European toolkit. The toolkit mentions the need to change schools into learning communities and promote inclusive education by stimulating stakeholders' engagement and tackling students' early dropout. These guidelines are referenced by the Portuguese Ministry of Education in 2017, as guiding principles for schools.

In Spain, one of the best-known projects in this field - INCLUDED: *Strategies for inclusion and social cohesion from education in Europe* - was integrated into the European Union's research program. Successful Educational Actions (SEAs) were identified in the research project, mainly focusing on vulnerable and marginalized groups. The project has shown that SEAs increase both educational success and social inclusion and contribute to reducing absenteeism and early school leaving and increasing school performance (Comunidades de Aprendizaje, 2011). Among these SEAs actions, we find these:

1. Interactive Groups within the classroom;
2. Community participation in all decision-making, evaluation, and collaboration processes in all school spaces, including the classroom;
3. Volunteering that come to all school spaces to promote a more significant number of interactions;
4. Training directed to family members and community members;
5. Extensive and inclusive dialogical reading, for example through the accomplishment of Dialogical Literary Dialogs;
6. Extension of learning time through, for example, the implementation of Tutored Library activities.

SEAS4ALL transfer to Europe the results of INCLUD-ED and the experience of more than 20 years implementing Learning Communities (LE) in 8 countries worldwide (Spain, Brasil, Mexico, Perú, Guatemala, Chile, Argentina, and Colombia). SAE has demonstrated that they: “(a) increase the efficiency of learning, that is to say, that students acquire the necessary instrumental tools to live included in the current society (basic and transversal skills); and (b) generate equity since all the student body learns more, and those in a disadvantaged situation acquire the basic and necessary knowledge”¹⁰. SAE also (c) increases social cohesion, coexistence, and community participation in educational activities, giving all students high-quality learning opportunities (Comunidades de Aprendizaje, 2011). Moreover, the so-called research led by the head researcher Ramón Flecha made it possible to identify international experiences with positive results in schools that showed their validity in the school

¹⁰ Information consulted on the SEAS webpage <https://seas4all.eu/>. (retrieved in December 2017).

system. Among the experiences studied, three were pointed out as being the ones that encompassed - more schools and more results (Flecha, R., & Puigvert, 2002: 4) to serve as a basis for the realization of learning communities in Spain: *School Development Program* from Yale University; *Success for All*, from Johns Hopkins University; and the *Accelerated Schools* program from Stanford University (Elboj, C., Puigdemívol, I., Soler, M., & Valls, 2002; Flecha, R., & Puigvert, 2002).

The implementation of learning communities' projects led to the inclusion of schools' organisation as learning communities in the European Commission's recommended policies to all member states to combat school dropout. The European Commission now recognizes and validates schools' organisation as learning communities as effective ways of stimulating the commitment of all parties involved in learning processes and supporting the development and improvement of schools. European Commission presented a proposal for Council Recommendation on policies to combat early school leaving that included *schools as Learning Communities* by contributing to create a "favourable context for reducing school drop-out and for helping pupils at risk of dropping out:

Schools as 'learning communities' agree on a common vision, basic values, and objectives of school development. It increases the commitment of pupils, teachers, parents, and other stakeholders and supports school quality and development. 'Learning communities' inspire both teachers and pupils to seek improvement and take ownership of their learning processes. It creates favourable conditions also for reducing school drop-out and for helping pupils at risk of dropping out (European Commission, 2011: 7).

Civil society organisations have also been demonstrating their interest in this topic. At the European level, the European Civil Society Platform for Lifelong Learning (EUCIS LLL) is a response by civil society organisations to the definition and implementation of European Education and training policy under the Europe 2020 strategy. EUCIS LLL encourages its members to work together and to contribute to a policy dialogue under the *Open Method Coordination*. This is an expression of non-formal adult education in Europe, and brings together 123 collective members in 42 countries, representing more than 60 million people across Europe.

Although the first steps are being taken in Portugal to study LC, practical examples come both from civil society, school's initiatives, and government directives. The *Rede Educação Século XXI* and *ACIRES XXI – Associação círculo de Inovação* are good examples of the first kind. At the school level, the *Escola da Ponte* is the most well-

known school working under the principles of CL for more than 40 years. Furthermore, the government has released a pilot project of pedagogical innovation (PPIP) early this year to be running by the Ministry of Education during the following three school years. The schools¹¹ involved must identify problems, set priorities, mobilise teachers, and share ideas at various school networks meetings. The Directorate for Education coordinates the work and sets a follow-up group, including the mission structure for promoting school success, the General Inspection of Education and Science; the National Agency for Qualification and Vocational Education and the General Direction of School Establishments monitors the entire project. In chapter 6, we elaborate on which policies contribute to the development of learning communities and learning schools.

4.4.Challenges of learning communities

The difficulty in constituting a learning community should not be minimized, and even schools considered to be the most “innovative” have shown that often failed in sustaining innovative learning practices over time (Giles & Hargreaves, 2006; OCED, 2015; OECD, 2017c). This is because fellow professionals view these schools as unlikely to be “real schools” working under unrealistic conditions and unusual structures and are given additional resources (Giles & Hargreaves, 2006). If this is enough to place a learning system that works for everyone in the first instance, it does not need much time to become unbearable to sustain and scale up these schools. The second reason pointed out by Giles & Hargreaves (2006) to justify the weak record of sustainability of LCs is the constant changing of leadership, systematic shifts in policy or prioritizing other components that cause, in Giles and Hargreaves words, an “*attrition to change*” that put teachers and schools ‘back on the track’ of “*conventional grammar of schooling*” (Giles and Hargreaves, 2006: 126). Indeed, changes in external context, such as reducing resources and changing power relations, reinforce traditional schooling's traditional grammars. This kind of instability is addressed by (Bolívar, 2000; Andy Hargreaves &

¹¹ Freixo (Ponte de Lima); Cristelo (Paredes); marinha Grande Poente (Leiria); Fernando Casimiro Pereira da Silva (Rio Maior); Vila Nova da Barquinha (Santarém) and Boa Água (Sesimbra).

Fink, 2008; Stoll, L.; Louis, 2007). For these authors, sustainable improvement raises tensions between the inevitable and necessary flexibility and moving, energised set of relationships and stability, because it is tough to learn in an unstable setting. “Instability is a problem for school which, as a public institution, have a limited ability to manage their policies, even under school-based leadership and management (Stoll; Louis, 2007: 8)”.

Another barrier to collective learning in collaborative learning communities is the emphasis on individual learning, excellence cultivated through an education system measuring individuals’ outcomes, and over valuing examination results. The major challenge is to develop a platform in which collective learning is equally valued (Retna & Tee, 2006: 147). Within this scenario, schools are stacked in between two contradictory logics: the will of being collaborative, and developing participatory schemes of action and the opposite notion of competitiveness and schools’ efficiency. This dilemma is going to be detailed in chapter 6.

As stated before, building learning communities need the right conditions to become a reality. Building learning communities that effectively achieve their goals and sustainable in time requires an integrated response between government policies, school actions, and their members' responses. In sum, it needs the right organisational conditions and governmental support to flourish, sustain, and scale-up.

We know from the literature that *Learning Organisations* (LO) are formal organisations that purposefully create, support, and use learning communities and communities of learners as the primary means of creating and maintaining a learning system. LO is known by using these networks as a primary means by which the organisation's work is accomplished (Schechty, 2009: 115). Usually, it is best to think of schools as operating units within a broader learning system (Schechty, 2009). Thus, schools can be a source of connection among various learning communities, some of them focused on internal issues to the school, and some may be connected to broader issues in the community at large (Schechty, 2009: 114). Learning communities are the building blocks on which learning organisations stand, but they are unlikely to learn schools they are not formal organisations. These formalized systems shape how the learning communities act in the organisation's life; the kind of operating systems that are employed; and how the organisation's work incorporates and legitimises their actions and principles. These communities cannot thrive without systems to support them far different

from those in most schools today (Schechty, 2009: 115). Learning communities can exist in formal organisations based on bureaucratic principles, but their existence is always insecure and temporary. Under these conditions, its sustainability is always threatened because people try to install learning communities in schools while leaving essential bureaucratic structures intact (Schechty, 2009). As put it by Gilles and Hargreaves (2006):

A learning society's future will depend not merely on our capacity to make those schools that are learning organisations and professional learning communities more resilient to standardization. It will also depend on the capacity of nations and their governments to create environments in which schools as learning organisations can flourish by relaxing their regimes of standardization (Giles and Hargreaves, 2006: 153).

We believe this research has much to gain to explore the learning school framework, which is going to be the subject of the next chapter.

Chapter 3 – Learning Schools: Discussing the Possibilities for Creating an Open Learning System

Introduction

The present chapter intends to clarify the concept of Learning School and the challenges and implications of building-up a shared understanding of learning school. Throughout this chapter, we explore the schools as learning organisations founded in the literature and are widely recognized by students, families, policymakers, and education practitioners (section 1). Learning organisations represent a foundation capable of maximizing organisational learning capacity and, consequently, opening up the debate on the public policies and collective practices that can contribute to the learning process to become a real significant statement and a meaningful practice (section 2).

Over the third section, we discuss different perspectives on learning in the learning schools' framework. We address the intangible outcomes of learning community and learning schools, in section 4. We close the chapter with a critical analysis of the concept of learning school.

1. Unpacking the concept of Schools as Learning Organisations

Although the idea of learning school is not new, with authors such as Argyris and Schon (1978) addressing topics of paramount importance such as organisational learning and the distinction between “single/double-loop learning¹²”, it has gained worldwide popularity after Senge's bestseller *The fifth discipline: The Art & Practice of the Learning Organisation* (1990) was released. Throughout the 90s, the book became the ‘talk of the town’, spreading a learning organisation's concept within the contemporary management theory and practice globally. Since then, the concept started to be used not only within the business sector, but it was also adopted in the educational field with scholars agreeing that the same guiding principles should orient schools in a

¹² *Double loop learning* is an organisational learning process in which errors are detected and corrected in ways that imply the modification of norms, strategies and objectives implicit in an organisation (Argyris; Schon, 1978: 3).

complex, knowledge-using society as Senge's learning organisations (Fullan, 1993; Leithwood, & Louis, 1998; Mitchell and Sackney, 2000).

Since the original notion of the 'learning organisation,' there has been a range of ideas, within the field of education, that traverse the same intellectual territory (e.g. professional learning communities, the learning school, the learning organisation, the learning community) resulting in some conceptual overlap and it has been argued, some conceptual confusion (A. Harris & Jones, 2018: 351).

Although *Schools as Learning Organisations* (SLO) has been a central topic of research for the best part of the scholars on education in the last 25 years, there is also true that there is still a lack of consensus on the best definition of *Learning School* (LS) (Doyle & Johnson, 2019; Kools & Stoll, 2016; Kools, Stoll, et al., 2020). Bolívar (2000) point out three main reasons for this to happen: 1) different disciplinary perspectives contribute to its multiple conceptualisations, and each one has its ontology and reasoning; 2) literature has been focusing on understanding learning processes without due consideration to the processes' changing; 3) the starting principles of each disciplinary perspective have its own topics of study, research agendas and methods.

Indeed, from our bibliographic research, only a few have clearly defined the term Learning School. The scholarly interpretations of the concept vary, sometimes considerably, and lack in providing a holistic view of the processes, strategies, and structures shaping an LS, providing operational guidance for schools to transform themselves into learning organisations (Kools and Stoll, 2016). Nevertheless, some scholars have aimed to define the concept of learning school. These include (Senge, 2012) who describes the learning school as one committed to building learning capacity for everyone at stake. Learning schools are, in Senge's words:

(...) Organisations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continuously learning together (Senge et al., 2012: 3).

Watkins provides another useful definition that provides the necessary operational guidance and Leithwood, K., & Louis (1998) who consider a learning organisation one in which "people are aligned to a common vision, sense and interpret their changing environment, generate new knowledge which they use, in turn, to create innovative products and services".

Watkins and Marsick (1999) defined seven action imperatives that can be interpreted according to what schools must change to become learning organisations (Watkins; Marsick, 1999: 22). These seven action imperatives were the building blocks that guided the *integrative model* built by Kools and Stoll (2016), which we have used for analytical purposes in this study. These were identified as learning actions for the construct of learning Organisations are (Watkins; Marsick, 1999):

- 1) continuous learning, continuous learning opportunities;
- 2) inquiry and dialogue, a culture of questions, feedback, experimentation;
- 3) team learning, collaboration, and collaborative skills which support effective use of teams;
- 4) empowerment, the process to create and share a collective vision and get feedback from members regarding the difference between the present and shared vision;
- 5) embedded system of collective efforts to establish and capture shared learning;
- 6); system connection which reflects global thinking and connects the Organisation to its external environment
- 7) strategic leadership to promote learning

In their definition of *Learning School*, Watkins and Marsick (1999) have often focused on peer learning and collaboration among colleagues within the same school. Increasingly scholars have also pointed towards the importance of networked learning and collaboration across the school boundaries, aimed at forging synergies, sharing, and creating knowledge and innovations with various partners. (Silins et al., 2002) also, provide a similar holistic definition:

Schools that function as Learning Organisations in a context of rapid global change are those that have systems and structures in place that enable staff at all levels to collaboratively and continuously learn and put new earnings to use (Silins et al., 2002: 616).

More specifically the authors defined Learning Organisations as schools that employed processes of environmental scanning; developed shared goals; established collaborative teaching and learning environments; encouraging initiatives and risk-taking; regularly reviewed all aspects related to and influencing the work of schools; recognized and reinforced good work; and provided opportunities for continuing professional development (Silins, et al., 2002: 622).

Clarke (2000), on the other hand, adds to the Learning School concept the notion of developing more “ecologically compatible systemic practice” (Clarke, 2000: 5), one that helps in redesigning schools in their relationships with other schools and, in some cases, with the broader community.

For Wallace (1997), the main focus is on improving student learning and providing the support conditions to facilitate that goal, i.e., create a sense of community as a learning organisation (Wallace, 1997: 179).

Nixon (1996) is centrally concerned with participation and involvement, with the continual search for quality and public accountability. The organisation of the SLO is itself implicated in the processes and procedures of learning; organising through partnership brings together disparate groups to support and encourage learning including students, teachers, parents, and members of the local communities; and organising for life, it focuses on learning as a lifelong process and on the need for close links between institutions, including neighbouring schools and colleges (Nixon, 1996: 92).

Bowen, Rose, & Ware (2006) focus mainly on demonstrating that networking and collaboration are critical organisational learning (Bowen et al., 2006). For these authors, schools that effectively develop a culture of organisational learning continuously focus on identifying and solving new problems through team learning, thereby institutionalizing new knowledge. Learning Organisations plan their intervention efforts to focus on measurable, achievable results in a few high-priority areas. Schechty (2009) shares the same understanding and the author shapes learning organisations as those who create and maintain networks of learning communities and use these networks as the primary means by which the work of the organisation is accomplished (Schechty, 2009). Bolívar (2000), on the other hand, understands a learning school as both, a continuous process of improvement, and as a product of it.

Bolívar (2000) suggests that learning schools model is appropriate to deal with school change for three kinds of reasons: first, uses knowledge and experiences from its staff, namely, teachers. This is a way of valuing its professionals and engage them in the change process through collaborative learning. Secondly, learning school model recognises the relevance of structural factors – normative and cognitive in the complex process of organisational change. Third, collaborative work and continuous reflection on their actions and processes give school members a realistic notion of what it is attainable. As a metaphor, Bolívar says the learning school can redirect processes which may help

to think about how should schools be (Bolívar, 2000). Besides Bolívar (2000), some of the most recent literature has been shedding light on the paradigm shift from viewing schools as strictly “teaching institutions” (where the emphasis is on the transference of information to students) to “learning institutions”, which emphasize the gathering, analysing and sharing of information in the collective arena (Bowen, Rose, & Ware, 2006; Clarke, 2000; Coppieters, 2005; Guerra, 2000; Schechter & Qadach, 2012; Schechter & Mowafaq, 2013); learning community which stresses the role of collaborative environments and collective action to build systemic learning spaces (Stoll, 2010; Stoll et al., 2006). Others have claimed the need to work with the concept of learning environments (OECD, 2009, 2012, 2013b; 2015) in response to the emerging paradigm of learning systems and learning cultures.

The school as learning organisation literature such as the above mentioned, portray a nuanced and complex notion. In essence, schools should become learning organisations by developing innovative structures and processes that enable them to develop the professional capacity to learn in and respond quickly to unpredictable and changing environments. Teachers' role is conceived as facilitators, and relationships are viewed as partnerships (Bowker, 2008). Systems are called for that allow members to work together, engage with problematic issues, and monitor their efforts so that learning can be achieved collectively. The previous definitions give us an insight into the various designations of the SLO that have been developed during the last 10 years.

Case studies provided by (Giles & Hargreaves, 2006; Retna & Pak Tee, 2006; Sackney, 2005) give us a sense of the potentiality and challenge of transforming schools into learning organisations. Retna & Pak Tee (2006), for instance, shows how broader societal culture (in their case the Singaporean culture) has a profound influence on how structures, authority, and the relationship between subordinates and superiors in a school and may hamper the transformation of schools.

Kools and Pont (2018) reports on the case of the educational system in Wales. The authors highlight the four determinants that can facilitate or hinder this process: smart policy design, stakeholder engagement, a conducive context, and an effective implementation strategy. To further support its applicability to contemporary school organisations, the authors proposed refinements and operationalized the dimensions of the SLO in an integrated model (Stoll & Kools, 2018) in which the collective endeavour is focused on eight dimensions: (a) developing a shared vision centred on the learning of

all students, (b) partners contributing to school vision, (c) continuous learning opportunities, (d) team learning and collaboration, (e) a culture of inquiry, innovation, and exploration, (f) systems for collecting and exchanging knowledge and learning, (g) learning with and from the external environment, and (h) modelling learning leadership (Kools; Pont, 2018).

In the Portuguese language and especially in the Portuguese context little have been said about this topic, with honourable exceptions (Alarcão, 2001; Canha & Alarcão, 2008; Catela, 2013; Dinis, Melão, Bowen, & Webber, 2013; Ferreira, F.; Flores, 2012; Guerra, 2000; Madeira, 2017; Martins, 2015). The most recent empirical research on this issue comes from the education sciences discipline which focuses on education management and leadership (Afonso, 2009; Catela, 2013; Dinis et al., 2013; Madeira, 2017; Martins, 2015). Most of these studies evaluate the level of organisational learning of schools in the Portuguese context. Dinis et al. (2013), for instance, studied 10 schools (primary and secondary public education in the municipality of Viseu) and Martins (2014) analyzed professional schools at the national level. Madeira (2017), in a more recent study, studied the organisational learning capacity of the Faro school cluster. Both used as an instrument of measurement the SSP-LO questionnaire (School Success Profile – Learning Organisation) developed by Bowen and Ware and Rose (2006) and Bowen, Ware, and Powers (2007) for schools in the US.

Scholars in Portugal, as in other contexts, highlight the need of changing the school paradigm and try to enlighten how to improve collaborative practices so to turn our schools into learning or reflexive schools (Alarcão, 2001). According to Alarcão, a reflexive school is “*uma organização (escolar) que continuamente se pensa a si própria, na sua missão social e na sua organização, e se confronta com o desenrolar da sua atividade em um processo heurístico simultaneamente avaliativo e formativo*” (2001: 25).

Besides, the concern of most of the Portuguese scholars has been to evaluate whether Portuguese public regular/vocational/professional schools or departments are doing well on reaching this goal and what are the role of teachers in pursuing it (Alarcão, 2001; Dinis et al., 2013; Gonçalves, 2016; Guerra, 2000; Madeira & Costa, 2017); the importance of leadership in the process of sustaining a learning system within schools (Catela, 2013) and the importance of collaborative and collective learning practices in didactics (Canha & Alarcão, 2008; Magalhães, 2015).

Research evidence shows that there is much room for improvement in this area of study. According to Madeira (2017), although teachers recognize the importance of the concept of SL, it would also be necessary to review subjects such as the high number of levels, classes, and students, the extension of curricula, and the system of students' assessment (Madeira, 2017: 108). It is also necessary to rethink leaders' role in schools and the sustainability of innovation and change processes in an environment that features high pressure of academic standards (Idem, 2017: 108).

At the government level, we believe raising school's autonomy is a good practice, but public schools in Portugal are caught between contradictions: on the one hand, political rhetoric and norms direct the school towards democratization and autonomy; on the other, in practice, there is a logic of accountability, namely through the external evaluation of students, external evaluation of schools and inspection processes. This topic is going to be developed in chapter 6, as literature highlights management and school dynamics are determined, guided and conditioned by legislative acts; therefore, determining whether the law as an external factor is a facilitating or, instead, an inhibiting element of the learning school's development, it is thought, a pertinent issue.

The vast literature on this subject agree on three fundamental ideas: the intentional character of the change; the self-transformation of the organisation; its meta capability "learn to learn", and its impact on all its protagonists (Karen Seashore Louis, 2012; Schlechty, 2009; Stoll & Kools, 2017). To entitle an institution as a learning organisation means increasing its personal, interpersonal, and organisational learning capacity.

2. Building capacity: supportive mechanisms for learning schools to thrive and sustain

Capacity building includes the conditions, opportunities, and experiences for collaboration and mutual learning (Katz & Earl, 2007: 37). Building capacity depends on "intentionally foster opportunities to examine existing beliefs and practices and challenge them against new ideas, new knowledge, new skills, and even new dispositions. When networks are focused on learning, they intentionally seek out and create supporting

activities, people, and opportunities to push them beyond the *status quo*” (Earl, et al. 2006: 9).

Sackney suggests that capacity should be viewed as a *model* (Sackney, 2005) concerning systemic educational change, which means to be seen as the power to engage in and sustain learning of people at all levels of the educational system for the collective purpose of creating an open learning system (Stoll, 2010: 470).

Other authors highlight the different levels at which capacity building may be developed. Capacity exists at the individual level, in groups within organisations, and whole organisations, whether schools, ministries, or departments. Stoll (2010) recalled that successful education reform depends on teachers’ individual and collective capacity, school capacity, and system capacity. In the same reasoning line, M. Sackney (2000) has conceptualised capacity building around three linked dimensions: personal, interpersonal, and organisational capacity. Building personal capacity entails, an in-depth and critical deconstruction and reconstruction of one’s professional knowledge. Interpersonal capacity addresses the development of relations and collective practices whereby ongoing professional learning becomes a constitutive norm. Last, organisational capacity means building organisational structures and systems that support and value personal learning, facilitating and encouraging collective learning.

This model asks educators to build personal, interpersonal, and organisational capacity to embed these new images in their schools (Sackney, 2011: 156). At the personal level, building capacity is a process of looking at existing knowledge and practice; reflecting on the effects of the practices; and experimenting with new knowledge and practices to search for more energizing learning experiences for students, colleagues, and oneself. Interpersonal capacity equips educators to develop collective understandings, collective commitments, and collective responses as they align practices with the educational meanings and purposes hammered out by the community. Organisational capacity brings people together; focuses their work; and provides knowledge, resources, structures, and expectations to support deep learning. The model assumes that knowledge is personally and socially negotiated and constructed, and learning flows from and through the knowledge gaps and embedded knowledge of individuals and groups of people. It also assumes that the domains of capacity are intricately connected and mutually influencing, and that, together, they constitute the learning ecology of the school (Sackney, 2011: 156).

3. Perspectives on learning in the learning schools' framework

In the last 25 years most of the scholars have tried to define the multi-conceptual expression “Learning Organisation” with defined categories, typologies, or perspectives that can frame the discussion on LO within four frameworks: “System thinking”, “Learning perspective”, “Strategic perspective” and finally the “Integrated perspective” (Kools & Stoll, 2016). Table 1 systematise the different perspectives on learning that we are going to develop in the following pages:

Table 1 - Perspectives on Learning in the Learning School's Framework

The “system thinking” perspective	The “learning perspective”	The “strategic perspective”	The integrative perspective
Main elements:	Main elements:	Main elements:	Main elements:
<p>* The conceptual foundation of the learning organisation concept</p> <p>Ability to look at the interrelationships of a system as opposed to simple cause-effect chains; allowing continuous processes to be studied rather than a single snapshot</p> <p>* Creates "generative capacity" - allows transformation</p> <p>* Learning organisations are open systems</p> <p>* The connectedness of the elements of the system through partnership; network; Professional Learning Communities; Communities of practice</p>	<p>* Focused on organisational learning</p> <p>* Focused on the importance of social interaction, context, and shared cognitive schemes for learning and knowledge creation</p> <p>* Fails in providing a holistic construct of the concept and practical guidance</p>	<p>* The strategy focused on the organisation development of core competencies</p> <p>* 5 imperatives:</p> <ol style="list-style-type: none"> 1. Clarity and support for mission and vision; Shared leadership and involvement; 2. A culture that encourages experimentation; 3. The ability to transfer knowledge across organisational boundaries and; 4. Teamwork and cooperation. <p>* Fails in neglecting some of the commonly defined elements of Learning Organisations, such as individual learning</p>	<p>* Integrates people and structures;</p> <p>* Seven Action-oriented imperatives towards the transformation of learning organisations at the individual, team, and organisational levels:</p> <ol style="list-style-type: none"> 1. Developing a shared vision with a focus on the learning of all students; 2. Creating and supporting continuous learning opportunities for everyone at the school community; 3. Promoting team learning and collaboration amongst school community members; 4. Establishing a culture of inquiry, initiative, and experimentation; 5. Embedding systems for collecting and exchanging knowledge and learning; 6. Connecting schools to the external environment and a more extensive learning system; 7. Strategic leadership for learning

Common features across perspectives

- * Learning organisation is suitable for any organisation,
- * An organisation's learning capability is the only sustainable advantage in the future,
- * The Learning organisation is generally seen as a multilevel concept and can be defined as 'organic' and in terms of interrelations between individual behaviours, team organisation, and organisational practices and culture,
- * Beliefs, values, and norms of employees for sustained learning are emphasised,
- * The need to create a learning atmosphere, learning culture or learning climate is frequently discussed in this context. As such, learning to learn is a crucial factor in becoming a LO,
- * These standard features are best reflected in the integrative perspective (Kools and Stoll, 2016).

3.1. 'System thinking' perspective

The 'System thinking' perspective is considered by various scholars the conceptual foundation of the learning organisation concept, which relates to and interacts with the environment (Fullan, 2006; Kools & Stoll, 2016; Stoll & Kools, 2017). The term learning organisation stems from the notion of the "learning system" discussed by Revans first in 1969, and Schon in 1970 (Kools, et al. 2016). This perspective focuses on the interactive character of the whole system and has been applied to different fields of knowledge. The two essential, opposing types are open and closed systems. In contrast to close systems, open systems' characteristics are their relation to and interaction with the environment. As the external environment is continuously changing, elements of the system must follow this change. A learning organisation is an open system, as many scholars have pointed out (e.g. Senge, 1990, 1999; Clarke, 2000). Underneath the notion of an open system is the idea that schools in the 21st century are not sustained by working in isolation but instead need to be connected to diverse partners, networks, and professional learning communities (Kools et al., 2016). SLOs are organised through partnership, bringing together disparate groups to support and encourage learning including students, teachers, parents, and members of the local communities (Nixon et al., 1996; Bowens et al., 2005; OECD, 2013).

Senge's theory is structured around five "disciplines" practised by a learning organisation and its members. The fifth discipline or system thinking is Senge's choice for his book title (1990), and shows us that the essential properties of a system are:

- Systems thinking – It is the conceptual cornerstone underlying all the other disciplines: the ability to see the bigger picture, to look at the interrelationships of a system as opposed to simple cause-effect chains; allowing continuous processes to be studied rather than single snapshots.

- Team learning – emphasis on the learning activities of the group rather than the development of team process;
- Shared vision – ability to unearth shared “pictures of the future” that foster genuine commitment and enrolment rather than compliance;
- Mental models – deeply held internal images of how the world works;
- Personal mastery – continually clarifying and deepening personal vision, focusing energies, developing patience, and seeing reality somewhat objectively.

Senge (1990) places the onus on everyone's engagement and the collective learning towards the achievement of common goals. Learning schools would operate as genuine communities that draw on the collective power of a shared vision and collective intelligence of their human resources in pursuit of continuous improvement; not determined by the sum of its parts but by the process of interactions between those parts (Kools, George, et al., 2020a; Kools & Stoll, 2016).

Through “system thinking” their members would be able to see “the big picture” of their organisation, and they would be able to see the connections between individual learning and how organisation learned collectively, as a key to change and success (Mitchel and Sackney, 2000; Giles and Hargreaves, 2006).

Probably the well-known example of system thinking is given by Senge who noted that the learning organisation is one that possesses, not only adaptive capacity but is also “generative” – due to the *ability to create alternative futures*, i.e. may change behaviours and can generate shared mental models through communication and collaboration. In sum, learning in a learning organisation is transformative as it requires a transformation of mentalities of those implicated in this process.

3.2. “The learning perspective”

The learning perspective is a notion of the learning organisation that is closely linked to organisational learning (Kools and Stoll, 2016). Organisational learning is the study of learning processes of and within organisations that were introduced in the late 1950s and 1960s, but it was only until the 1990s that the organisational learning idea became a common concept in organisational theory (Kools and Stoll, 2016).

Organisational learning points to the importance of social interaction, context, and shared cognitive schemes for learning and knowledge creation (de Corte, 2010; Lave and Wenger, 2003), however (Kools and Stoll, 2016) underline that although the learning perspective provides a comprehensive focus on aspects of learning at all levels of the organisation, it fails to provide a holistic construct of the concept and practical guidance.

3.3. “The strategic perspective”

The ‘strategic perspective’ responds to this lack of operational guidance (Kools and Stoll, 2016), as so is very action-oriented. According to this approach, a learning organisation requires an understanding of the strategic internal drivers necessary for building learning capacity. Strategy focus on the organisation’s development of core competencies for learning.

Leadership is crucial within this perspective, with most scholars arguing for a more distributed form of leadership. Scholars fitting the strategic perspective have attempted to provide clear definitions of the learning organisation with many providing building blocks or action imperatives (see, e.g. Garvin, 1993; Pedlar et al., 1995; Marsick, 1993; Phillips, 2003; Goh, 1998, in Kools and Stoll, 2016) for operationalising the learning organisation concept into daily practice (Yang, Watkins, & Marsick, 2004). Under this perspective, Kolls and Stoll (2016) stressed the five imperatives that are pointed out by the “learning perspective” followers:

- Clarity and support for mission and vision;
- Shared leadership and involvement;
- A culture that encourages experimentation;
- The ability to transfer knowledge across organisational boundaries and;
- Teamwork and cooperation.

To accomplish these imperatives, two supporting foundations are necessary: effective organisational design; and competences and skills for the tasks and roles described in these strategic building blocks (Kools & Stoll, 2016: 18). According to Kools and Stoll's (2016) understanding, this perspective fails in neglecting, some of the commonly defined elements of the learning organisation, such as individual learning.

3.4. “The ‘integrative perspective’”

Stoll & Kools (2017) like several other authors (Örtenblad, 2004; Schechter & Mowafaq, 2013; Spillane, Halverson, & Diamond, 2004) therefore propose a fourth perspective, the ‘integrative perspective’, that pulls together other perspectives. Their analysis refers to the updated definition by (Watkins; Marsick, 1999) of the learning organisation that seems to consolidate the prior perspectives' strengths. They describe a learning organisation as one in which:

People are aligned to a common vision, sense, and interpret their changing environment, generate new knowledge which they use, in turn, to create innovative products and services to meet customers' needs (Watkins and Marsick 1999, in Stoll & Kools, 2017: 2).

Their proposed organisational model integrates two main organisational constituents: ‘people’ and ‘structure’ (Kools and Stoll, 2016). These are seen as interactive components of organisational change and development. Yang, Watkins, and Marsick (2004) identified seven action imperatives that characterise companies travelling toward becoming a learning organisation at an individual, team, and organisational levels.

In the late ten years, several scholars have been writing on these dimensions (see table 2). We use an adaptation of the integrative model developed in the study Kools and Stoll (2016) in this research. These elements were meticulously discussed through and described in Kools and Stoll (2016), “Transforming Schools into Learning Organisations”. We have integrated the 7 complementary dimensions that are shaping schools as learning Organisations. These dimensions are a convergence of Marsick model DLOQ Self-Scoring Version (1996; 2003) and its reviewed version (Kools and Stoll, 2016). The seven dimensions can be seen in table 2. Each dimension entails specific elements that shape each of it. Table 2 is an adaptation of the seven imperatives from this study used for analytical purposes. This might be interpreted in terms of what schools must change to become learning organisations (Kools and Stoll, 2016).

Table 2 - The integrated model of the school as learning organisations (SLO) adapted from Kools and Stoll (2016)

SLO dimensions	Elements ¹³
Developing and sharing a vision centred on the learning of all students (M. Fullan, 1995c; Silins et al., 2002; Watkins, K. E.; Marsick, 1999);	<ul style="list-style-type: none"> * A shared and inclusive vision is aimed at enhancing the learning experiences and outcomes of <i>all</i> students * Vision is the outcome of a process involving all staff * External community and partners are invited to contribute to the school's vision
Creating and supporting continuous learning opportunities for all staff (M. Fullan, 1995c; Mohd Hamzah, Yakop, Nordin, & Rahman, 2011; Moloi et al., 2006; Retna & Pak Tee, 2006; C. Schechter, 2007)	<ul style="list-style-type: none"> * All staff engage in continuous professional learning * New teachers receive an induction and mentoring support * Professional learning is focused on student learning and school goals * Professional learning challenges thinking as part of changing practice * Staff are fully engaged in identifying the aims and priorities for their professional learning * Professional learning is based on assessment and feedback * The school allocates money and other resources for staff learning * The school evaluates the impact of professional learning
Promoting team learning and collaboration among all staff (Benjamin, 2009; Hamzah et al., 2011; Schechter & Qadach, 2012; Schechter & Mowafaq, 2013;); (Benjamin, 2009; Fred et al., 2019; Mohd Hamzah et al., 2011; C. Schechter & Qadach, 2012; Chen Schechter & Mowafaq, 2013)	<ul style="list-style-type: none"> * Staff collaborate in their work * Staff learn how to work as a team * Collaborative working and collective learning are focused, informed by evidence, and enhance learning experiences and outcomes of students and staff practice * Staff feel comfortable turning to each other for consultation and advice * Respect and trust are core values * The school allocates money and other resources for collaborative working and collective learning
Establishing a culture of inquiry, initiative, and experimentation (Higgins, Ishimaru, Holcombe, & Fowler, 2012);	<ul style="list-style-type: none"> * Staff want and dare to experiment and innovate * The school supports and recognises staff for taking the initiative and risks * Staff engage in forms of inquiry to investigate their practice * Staff have open minds to doing things differently * Problems and mistakes are seen as opportunities for learning
Embedding systems for collecting and exchanging knowledge and learning (Coppieters, 2005; Moloi et al., 2006; C. Schechter, 2007; C. Schechter & Qadach, 2012; Chen Schechter & Mowafaq, 2013)	<ul style="list-style-type: none"> * Systems are in place to examine progress and gaps between current and expected performance * Examples of practice are made available to all staff to analyse (good and bad) * Structures for regular dialogue and knowledge exchange are in place * Staff can analyse and use multiple sources of data for feedback, to inform teaching, and to allocate resources * The school development plan is evidence-informed, based on self-assessment, and updated regularly
Learning with and from the external environment and larger learning system (Benjamin, 2009; Bowen et al., 2006; Davidoff & Lazarus, 2002; Middlewood. D.; Parker, R.; Beere, 2005; Park, 2008; Retna & Pak Tee, 2006)	<ul style="list-style-type: none"> * The school pro-actively scans the external environment to timely respond to challenges and opportunities * Staff collaborate and learn with peers in other schools through networks and/or school-to-school collaborations * The school works with parents/guardians and the community as partners in the educational process * Parents and the community are partners in the organisation of the school * The school partners with higher education institutions, business, public or non-governmental organisations

Modelling and growing learning leadership
(Coppeters, 2005; Davidoff & Lazarus, 2002;
Middlewood, D.; Parker, R.; Beere, 2005)

- * School leaders focus on and model learning leadership
- * Leaders are creative and courageous change agents
- * School leaders develop the culture; climate and structures to facilitate professional dialogue, collaboration, and knowledge exchange
- * School leaders ensure that the organisation's actions are consistent with its vision, goals, and values.
- * Staff are encouraged to participate in leadership for learning actively
- * School leaders grow other leaders
- * School leaders promote and participate in strong collaboration with other schools, parents, the community, and higher education institutions
- * School leaders ensure an integrated approach to responding to the learning and other needs of students

Kools, et al. (2016) idea that schools make it more effective to become learning organisations by realizing these seven-action-oriented dimensions. With the lens of the integrated model, a school as a learning organisation is one in which:

(...) staff, parents, and other stakeholders share an education vision that focuses on the learning of all students; creates and supports continuous learning opportunities for all staff; promotes team learning and collaboration among staff; establishes a culture of inquiry, initiative, and experimentation; establishes embedded systems for collecting and exchanging knowledge and learning; is actively connected to the external environment and larger learning system; and strategic leadership for learning – of staff and students (Kools, et al., 2016: 3).

Together, these elements contribute to pursuing better the difficult task of transforming the schools into learning organisations.

According to the integrated model (Kools; Pont, 2018; Kools, George, et al., 2020a; Kools & Stoll, 2016) developing a shared vision with a focus on the learning of all students means that vision and goals of the school are planned and created through a process of shared commitment, participatory activities, and consensus of all school members including students and parents; and a teacher's vision is aligned with the school vision and goals. Sharing "pictures of the future" aims to enhance the learning experiences and outcomes of *all* students. Despite being an outcome of a process involving staff, students, teachers and the external community and partners are invited to contribute to the school's vision. Indeed, this process has been empowering school community toward a collective vision.

Several authors have mentioned students and community members as an essential contribution to transforming schools into learning organisations (Fullan, 1995c; Mohd, et al., 2011; Moloi et al., 2006; Retna & Pak Tee, 2006; Schechter, 2007). Creating and supporting continuous learning for staff imply that staff and teachers engage in

continuous professional learning. Professional learning is focused on student learning and school goals, which is part of school changing practice. Teachers are fully engaged in identifying the aims and priorities for their professional learning.

Learning from failures and mistakes requires inquiry and openness and requires that people are aware of different points of view. The building of organisational learning capacity involves cultivating a professional learning community that provides a shared purpose, collaboration, reflective inquiry and a coherent programme (King, 2001). These views on enhancing learning capacity highlight the situated and social nature of knowledge exchange. However, to be effective, teachers' professional development must be seen as a long-term continuous inquiry process spanning their professional life cycle and focused on school goals and student learning (Fullan, 1995; OCED, 2015; Silins et al., 2002).

As 'open systems' sensitive to their external environment, SLOs cannot operate in isolation. They are sustained by the connections to diverse partners, networks and communities. These connections with its community, partners, and networks, enrich its capacity to create a democratic space of collaborative learning. These connections facilitate information and knowledge exchange between professionals, with increased collaboration leading to improvements in the learning experience (Stoll & Kools, 2017: 9).

Several authors have referred knowledge-exchange as being important to transform schools into learning organisations (Angehrn et al., 2003; Fisher, 2003; Kools, George, & Steijn, 2020b; Schechter & Mowafaq, 2013; Sutton, 2011). Knowledge exchange emphasizes the importance of communication and information flow through high technology systems and low technology systems, namely interpersonal interaction and dialogue through social networks, including occupational groups and teams. According to (Bolam et al., 2005; Stoll & Temperley, 2009) a consequence of team learning is the establishment of professional learning communities, in which its members focus on the learning of students rather than on teaching, work collaboratively, and hold themselves accountable for results (DuFour, R., & Eaker, 1998). Collective responsibility is a crucial feature of professional learning communities (Kruse, et al., 1995; King, 2001; Stoll et al., 2006).

Overall, being connected to the external environment means that school scan its external environment to answer challenges and opportunities (Benjamin, 2009). For

example, school work with parents/guardians and the community as partners in the educational process. Besides, staff collaborate and learn with peers in other schools through networks and/or school-to-school collaborations. Moreover, school partners are also higher education institutions, business, public or non-governmental organisations. All of them help each other creating a culture of collaboration that facilitates professional dialogue, collective learning and knowledge exchange. These partnerships are based upon mutual trust and respect principles, putting into place opportunities for mutual learning and equality of relationships. The school and the other network members all play an essential and complementary role in creating an open learning system.

As it happens with the concept of LO, scholars and practitioners often use shared leadership, democratic leadership and distributed leadership interchangeably suggesting that, at least for some, distributed leadership may be no more than a new label for a familiar phenomenon. The distributed leadership framework argues that leadership activity is distributed in the interactive web of leaders, followers and situation, which form the appropriate unit of analysis for studying leadership practice, rather than focusing on leaders or places as isolated elements (Spillane, et al., 2004). By situation, the authors mean the sociocultural context (including artefacts) that can embody the practices.

The idea behind distributed leadership is that the complex nature of instructional practice requires people to operate in networks of shared and complementary expertise (Fullan, 2003). Furthermore, a distributed view of leadership shifts the analytical focus from the individual leader to the web of leaders, followers and situation that give form to leadership activity. Hence, a distributed perspective of leadership means that practice is a co-production of all three. Leadership does not reside in any one of these elements by itself; each is a prerequisite for leadership activity. Thus, the distributed leadership frame shifts the level of analysis from the individual actor or group of actors to the web of leaders, followers, and situation that give activity its form. These elements are supported by literature as being action-oriented to transform schools into learning organisations (table 2).

Despite the differences amongst those who attempted to define LS, several common characteristics and guiding principles emerge from the literature. First, scholars agree that the learning organisation is a process accessible to any organisation, regardless of the school's context (Bolívar, 2000). Second, most scholars see the learning organisation as a multilevel concept that implies changes in the interrelations between individual

behaviours, team organisation, and organisational practices and culture (OECD, 2010; Yang, Watkins and Marsick, 2010; Kools and Stoll, 2016). Third, there is an emphasis on the importance of creating an ideal of ‘learning culture’ or ‘learning climate’ (Ortenblad, 2002). Fourth, from the sample of publications reviewed almost all scholars highlight “learning to learn” as a critical driving to become an LS and the need for promoting team learning and collaboration, and continuous (individual) learning. Fifth and last, much of the literature emphasises the importance of the beliefs, values, and trust for continuous and collaborative learning (Leithwood, K., & Louis, 1998). Moreover, it emphasises the processes, strategies, and structures to create such learning conditions, experimentation and innovation to flourish.

We argue that these common characteristics are best reflected in the integrative perspective of the learning organisation (Kools and Stoll, 2016) which helps bring further clarity to the concept, with particular reference to the learning organisation model of Marwick and Watkins in which the seven action imperatives (dimensions) also provide necessary operational guidance.

4. Learning communities – intangible outcomes

Doyle & Johnson (2019) shed light on continuous learning processes with prominent features, including collaboration, team learning, and shared vision with learning taking place at the individual, team, and organisational levels. Also, its effects are being analysed, in terms of school leadership, in terms of collaborative practices, and its effects on students and schools learning capacity (Doyle & Johnson, 2019; Harris & Jones, 2018; Kools, M.; Pont, 2018; Kools & Stoll, 2016).

Furthermore, teacher learning benefits are well documented (e.g., Lieberman & Wood, 2001), but the evidence also links with student outcomes (e.g., Earl & Katz, 2006; Kaser & Halbert, 2005; Stoll 2010). The potential of learning networks’ positive influence on the development of leadership capacity is also appealing at a time when succession planning is an issue in many countries due to the impending retirements of large numbers of school principals (Pont, Nusche, & Moorman, 2008).

Studies of schools operating as collaborative communities have found that this organisational approach is essential for establishing successful relationships with others. According to several OECD reports (Kools; Pont, 2018; OCED, 2015; OECD, 2016b; OECD, 2010), for instance, the constitution of “learning communities” at school (entailing more collaboration and peer learning amongst teachers) and the establishment of new relationships with “external stakeholders” (such as parents, employers, funders and public at large) are being depicted as one key driver for innovation in educational settings and improving student learning. Table 3 gives us a sense of the kind of intangible outcomes reported by the literature as successfully achieved by changing the way schools operate by moving towards the learning organisation's paradigm.

Table 3 - Outcomes achieved by transforming schools from teaching into learning organisations

	The literature on learning community and learning schools	Other outcomes description (not academic)
1	Higgins et al. (2012)	Engagement and participation in school
2	Schechter and Mowafaq (2013)	Changes in shared mental models of Organisation and operating procedures, routines and performance.
3	Schechter (2008)	Changes in behavioural and cognitive outcomes such as shared mental models and causal links-maps of Organisational members.
4	Fullan (2014)	Students gaining self-confidence, perseverance and proactive disposition
6	Harris and Tassel (2005)	Improves outcomes for P-12 students, teacher candidates and school and university faculty
7	Park (2008)	Improves each person's willingness to engage in professional learning and growth
8	Schechter and Mowafaq (2012)	Changing school culture
9	Silins, et al. (2002)	Engagement and participation in school
14	Diggins (1997)	People become exceptionally skilled at creating, acquiring, and transferring knowledge and at modifying their behaviour to reflect new knowledge and insights in a learning organisation.
18	Bowens, et al. (2005)	knowledge development
21	Hamzah, et al. (2011)	transformational leadership practices
25	Clarke (2005)	Sharing ideas and development of trust in working. Self-knowledge and confidence improvement.
26	Schlechty (2009)	Sharing authority and teacher co-operation
27	Davidoff and Lazarus (2002)	Increasing participation rates of all the members of the school community in school
28	Middlewood, et al. (2005)	Sustained and effective collaborative partnerships with all schools
29	Leithwood, et al. (1998)	Individual and collective understandings, skills, commitments, and overt practices
30	Louis and Kruse (1998)	Teachers felt affirmed as professionals and better able to learn; are more comfortable sharing with colleagues and improved relationships; and more aware of whole school issues and needs
31	Stoll, et al. (2006)	Enhanced motivation and improvements in performance. Teachers enrol in high-quality thinking, substantive conversations, in-depth knowledge, and connecting with the world beyond the classroom
32	Sackney, et.al. (2005)	Staff members using a wide array of data to plan programs, to generate interventions, and to create learning activities. The staff has moved from strategic thinking to systemic thinking
33	Kools, et al. (2018)	The school has a vision that focuses on students' cognitive and socio-emotional outcomes, including their well-being.

As we can confirm in table 3, findings support a growing conviction among scholars and education practitioners that effective education is broader than academic achievement taken alone and should include, for example, engagement and participation; self-confidence and perseverance; students well-being; agency and engagement; willingness and empowerment. This is another way of saying that the value of the learning experience exceeds the tangible outcomes. Hence, the value is also associated with subjectivity, such as well-being, trust, collaboration, engagement, and the sense of belonging. For instance, Fullan (2014) suggests that active learning and partnerships with students may be considered the *new pedagogies*. In Fullan's and Langworthy's publication "A Rich Seam: How New Pedagogies Find Deep Learning" the authors contributed substantially to foster an understanding of the "new pedagogies" as a new model of learning partnerships between and amongst students and teachers, aiming towards deep learning goals on a large scale and enabled by pervasive digital access. In the author's opinion, new learning partnerships between and among students and teachers lead to deep learning tasks that restructure the learning process towards knowledge creation and purposeful use. In deep learning tasks, the goal is to create and develop new knowledge through integrating prior knowledge with ideas, information, and concepts, into a wholly new concept, solution, or content (Fullan; Langworthy, 2014: 23).

Moreover, students also go beyond creating new knowledge to apply it in their lives. Thus, creating and using new knowledge in the world are the basic premises for deep learning. Also, Silins, et al., (2002) states that engagement with school is a predictor of student achievement and is vital for learning that requires committed effort by each student. Indeed, students' participation and engagement with the school are both direct and indirect educational success outcomes. There is evidence that they are reliable predictors of retention in school, which is an explicit goal of school restructuring and they appear to affect the positive academic self-concept, which is a desirable educational goal in itself (Silins, et al., 2002: 624). The greater the student participation in and engagement with school, the less likelihood of alienation.

Furthermore, authors such as (Leithwood and Louis, 1998; Stoll; Louis, 2007; Stoll et al., 2006) have provided evidence of a positive relationship between the constitution of professional learning communities, student performance, and school achievement. These studies indicate that when teachers deliberately pursue together the

question of students learning, reflect on their professional practice and purposefully develop new approaches to improve their activity quality, they contribute to learner success and student engagement. Therefore, Stoll, et al. (2006) have suggested that teachers enrolling in high-quality thinking, substantive conversations, in-depth knowledge, and connecting with the world beyond the classroom enhanced motivation and improvements in students' performance.

5. Critical analysis of the concept of learning school

The learning organisation's critique as a concept began toward the end of the 1990s with several researchers questioning its usefulness (Doyle & Johnson, 2019: 4). These questions raised further concerns and increased efforts to produce measurable results (Watkins et al., 1997; Ellinger et al., 2002; Armstrong and Foley, 2003; Yang et al., 2004). Apart from the vagueness of the concept, there was a growing need to provide empirical evidence, and this led to the creation of the Dimensions of Learning Questionnaire (DLOQ) to demonstrate learning links to organisational performance (Yang et al., 2004).

What is more, while acknowledging its potential and relevance for organisational development, it is nevertheless necessary to consider the difficulties and limitations of its transferability in the area of education. Andy Hargreaves (2003), Silins et al., (2002) and Bolívar (2000) analysed the limitations of transposing the concept to school settings. Despite the limitations and possible acritical uses of the expression, in their opinion, there are benefits in renewing the concept of the learning organisation, so that it fits the reality of schools. Therefore, we face perceiving how a model based on the business sector can be transferred to the education sector without encouraging progressive education privatization (Bolívar, 2000). Similarly, Bowker, among other authors such as Bolívar (2000) and Talbert (2010) and Harris & Jones (2018) underline that achieving the idea of becoming a learning school may be problematic and, in many ways, make it more a distant dream than a reality. In this regard, Bolívar proposes to see LS more as a regulatory idea that does not need to be empirically anchored to be fully achieved. As a “counterfactual model” (Bolívar, 2000) it does not need to be materialised as a tangible

reality, i.e. as a *factum*; instead, the model works as criteria for judging existing realities and guiding processes to achieve a goal. The same is true, says Bolívar, with Rousseau's idea of the social contract, Rawls's idea of justice, and Habermas's ideal communication community, which are clear examples of regulatory ideas that can serve as counterfactual models of reality (Bolívar 2000: 10). Indeed, while literature pointing towards the importance of turning schools into learning Organisations has been accumulating during the last 25 years, there still is relatively little empirical evidence available to support the argument that such schools are also associated with better performance and more significant innovation, thus is more a “social construction” that aims at a particular ideal of development, never fully achieved in the real world (Bolívar, 2000). As recalled by Bolívar (2000), Senge expresses LO more as a desirable reality yet does not describe the reality itself.

As underlined by Field (2019) in the article “Schools as learning organisations: hollow rhetoric or attainable reality?” there are repeated claims in the educational improvement literature that there are significant benefits for schools that become learning organisations and, as a result, school leaders should steer schools in this direction. However, Field (2017; 2019), concludes that schools as learning organisations are conceptualized in so many different ways that it is possible to claim almost anything. The concept of “school as a learning organisation” is, in Field’s words (2019) more a “hollow rhetoric” than an “attainable reality”. As the author has discussed at length elsewhere (see, e.g., Field 2018 & 2019a), interest differences have received little attention in the organisational learning literature, despite their importance in accounting for the likelihood that learning is shared. When change involves a conflict of interest (e.g., new arrangements for managing teacher performance, compliance, remuneration, and career progression, or that reduce the power, professional status, learning and development opportunities, and/or resources of individuals or groups), it is unlikely that managers and staff openly share what they have learned with each other. On the other hand, Paul Tosey (2005) in *The Hunting of the Learning Organisation* addresses the paradoxical nature of organisational life. According to this author, there is no such thing as a permanent state within organisations and, as so, might be an illusory aspect.

Furthermore, Bowker (2008) recalls that the pressure of standardised reforms (competitive pressure; evolutionary attrition of change; standardized reform is also mentioned by Giles and Hargreaves (2006): “standardized reform agenda is actively

undermining the efforts and successes of those few, truly creative “knowledge society” schools, and their teachers, that currently exist (Giles and Hargreaves, 2006: 153). In schools where New Public Management (NPM) is dominant, it may be difficult for those who wish to inspire change, to think outside the NPM discourse. Rather than vertical, bureaucratic, and rational strategies of change, it is assumed that the emergence of autonomous and horizontal strategies of change must be fostered, one that gives protagonists and their agents an active role and therefore, is more perennial in time. In Hargreaves' opinion, it is an internal solution to the problems posed by external forces (Hargreaves, 2005). This is the fundamental irony of the educational change in a postmodern era. Thus, we give local responses, such as new forms of governance in the education field to externally imposed problems, depending on these solutions. Since neither macro (structural or policy) solutions, nor micro (classroom) solutions seem to have brought the desired result in their fullness, the “meso paradigm” that transfers to the school the responsibility of solving external problems emerges with particular force (Bolívar, 2000: 50).

Fourth, learning organisations' theories thus have their origins in the new paradigms of understanding organisations and post-Fordist (decentralized and flexible) work organisation. Decentralizing management; making employees responsible for achieving the company's goals and outcomes; increasing autonomy of the centres and promoting team learning through knowledge exchange is the *modus operandi* of most companies nowadays. To hold employees accountable for the company's goals, by decentralizing its management, increasing the autonomy of the centres, and, at the same time, promoting professional communities with shared values and goals is what top companies have done in recent times. At a time of a financial crisis or recession and retraction of the State's role in education, as was the case in Portugal between 2010 and 2014, the NPM model attempts to boost public Organisations in a similar way to the Organisations of the first sector (Bolívar, 2003). The major challenge is finding how to implement the model with its roots in the management field to the education sector.

Fifth, challenges and difficulties of transforming schools into learning organisations are also endemic ones, namely schools size and structure; over bureaucratization of processes; disciplinary knowledge taking priority over exchanging knowledge. To sustain this change is also undermined due to, unstable teachers'

professional careers and in schools with a historical legacy of top-down administration and fragmented departmentalised subject-based communities (Fink, 2000; Talbert, 1995).

The need to embrace technology since emerging reliance on electronic devices and communication technologies must lead to electronic learning systems (Doyle and Jackson, 2019). More than never before, we know that we need to be quick in adapting, transforming, and being physically apart, yet socially together. The pandemic taught us that we need to create our communities over other platforms and revised tools to implement learning in the virtual environment by moving away from the traditional classroom, one-way delivery of learning (Alston & Jernigan, 2017; Mutamba, 2017).

Despite the flaws, Bowker sees in learning schools model, an alternative way of conceiving schools in terms of aspects that cannot be seen in the New Public Management discourse. In essence, these LS need a robust network among members of the community to grow. Using social capital ideas (Hargreaves & Fullan, 2013), organisational structures take on a new role: they play a central part in the development of the network, which acts as a resource both for individual teachers and also the school, as a corporate actor. Likewise, Bolívar believes that in a postmodern world, in which people do not trust structures nor bureaucratic rules, learning organisations make it possible for institutions to generate continuous change and the self-transformation that might be an effective model for educational change. Establishing more horizontal structures seems to be the direction in a "post-bureaucratic" era (Bolívar, 2003). Bolívar stands for the idea of a learning school as a guiding framework for the development of organisations and not as a management strategy.

Bolívar and Hargreaves and several others representatives from the educational change theory (Fullan, 2005a, 2007; Hargreaves and Shirley, 2012; Hernandez and Goodson, 2005) propose to use the interesting elements of this subject, properly reconceptualized and situated so that it does not become a new "technification" of the Organisational processes and instead, can revitalize the strategies of educational change and the ways of thinking schools as Organisations (Bolívar, 2000).

Part II – Research Strategy

Chapter 4 – The Research Methodology

1. Research Methodology

This chapter intends to familiarize the reader with the methodological choices, which have informed the study. Chapter 4 introduces the methodological research strategy and how it has guided data collection, analysis, and development of theory. Following this introduction, we elaborate on the adopted methodology to frame the strategy of fieldwork analysis. Moreover, discussing a holistic and context-sensitive case study involved elaborating on the sampling strategy and data collection, analysis and significant ethical concerns (sections 1 and 2). This is also the section wherein research goals and questions are presented in articulation with the methods and a description of the research techniques. Throughout section 3 and 4, we present data sources, and we provide a detailed explanation of data collection strategies and sampling methods we have selected for this study. In sections 5 and 6, we describe data organisation, coding, and storage processes. In section 7, we elaborate on the process of data analysis. Ethical issues are approached in section 8.

Research design implies making decisions through the different phases of the research and mandates to be aware of these decisions' influence in all research stages. This is particularly important, as methodological apparatus and design directly influence the kind of results obtained, the methods applied and have a repercussion on the kind of knowledge produced.

As the overall aim of this study is analytical rather than descriptive - understanding in what ways are collaborative learning communities and learning schools broadening the notion of education as a Human Right in practice and driving educational change – I wanted to interlink different perspectives of belonging to this learning environment so that I could comprehend the complexity of the context. Understanding how collaborative schemes are affecting the school community implies having an attentive look at how people perceive it, how they feel it, and how they describe and remember the experience. The main questions I proposed to answer through this study mirror this concern.

i) Are educational models based upon collaborative learning, knowledge-exchange, and claiming for all stakeholders' agency in the educational community, contributing to rethink education as a Human Right?

ii) In what ways (if any) are collaborative learning communities and its supportive structures 'learning schools' contributing to this re-envisioning?

iii) What has been the Institute for Education and Citizenship (IEC) role in implementing collaborative learning communities? In what ways (if any) does the implementation of these new practices contribute to schools' change?

Only through a qualitative approach, I would be able to answer these questions and would be able to capture the detailed and nuanced information obtained during fieldwork. Rather than asking what sort of cognitive processes or conceptual structures are involved, this study intends to provide a fresh look at learning: one that acknowledges that participating in the social world is a fundamental form of learning (Fischer, 2000; Lee, 2013). On the other hand, one that acknowledges that the educational process is the result of a structure-agency relationship and is conceived as being mediated by a series of institutional arrangements, which are both created by knowledgeable actors (or agents) operating within a specific social context (or structure) (Hernandez and Goodson, 2005).

This study's approach takes place along with integrative perspectives (Bryman, 2012; Mason, 2002; Spencer, L., Ritchie, J. & O'Connor, 2003) to connect organisational culture with communities' interpretations and the local/national sociopolitical conditions where they emerge and legitimize themselves. To do so, I have combined three different levels of information. On the one hand, I convoked the organisational discourse and community interpretation of the facts (zooming in). On the other hand, I called for the policy-making guidelines (zooming out) concerning the implementation of "collaborative learning community". The main idea was to understand how they both link to the organisational structure of schools and their routines (Alcorn, 2010b; Fisher, 2003; Giles & Hargreaves, 2006; Andy Hargreaves, 2003; Katz & Earl, 2007), including collaborative learning practices (Clarke, 2005; Fullan, 2005b; Moloi, Gravett, & Park, 2006; Schechter, 2007; Schechter & Mowafaq, 2013) at the school level.

To encompass different levels of analysis, the methodological approach adopted in this research considers the use of multiple data generating methods (Valles, 1999), that I have applied to an array of data sources namely audio and written data. Data has been triangulated according to my analysis's requirements (Bryman, 2012; Mason, 2002; Patton, 2002; Valles, 1997).

If embracing a qualitative approach was the primer option I have taken, using multiple methods and techniques that would be context-sensitive was my second decision. Therefore, the analysis, explanations, and argument building upon data involved

considering the context's complexity based on the richness and meticulous data collection. Moreover, understanding how and to what extent are *collaborative learning communities* and *learning schools* (in theoretical and analytical terms) contributing to rethink education as a Human Right, led me to make other choices. The use of a case study method (Burawoy, 1998) is an example of this kind. In chapter 5, we elaborate on why we have decided to embrace an extended case study research.

2. Research goals and research questions

The empirical study selected shape an effort of developing a collaborative learning community (CLC), supported by a set of organisational conditions that were identified as an analytical model of ‘schools as learning organisations’ (SLO). This single case provided information for an analysis able to support a deeper understanding of how notions of collaboration, knowledge-exchanging, and agency can extend the notion of education as a meaningful concept to everyone at stake. Table 4 links research goals to the research questions and specific goals and tasks.

Table 4 - Linking research goals, research questions, specific goals and tasks

Research Goals		
Understanding how collaborative learning communities and learning schools challenge education as a human right and driving educational change.		
Research Question 1	Research Question 2	Research Question 3
What kind of background has been provided nationwide in terms of policy design and implementation?	How are educational models based on collaborative learning, knowledge-exchanging, and agency contributing to rethink education as a right?	What has been the Institute of Education and Citizenship (IEC) role for implementing a collaborative learning community?
Specific Goals	Specific Goals	Specific Goals
Analysing the implications of educational policies, actions, governmental programs on the emergence and leverage of CLC and transforming schools from teaching into learning organisations.	Studying which features of a collaborative learning community are being developed in our case study.	Studying in which ways are the CLC influencing individual and collective learning and collaborative actions.
Analysing the challenges identified by students, teachers and school directors for implementing collaborative learning communities.	Analysing which dimensions of the learning school’s integrative model are being developed.	Understanding what participants’ perceptions about the effect of belonging to the collaborative learning community are.
Understand whether policies are facing the identified challenges.		Understanding the effects of ‘belonging’ to the collaborative learning community on the school’s dynamic.
Tasks		

1. Mapping and analysing educational policies and practices developed regarding collaborative processes, creating open learning systems and democratising knowledge;
2. Identifying which features this case study have that allow us to speak of a learning community
3. Detecting which features of CLC are leveraging processes of developing collaborative actions, knowledge exchange, extending agency, and school's change dynamics.

Research hypothesis are the following:

1. IEC claims a new learning structure that is leveraging schools-community-university partnerships' democratisation using shared values and validation of different knowledge.
2. Due to the IEC role of facilitation, capacity building mechanisms have been improved for the learning community members and a knowledge-exchanging dynamic has been created.
3. Collaboration is being an “organisational norm” amongst schools that has a leverage effect. It has been a sustainable action and empowers local government and schools to take risks and redesign their relationships with other schools and, in some cases, with broader community-based services.

3. Data sources, data collection, and data analysis strategies: an overview

This research attempts to build and challenge the perspective we already had from the literature on *collaborative learning communities and learning organisations*. Through the use of a case study method, a combination of several techniques of data collection has been carried out during fieldwork, namely:

- Making direct, structured observation and participant observation in the field setting: in classes, public events, and meetings (At the field);
- Taking field notes (memo writing) and supporting materials - creating a narrative based upon these notes and based on my thoughts at the field (At the field);
- Individual in-deep semi-structured and face-to-face interviews; informal conversations (At the field);
- Sources of evidence, rather than a diagnosis mean (At the field);
- Document analysis – written documents (desk research).

Table 5 links the research questions to data sources and generation methods.

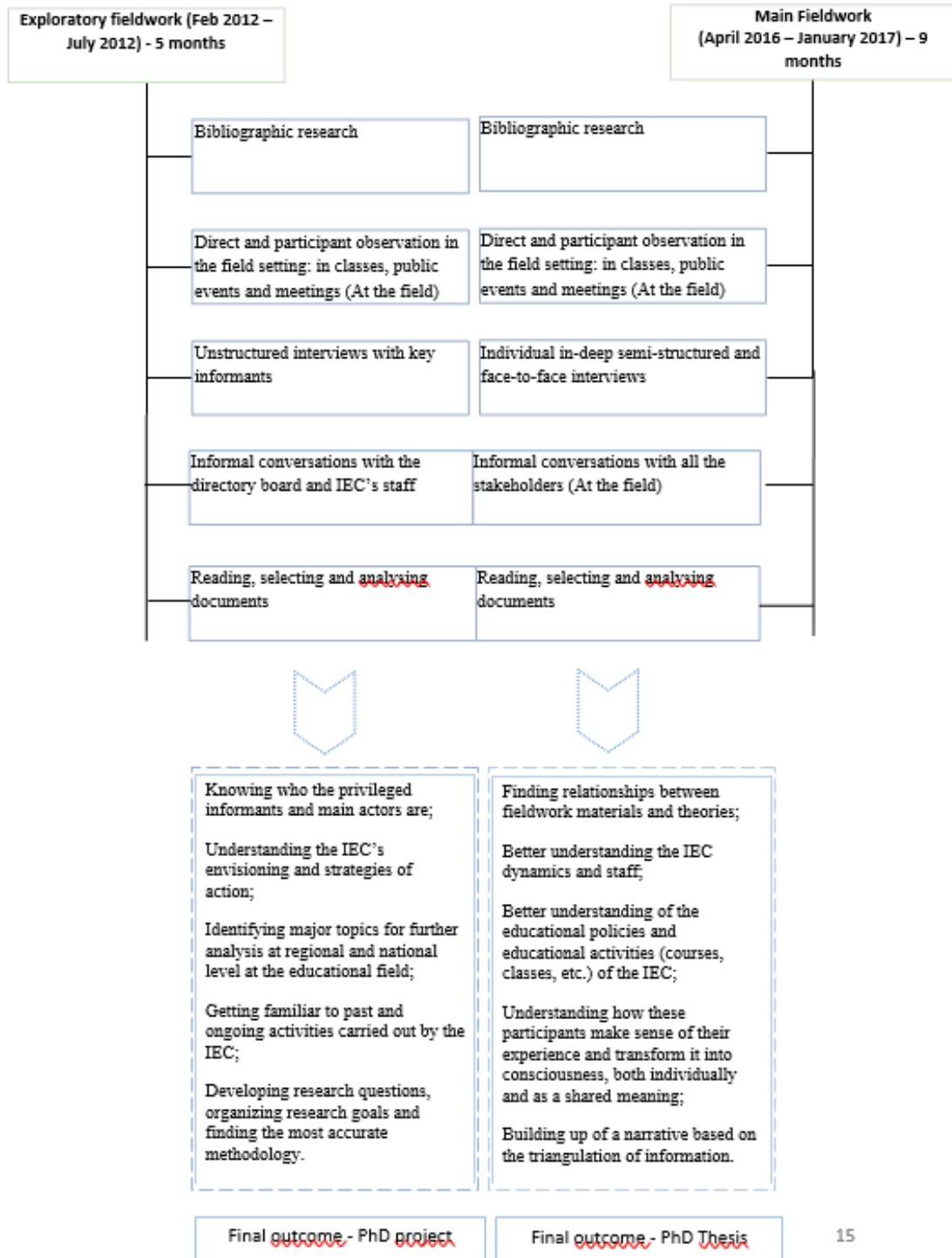
*Table 5 - Linking Specific Research Questions to Data Sources and Generation Methods
(Adapted from Manson, Jennifer (2002 [1996]))*

SYSTEM-WIDE VISION FROM PARTNERS PERSPECTIVE		
Research Question (s)	Data sources and generation methods	Justification
How and to what extent are the relationships with the IEC contributed to building a system-wide vision of the education system and contributing to a learning school system's emergency?	Ciência Viva - National Agency; Directory Board; Universities and Research Centres; Municipality Documentary analysis	Interviews provide interviewees' accounts of the evolution of leading educational policies. The analysis of these documents allow me to disclose the main events, guidelines, and evolution of the educational system
Who have been the main actors in this process?	Ciência Viva - National Agency; universities, schools, and municipality; IEC directory board Documentary analysis	Interviews provide interviewees' accounts of the main actors Documents produced by Ciência Viva; by IEC and other relevant organisations identify the organisations and people involved and their contributions
In what ways (if any) is this model being challenging the Portuguese educational practices at the school system level?	Ciência Viva - National Agency; and other educational organisation and educational leaders Documentary analysis	Interviews provide information about the agendas of the leading organisations at different moments. Identify the crucial elements of the debates in the early years (2013-2017), by analysing the more relevant documents.
What kind of collaborative action do they ask?	Ciência Viva - National Agency; universities, schools, and municipality; IEC directory board Documentary analysis: Annual activity reports	Interviews provide information regarding network development; connections and possible tensions amongst stakeholders. The analysis of these kinds of documents reveals the connections amongst different institutions and linkages between organisations.
How effective is the CLC model in strengthening the learning process based upon collaboration and engagement framework?	Ciência Viva - National Agency; universities, schools, and municipality; IEC directory board Documentary analysis and literature review	Interviews provide information about the application of the European framework in the national guidelines The analysis of these documents provide me with information about the influence and presence of international claims and standpoints
COLLABORATIVE LEARNING COMMUNITIES AND LEARNING SCHOOLS		
What strategies are being used by the IEC? From your experience, identify which features characterise best your school. From your experience, identify which features characterise best the IEC.	Interviews with everyone at stake IEC Documentary Analysis: mission; Educational project; regulations; activity plans; collaboration protocols; funding policy. Participation and observation in the events at IEC and Schools organised in the scope of the network Participation in meetings; assemblies – direct and participant observation	Interviews provided me with information related to strategies developed and designed by the IEC to achieve their goals and to improve the network established Documents highlight the mains strategies and guidelines, communication channels, and action. The events provided me with elements to analyze the way IEC is organised, networks, agendas, and the way it interconnects with all stakeholders
Who have been the main actors in this process?	Interviews with leaders and members of the said learning community (semi-structured and focus group) Participation in the events at IEC and schools Participation in meetings; assemblies – direct and participant observation	These interviews help me identify the main actors and their motivations for being part of the CLC. The participation in events and meetings allow me to see firsthand who participate in the activities and the different roles each one has in the CLC.
What has/have been their agendas? What kind of collaborative action do they ask?	Interviews with leaders and members of the said learning community (semi-structured and focus group) Participation in the events at IEC and schools	These interviews help me identify the main actors and their motivations and aims for being part of the CLC. It also provides me with the way different

	Participation in meetings; assemblies – direct and participant observation	actors envision the existence and the impacts of CLC The participation in events and meetings allow me to see firsthand who participate in the activities and the different roles each one has in the CLC.
IEC ACTION AND EFFECTS ON INDIVIDUALS AND ORGANISATIONS		
What are the effects of the IEC's collaborative learning practices on the student's academic paths (Individual analysis?)	Interviews with students and former students; parents/guardians; teachers	These interviews bring light into their perceptions about their experiences of being part of the CLC and educational policies.
What are the effects of collaborative learning practices carried out by the IEC in the process of structuring knowledge-sharing networks and in the definition of its features? (Organisational analysis)	Participation in meetings, events, and the daily routine of partner schools. Direct and participant observation. Interviews with leaders, directors, researchers engaged at the network	These events allow me to access those participants who have not a central role in decision-making. These interviews bring light into their perceptions about their experiences of being part of the CLC and educational policies.
What are the effects of educational policies on the collaborative learning practices carried out by the IEC? (Structural Analysis)	Documentary analysis - Legal documents; Parliament debates; programs of the government; National Guidelines and treaties. Interviews with leaders, directors, researchers engaged at the network; CLC partners Interviews with <i>Ciência Viva</i> ; <i>Calouste Gulbenkian</i> Foundation and other educational policy analyst	Documentary analysis of these documents highlights the main traits of the government's agenda. Interviews shed light on interviewees' opinions about the government's agenda and how far they can influence the government's educational issues.
Is there any correspondence between IEC strategies and the Portuguese state's agenda to expand the concept and practice the right to education?	All methods used in the study	A comparison of differences and similarities between the data yielded from the different sources gave me a picture of whether or not there is a 'fit' between the state's agenda and practices in the field of education.

We divided fieldwork into two different stages. The exploratory stage of fieldwork took place from February 2012 up to July 2012, and the main stage of fieldwork occurred between April 2016 and January 2017. Figure 1 shows a graphic overview of all fieldwork stages.

Figure 1 - Overview of fieldwork stages



3.1.Exploratory Fieldwork

The fieldwork here presented started with a five-month exploratory phase in which I visited the institute weekly. This work phase has generated a variety of audio and written materials, namely unstructured tape-recorded interviews, field notes taken during public events, classes, and meetings. As I was not dependent on one single interview opportunity, this stage integrated exploratory interviews with privileged informants at the IEC premises (IEC directory board, teachers, and students) and informal conversations with IEC staff members. Exploratory interviews or, as Fontana and Frey (2000) call it “unstructured” do not mean unfocused interviews (Patton, 2002).

This technique offered flexibility to pursue information in the direction that appeared to be appropriate from observing the setting under study; from talking with individuals in this setting and from the first readings undertaken (Patton, 2002).

This phase of work also included reading and analysing written information on three levels:

- i) The IEC internal documents (organic statute, legal status; ethical principles; activity plans and minutes); local newspapers mentioning IEC activities;
- ii) School and municipality actions on education at a regional level; municipality strategic vision for education;
- iii) Governmental strategies and national guidelines on school networks and schools’ autonomy; guidelines for improving students' learning outcomes; *Ciência Viva* mission, strategy, and future actions.

Complementary to these tasks, I have attended classes (advanced course on Neurobiology) and public events at the IEC premises namely, the *Brain Awareness Week 2012* event or the delivery of certificates of student participation in the IEC advanced courses. Other than this, I attended significant events such as art and science expositions; conferences, and seminars. I undertook direct and participant observation at these events organised by the Institute of Education and Citizenship. These events allowed me to figure out what were the IEC vision and its strategies of action; who were the main actors and how they relate with each other; what were the actors’ major concerns and their envisioning for education at the individual level (school principals, teachers, and students), at the regional level (president of the municipality; president of the municipal

assembly) and the national level (former ministers of education and former minister of science and technology). It was also an opportunity to gain access to several privileged informants and to get familiar with past and ongoing activities.

In practical terms, and for research designing purposes, exploratory fieldwork allowed me to determine what sort of questions should be asked, playing a crucial role in developing research questions, organizing research goals, and shaping the most accurate methodology towards the achievement of the proposed goals.

3.2. The main stage of fieldwork

The main fieldwork stage is part of an integrated process of finding relationships between fieldwork materials and theories to sustain the main thesis arguments. Besides, including literature review, interviewing, and desk research, the main fieldwork comprised attending and observing courses, classes, and meetings at the IEC amenities and the school premises.

I can list and describe data generation methods as the following:

3.2.1. Observation

As “naturally or situationally occurring data” (Mason, 2002: 88), these events allowed me to generate important information concerning the institute’s staff’s direct actions, namely sound bites, action strategies, and the mobilization of community members, and the schools’ community. Moreover, it also gave me a broader picture of the organisation members understudied and a better understanding of courses organised by the IEC.

I undertook participant observation (Mason, 2002; Valles, 1997) at events organised by the IEC that occurred between March 2016 and January 2017 namely, classes; experimental science course evaluation meetings; former IEC students’ meetings; official ceremonies.

The balance between being a passive observer and participating in the field was not always easy to achieve, and some authors underline the impacts that high levels of participation on the field can have on the results of the study (Bryman, 2012; Patton,

2002; Valles, 1997). I remain aware that the data generated through participant observation might be criticized for being “subjective, unrepresentative and narrow” (Jennifer Mason, 2002: 86). I tried to adjust my role according to each specific situation. In some events, meetings, and seminars, I was only a spectator focused on my field notes about the event itself. However, on some occasions, I was an active participant, helping with what was needed to be done; in another situation, I was a participant researcher, observing and participating in the events. On other occasions, fieldwork notes were taken after the interviews, on my way back home.

All observations, personal reflections, and feelings were registered in my field notes (memo writing), and I carried out a thematic analysis. Mechanical devices, such as an audio recorder, were used to record field notes. These notes were transcribed and categorized through the MAXQDA software (V.12). I have used MAXQDA as a support device for systematizing the information collected during fieldwork. Based on these notes, a narrative was built considering my perspectives and interpretation of events, conversations, meetings, or/and activities, and based on the participant’s point of view of a particular subject. Memo writing allowed me to compile thoughts and ideas and prompted me to reflect on the best way of putting interviews and the theory beyond dialogue. During data analysis, I revisited all memos as often as considered relevant to ask questions, elaborate on potential testimony meanings of interviewee’s statements, or compare concepts identified during interview sessions.

3.2.2. Interviews – overview

I have conducted semi-structured, face-to-face, in-depth interviews (Alan Bryman, 2012; Jennifer Mason, 2002; Valles, 1997) with students, teachers, school leaders, parents/guardians, researchers from the University of Coimbra and Aveiro, Biotechnology entrepreneurs, the municipality of Oliveira do Bairro, IEC staff members and directory board, and Ciência Viva directory board. In total, I have conducted forty-nine interviews (N interviews 49) with fifteen-three interviewees (N interviewees 53). These interviews were designed to understand peoples’ lived experiences (Patton, 2002: 104) within this network and thoughts on their engagement at school and their learning process. Indeed, what all the interviewees have in common is that all the respondents have had personal experiences in this educational network. Yet, each group of interviewees

plays a different role in this network. Interviews were particularly helpful in understanding how these participants make sense of their experience and transform it into consciousness, both individually and as a shared meaning (Patton, 2002: 104). It would also be interesting to hear from those who have chosen deliberately not to participate in this learning network. However, due to time concerns, I put this group of people aside from this research. Indeed, this would be another research topic that does not fit our research goal, which does not help us answer our research questions. Understanding the limitations identified by those people might allow us in the future to continue researching people's common motivations for embracing collaborative learning experiences and understanding students' changing perceptions of their learning environments.

Interviews lasted from one to two hours and were adapted to the established category of respondents, who were invited to present their insights and opinions on the matters under study. Interview guidelines and the study purpose and goals were made clear through an email sent to the interviewees in a *Research Participant Request Form* (see Appendix I). Students were requested for parents'/guardians' permission to participate in the study by releasing a form wherein the study was thoroughly explained, and permission was directly asked. During interviews, follow-up questions were asked to clarify previous answers. The resulting outcomes served as inputs to amend subsequent interviews. Interview's observation worksheets were elaborated to compile the interview's transcription and the researcher's thoughts about the interview context.

All the interviews were conducted in Portuguese and immediately transcribed and anonymized by switching the interviewees' real names (teachers, students) by pseudonyms. Only the statements chosen to be quoted on the thesis were translated into English. This decision was made bearing in mind time concerns and epistemological and ethical concerns, as I elaborate on the final section of this chapter.

3.2.3. The interviews' guides - dimensions of analysis

As previously stated in chapter 2, several scholars use specific dimensions, or “action-imperatives” (Watkins & O’Neil, 2013) that ideally are shaping schools as learning organisation (Benjamin, 2009; Caldwell, 2012; Clarke, 2005; Davidoff & Lazarus, 2002; Jacobson et al., 2010; Moloji et al., 2006). The dimensions that were used in this study are a convergence of Marsick and Watkins's learning organisation model

(1999; 2003) and the reviewing of the so-called model by Kools and Stoll (2016). As the latter authors have shown (Kools & Stoll, 2016), these 7 dimensions were very much explored in isolated pieces and a related body of research on “professional learning community” has been writing about both concepts, professional learning communities and learning schools (e.g. Louis and Leithwood, 1998; Fullan, 2001; Stoll et al., 2003; Giles and Hargreaves, 2006).

Indeed, although the recognition of the importance of the dimensions mentioned above is not new, its integration in one single model (integrative model) was only done very recently by few academics and practitioners (Kools & Stoll, 2016; Marsick & Watkins, 2003; Örténblad, 2004) and it has never been tested in Portugal. This research tries to fill this gap. Considering these dimensions all together allows establishing an action-oriented definition of Learning School. For this study, we have tried to understand how much of these dimensions were present in the schools.

We believe that these dimensions help me identifying best practices that can turn schools learning achievements more effective.

This study explores the presence of these seven dimensions at the educational network implemented by the IEC. The development of interview questions fully covers these seven dimensions (as shown in table 5). Due to its action-oriented nature, the dimensions were converted into indicators that underlie what elements must be considered when the main goal is to transform schools into a learning organisation¹⁴. These elements were converted into questions to be asked to the interviewees of this research.

Overall, interviews’ guides are divided into three operational axes so that I could cover 1) interviewees’ opinions on the Portuguese education system (national and school level); 2) their opinions on the presence or absence of the dimensions that constitute an ideal type of SLO; and 3) the effect of collaborative endeavours on students’ learning outcomes and schools’ dynamic.

Each guide was carefully discussed amongst the researcher and the supervisors. Interview’s guides were structured to facilitate asking the same questions to multiple participants within the same category of respondents; otherwise, it would not be possible achieving data saturation, as it would be a continually moving target. The questions were

¹⁴ See chapter 3 - Table 2 – The integrated model of the school as learning organisation (SLO) adapted from Kools and Stoll (2016).

tested by the author through its application to one person per group. The reviewing process stopped after one round of interviews with each one of these respondent's category members. A specific interview guide was elaborated for each respondent's category. Six interviewees' groups were established and were unfolded into eleven sub-groups of analysis. The constitution of these six groups is very much in line with newer approaches to membership of collaborative learning communities that extend the available knowledge bases. This newer approach suggests the need to broaden our understanding of what constitutes a collaborative learning community and who might be considered a legitimate member (Stoll; Louis, 2007: 5). We adopted the same understanding as Stoll and Louis (2007) when they argue that there are other external stakeholders with specific knowledge that schools call on or who, through critical friendship or creating 'urgency', may generate the impetus for developing CLC (Stoll; Louis, 2007: 5, 6). In this case, these agents are parents, researchers from higher education institutions, museum staff, and policymakers, apart from students, teachers, and school directors. Indeed, broadening our perception of a learning community implies as referred to in chapter 2, rethinking notions of 'location' for a learning community and expanding the notion of 'who belongs' (Stoll; Louis, 2007, p. 4). Table 6¹⁵ is a graphic representation of how and why I divided respondents into six major groups, based on the kind of expertise I was given through interview.

Table 6 - Interviewees' Analytical Categories (adapted from Stoll, L. and Louis, K., 2007: 5)

Systemic extensions to CLC membership	Knowledge bases available to the CLC	Interviewees	N Interviewees
CLC as a group of teachers (original definition of Professional Learning Community)	Pedagogical and other related	(Group B) Teachers (B1) Science courses monitors (B2)	B1 – 4 B2 - 9
Extended across the school to include support staff, governing bodies members of schools councils and students	Other professional knowledge, e.g. knowledge of specific learning needs; students' knowledge; external knowledge and broaden envision	(Group A) School leaders(A1) (Group C) Students (C1) Former Students(C2)	A1 – 8 C1- 4 C2 - 13

¹⁵ Some interviewees had double roles, being simultaneously *parent* (F) and *teacher* (B), or *staff member* from a museum (E) and also *science teacher* (B). In these situations, the researcher decided to affiliate the interviewee to one single analytical category. For analysis purposes, the analytical category, to which someone belongs, was defined by measuring what role has popped up more intensively and more often during the interview by the respondent. The decision was taken by taking into account the *Research Participant Request Form*.

Extended among schools, to include grouped schools and networks of schools and local authorities	Access to more significant amounts of the same knowledge bases	(Group E) City council (E1)	E1 - 1
		(Group D) IEC directory Board (D1) IEC Staff (D2)	D1 - 1 D2 - 3
Extended beyond schools to include parents	Local knowledge and intimate knowledge about individual children and young people	(Group F) Parents (F1)	F1 - 2
Extended beyond schools and the wider community and other services	Other professional knowledge, e.g. higher education, health, the biotechnology industry	(Group E) City Council (E1) Researchers from Universities (E2) Other partners – BIOCANT and Ciência Viva National Program (E3)	E1 - 1 E2 - 6 E3 - 2
Total (N)			N 53

3.2.4. Interviews – Considerations on substance, style, scope, and sequence

As collecting and analysing data happened simultaneously, comparisons between interviews, adding information to the interview guidelines, and reformulating questions were possible in due time. Repeated reading of the transcripts and the notes taken during the reading enabled me to detect recurrent topics, concerns, and practices used as guidelines to inform subsequent interviews.

Although we have not many unforeseen situations to report while doing the interviews, I had to make a few on-the-spot decisions about substance, style, scope, and sequence of interview questions.

The substance of the interviews was based on the dimensions mentioned above. Those dimensions shaped the kind of questions asked and formed the empirical phase of this study. Nevertheless, during the period of fieldwork (2016-2017), private schools went through a particularly tense period, as new rules for public funding came out from the government¹⁶. Consequently, most of the interviews I have made to people from private

¹⁶ Private schools with “association contracts” are schools of choice that have to follow state admissions rules and receive a lump sum to cover 100% of the costs of schooling and students do not pay tuition. These contracts were established in the early 80s by the government and non-governmental schools which were located in geographical areas without state schooling coverage or which, besides the official curricula, teach other subjects or courses with their syllabuses, as is the case of artistic and vocational schools, or special needs education in different levels (from basic to secondary level). These contracts were established so that non-governmental schools could fill the governmental gaps. However, in 2013 a new law – Estatuto do

schools (school principals, teachers, students, and families) spent a considerable amount of time talking about this subject. Indeed, this was also the case of ‘educational innovation’ that came into the spotlight during the interviews to adapt to each interviewee's profile and experience. The topic of innovation was not foreseen but was introduced early in the interviews fieldwork phase.

Concerning interview style, in-depth semi-structured, individual, and face-to-face interviews were conducted. These interviews were conducted in a place of best convenience for the respondents. Although most interviews were conducted as previously mentioned, it happened to conduct interviews with two (two times) and even three people (one time). For instance, this happened when the interviewees were a team of science teachers who decided to be interviewed all together, embodying the way they use to work in their daily professional routine. It also happened to interview the school principal, who decided the best person to speak with on this study's issue would be his right-hand man teacher, so he participated in the interview side by side with him.

Regarding scope, the questions asked to IEC staff members, students, teachers, and parents/guardians were always based on their lived experiences rather than hypothetical or abstract scenarios. This way, we avoid vague answers. We have included more abstract questions for other respondents (school leaders, researchers, and IEC directory board and Ciência Viva national agency).

Although the sequence of the questions was previously determined, some decisions were made to get the best out of every interviewee. A few times, it happened to go back and forth on the interview guide, changing the question's order.

Ensino Particular e Cooperativo - established that these association contracts could be done also in those areas where there was enough public educational offer. Those rules changed in 2016 when the government changed from a conservative to a left-government coalition. In April of 2016, the new government issued an Administrative Norm 1H/2016 establishing that the non-governmental schools benefited by an Association contract only can receive students who reside “in the geographical area of the implementation of the offer established by the Association contract” (Queiroz; Melo, 2017: 155; Galvão 1998; OIDEL web page: <http://www.oidel.org/tense-situation-in-the-portuguese-educational-system-en/>)

4. Theoretical saturation of data

Theoretical saturation was used as a criterion for deciding on the sample's adequacy (Fusch & Ness, 2015; Mason, 2010). As study design is not universal, there is not such a thing as a one-size-fits-all method to reach data saturation. This approach has been criticized by a few authors (O'Reilly & Parker, 2013) for being an arbitrary and unclear choice and unsystematic process, with some authors asking, how can the researcher demonstrate that the saturation point was reached? Indeed, the point of saturation is either, a difficult point to identify, and a flexible notion (Mason, 2002; Fush and Ness, 2015). Although explicit guidelines for determining theoretical saturation are still lacking (Fusch & Ness, 2015; Mason, 2002; 2010) argued that data saturation is reached in a qualitative study, not precisely by quantitative patterns, such as the number of interviews *per se*, but rather by the depth of the data (2015: 1409). As recalled by Mason (2002), the sample size should help first understand the process under study, rather than represent a population, and second, should be a dynamic and ongoing practice. Hence, when the information obtained is enough to replicate the study; when new or additional information has been attained, and when further coding is no longer feasible one can say data saturation was reached (Fusch & Ness, 2015; Mason, 2002; Mason, 2010).

In what is concerned with this study, thematic exhaustion and variability and emergence of regularities were some of the indicators that made me realise the interviewing process had come to an end. Indeed, more data did not lead to new or additional information related to the research questions from a particular moment onward. Thus, no additional/relevant data could be found to develop new coding and the relationships between analytical categories. We illustrate the saturation of data in table 7.

Table 7 - Number of segments coded in interviews by category of respondents

Relevant or new information /relevant new codes	Interviews ranked by category										
	A1	B1	B2	C1	C2	D1	D2	E1	E2	E3	F1
1st interview	107	66	60	79	55	33	29	12	11	12	32
2nd interview	58	40	71	13	51	48	64		18	19	38
3rd interview	13	26	66	27	56		56		15		
4th interview	44	34	33	31	27				5		

5th interview	19		44		46				8	
6th interview	8		25		21				9	
7th interview	18				15					
8th interview					14					

What table 7 shows is the decreasing of new and/or relevant information added by the respondents during the interviews. From some point onwards, there is no new information concerning the analytical categories created so; the participants provide no further help through answering research questions. An exception to the decrease of new or relevant information is the categories D1, E3, and F1.

5. Samples

5.1. Sampling individuals

Snowball sampling was entailed to select students, teachers, school principals, IEC staff, directory board; parents; researchers from research centres; municipality; *ciência viva* national agency; Biotechnology entrepreneurs part of the group of interviewees (Table 8). The process consisted of asking well-situated informants, who would be the best person to talk to on the topics under study.

Table 8 - Number of interviews and interviewees by analytical category (convenience sample)

Category	Sub Category		Interviews	Interviewees
A – School leaders	A1	School leaders	7	8
B - Teachers	B1	Teachers	4	4
	B2	Science courses monitors	6	9
C - Students	C1	Students	3	4
	C2	Former students	13	13
D - IEC	D1	IEC directory board	2	2
	D2	IEC Staff	3	3
F – Parents / Guardians	F1	Parents	2	2
E – Other partners	E1	City council	1	1
	E2	Universities	6	6
	E3	Other partners (Biocant)	1	1
	E3	Other partners (Ciência Viva)	1	1
Total (N)			49	53

Reading the data

I have divided the information obtained through interview sessions by groups of respondents. Each group has a particular and sometimes overlapping vision of the influence of the IEC's set of activities (seminars, courses) on their schools. Nevertheless, there are several similarities in what the members of different groups think about the education system in Portugal (chapter 6), their school and the IEC courses, and its influence in school's dynamic, students' academic path, and teachers professional career (chapter 7 and chapter 8). I have drawn students, teachers, and school directors' profiles. I have analysed their personal opinion on the distinguishing characteristics of these educational practices and its effects on different scales (meso and micro scales) meaning school dynamics, students' academic path, and teachers professional career. All the interviewees have mentioned that participating in courses and other activities organised by the IEC has contributed to developing the dimensions considered crucial in transforming schools into learning organisations.

Interviewees' profile

I have split our interviewees into ten major groups, namely school directors (Group A); teachers and science courses monitors (Group B); students and former students (Group C); parents/guardians (Group F), IEC staff, and IEC directory board (Group D); researchers; *Ciência Viva* Directory Board and Municipality (Group E). We follow this section by providing a short snapshot of each one of these groups.

School Leaders (Group A – A1) (N=8)

Eight school leaders from eight different schools and school clusters¹⁷ were interviewed. 7 were male and 1 female. 5 were from public schools or/and school clusters, and 2 were directors of private schools.

These school leaders were my gatekeepers at school and helped me out finding teachers and students to interview. School directors work in only one school or a school

¹⁷ Back in 2006, Portugal reorganised its public school network around school clusters (schools of one or more education levels grouped under centralised leadership) that in 2012 represented a quarter of all pre-primary, primary, and secondary schools (OECD, 2015). The idea beyond this policy was to overcome geographical isolation, to facilitate transition across education levels, and also aimed to foster greater collaboration among teachers, improve work organisation and provide wider learning opportunities for students.

cluster in central Portugal, including districts of Aveiro; Bairrada; Anadia; Águeda. For most time of their careers, they were also school teachers.

School teachers (B1)/ Science courses monitors (B2) (N = 13)

Teachers were found to be a crucial piece in this study. Through them, I have reached students and quickly was clear to me that they were fundamental in student's enrollment at the IEC's activities. I have interview science teachers and teachers from other scientific fields such as Portuguese language, sports and physics, and chemistry teachers. This happened because teachers enrolled in the courses along with their students, depending on their interests. For instance, it happened to be interviewing the sports teacher who happened to be interested in forensic psychology, so she had enrolled in this course at her school.

I also have identified a set of common features amongst school teachers: teachers from the public (3) and private (1) schools; The 4 school teachers interviewed were female.

I have interviewed both permanent teachers and contract teachers; Teachers have more than 10 years of school' teaching experience; All of them enrolled at least in one IEC course at their school or IEC setting;

In what is concerned with the science monitors they were all young scientists with an academic background (bachelor and master's degree or PhD degree) in science-related courses, such as Biochemistry; Biology; Ecology; Pharmaceutical Sciences; Archeology; History, and Human Evolution. I have interviewed 8 female monitors and 1 male. From these monitors, 2 give science courses in private schools and 8 give science courses in public schools

Students (C1) and former students (C2) (N= 17)

Seventeen students and former students were selected based on their IEC activities, especially in advanced science courses at the IEC premises and school¹⁸.

¹⁸ Mainly, students were interviewed at the IEC main venue. However, in some cases, students were interviewed at the university where they studied by the time of the interview or, in the alternative, at a place of best convenience to the interviewee (CES premises; school neighborhood).

Most of the respondents realised how meaningful the participation in IEC activities was after some time passed. Higher levels of self-reflexivity over their schools and the importance of participating in IECs activities for their lives come after taking some time for reflection on their participation. That is why I have interviewed more former students (who have recently participated in the courses but who, at the moment of the interview, had not enrolled in any course for the coming academic year).

I have found out common features among students:

- Students have between 16 and 24 years old [attending upper secondary (4) / higher education / in the transition to the 1st job (11)];
- 6 were male students and 9 students were female;
- 6 students were in a private school, and 9 students were from the public school;
- Students enrolled in the courses to learn more – not feeling challenged by the learning process as it happens in the school;
- Students have academic ambitions;
- Students value the fact of having a competitive advantage over other school mates or university colleagues;
- Students choose university courses interconnected to health, psychology, computer science, biology, biochemistry, and chemistry [areas on which IEC courses are related to];
- Students enrolled in higher education courses of their choice (being the youngest students confident that they enrol in the course of their choice);
- Students have study habits and have a balanced lifestyle (study and leisure time);
- Students enrol in extracurricular activities such as sports, associative, and/or artistic activities;
- Students have stressed that the collaboration with the IEC helped in getting consistent study habits; defining their academic paths (choosing an academic career or a career path); and getting familiar with techniques and subjects revisited later on, at the university.

IEC Staff (D1)/ IEC Directory Board (D2) (N= 5)

The IEC's directory board was interviewed twice, and staff members (three people) were interviewed once for this study. Their contribution was precious because they gave me the hints on reaching people for the interviews and revelled me nuanced information about their work dynamics that would otherwise be hard to access.

The IEC director is Professor Arsélio Pato de Carvalho¹⁹. In 1990, Professor Arsélio Pato de Carvalho founded the Centre for Neuroscience and Cell Biology of Coimbra,

¹⁹ In 2020 the institute shifted director and professor Arsélio Pato de Carvalho is now the honorary director of the IEC. The directory board is composed by the former IEC staff.

which he directed for 12 years. In the late 1990s, he played a crucial role in setting the *Biocant park* in Cantanhede. He was a member of the Advisory Board of the Science department of the Calouste Gulbenkian Foundation (1980-2006). He was the counsellor of the Education and Scholarship department of the Calouste Gulbenkian Foundation (2006-2010). Professor Arsélio Pato de Carvalho was also Rector of the University of Coimbra (2002-2003), awarded by the President of the Portuguese Republic with the honour of the Grand Officer of the Infante D. Henrique Order (2007) and distinguished, among others, with the Prize Stimulus to Excellence in Scientific Research, awarded by the FCT (2003-2004) and the "Seeds of Science" award for his career in 2010. In 2017, he was honoured with the doctorate *Honoris Causa* by the University of Aveiro. Mamarrosa is his hometown.

City Council (E1); Research Centres (E2); Biotechnology entrepreneurs (E3) and National Agency for Science and Technology (E3) (N=9)

Overall, nine people were interviewed under this category. I interviewed the president of the municipality of Oliveira do Bairro (1); researchers from the Centre of Neurosciences of the University of Coimbra and the health department of the University of Aveiro (6). The interviewed researchers come from Coimbra's University and also from Aveiro's University. By and large, they work with science-related topics at university departments of science and health. Researchers working at Biocant park in Cantanhede were also interviewed.

The director of the national educational program *Living Science* (Programa Ciência Viva) (1) was also interviewed. Also, the I&D Manager of the biotechnology company *Crioestaminal* (1) was interviewed. An informal conversation with the director of the Gulbenkian Foundation was also included as a fieldwork note due to the relevance of the topics stressed by the interviewee on the topic of this research.

Parents and guardians (group F – F1) (N=2)

It was clear since the early beginning of the interview process that parents/guardians played an instrumental role in students' decision to participate in the IEC activities. Parents were referred to by students fundamentally as helpers, in a sense, they pick them

up after school, drop the kids on Saturday morning at IEC, and give their classmates a ride to the courses. Most of these parents organise themselves in a once a month ride to their children. As most of these kids are not independent of their parents and because the IEC is far away from their houses, children would have low chances of going to these courses without parents' arrangements. On the contrary, teachers and other classmates were often pointed out as why they started participating in the courses and from whom they have heard for the first time about IEC and its activities. For that reason, I interviewed only 2 mothers²⁰. The interviewees were two mothers who were both teachers in private schools²¹. Notwithstanding their role as teachers, they were both interviewed bearing in mind their leading role as mothers of children who participated in the IEC's activities.

5.2.Sampling organisations

I selected an information-rich sample for studying in-depth, in the same terms as what Patton (2002), Mason, 2002, and Bryman (2012) would call as *purposive sampling*. I selected a case from which I firmly believe we can learn from central issues to this study's purpose. The case selection is based on its relevance to the research questions, the researcher's theoretical position and analytical framework, and perhaps the most important, the argument and explanations developed within the study (Mason, 2002; Patton, 2002). Studying these information-rich cases, rather than yielding insights for generalization, gives an in-depth and thorough understanding of this specific context. Thus, due to the impossibility of interviewing all schools of the so-called network, at one point, I had to decide which schools would be considered for this study. Two main criteria were elected to be the foundation underneath the institution's choice: Heterogeneity (in terms of length of partnerships with the IEC, spheres of action and mechanisms of action and location) and the accessibility to these institutions: availability of people and distance.

²⁰ Parents Associations were contacted yet it was not possible to interview none of its members in due time.

²¹ They were both very concerned about the uncertainty of the future of their schools due to the implementation of significant changes in the private schools funding policy, previously mentioned.

Heterogeneity in terms of length of institution-IEC partnerships comprises the durability and the strength of these relations. Selecting institutions with links established in diverse periods to the IEC allowed me to cover different partnerships. For analytical purposes, I considered a long-standing partnership (P1) those links which are consistently running from the first, second, or third year of IEC's formal constituency (2009, 2010, 2011) up to 2017. The medium-term partnerships (P2) were established on the 4/5th year (2012 and 2013) and last until 2017. Recent partnerships (or P3) were formally established last year or in the previous year (2014 or 2015) maximum. Twenty out of fifty-three interviewees belong to the group of schools/ institutions with partnerships from the first kind (P1) (N=20), followed by thirteen interviewees from schools/ institutions enrolling in partnerships from the second kind (P2) (N=13) and seven interviewees belong to schools'/institutions partnerships of the third kind (N=7).

Nevertheless, the type of partnership established, all institutions were characterised bearing in mind their sphere of action: schools and school's groups (12); higher education/ research centres and universities (4); public governance (2). The second criterion was to have institutions with different action mechanisms: private (4) and public (9) institutions. Third, institutions' location was also considered, since I wanted to have represented schools from urban and non-urban locations. The fourth criterion was accessibility in terms of availability of people from these institutions to be part of this research, but also the distance of these institutions so that it would be feasible for me to go there often. The institutions covered by this study are listed below in table 9. In table 10, we have grouped schools by the type of partnerships established with the IEC, being P1 the partnerships established between 2009 and 2011; P2 are the partnerships established between 2012 and 2013, and finally, P3 are the partnerships established between 2014 and 2016. We only considered partnerships established until 2017. Figure 2 represents an overview of the IEC partnerships grouped by type of institution and the kind of partnership (Figure 2).

Table 9 - Institutions covered by the research

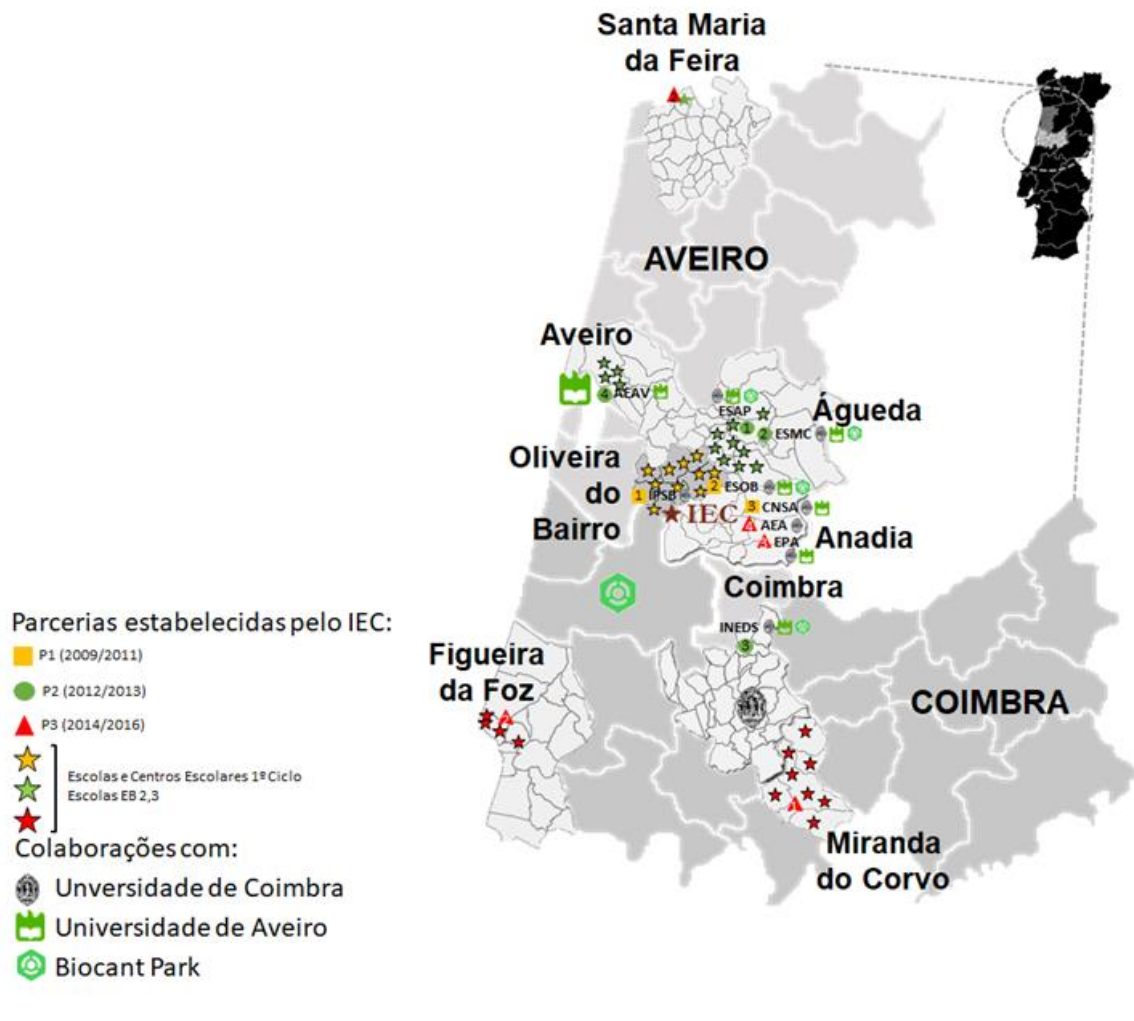
Institutions	N
Instituto Social de Bustos	7
Instituto Educativo Souselas	8
Agrupamento de Escolas de Oliveira do Bairro	6
Instituto de Educação e Cidadania	5
Escola Secundária Adolfo Portela	4
Centro Neurociências UC	3
Agrupamento Escolas Águeda Sul	2
Colégio Nossa Senhora da Assunção	2
Departamento de Ciências da Saúde Universidade de Aveiro	2
Criostaminal - BIOCANT	1
Agrupamento escolas Figueira Mar	3
Câmara Municipal Oliveira do Bairro	1
Colégio Santa Eulália	1
Agrupamento escolas Miranda do Corvo	2
Escola Profissional de viticultura e enologia de Anadia	1
Agrupamento de Escolas de Anadia	3
Agência Nacional Ciência Viva	1
UC-Biotech	1
Total (Válido)	53

Table 10 - Schools grouped by type of partnerships with the IEC

P1 2009/2011	P2 2012/2013	P3 2014/2016
Instituto de Promoção de Bustos	Escola Secundária Adolfo Portela	Agrupamento de Escolas de Miranda do Corvo
Agrupamento de escolas de Oliveira do Bairro: Escola básica EB2/3 Dr. Acácio de Azevedo Escola Básica Integrada Dr. Fernando Peixinho Escola Básica de Oliveira do Bairro Escola Básica de Bustos Escola Básica de Mamarrosa Escola Básica de Troviscal Escola Básica de Vila Verde Escola Básica Oiã Nascente Escola Básica Oiã Poente Escola Básica da Palhaça	Agrupamento de Escolas àgueda Sul: Escola secundária Marques Castilho Escola Básica Aguada de Cima Escola Básica Aguada de Baixo Escola Básica Fermentelos Escola Básica Barrô Escola Básica Travassô Escola Básica Espinhel Escola Básica Óis da Ribeira Instituto Educativo de Souselas	Agrupamento de escolas Figueira Mar: Escola básica de Serrado Escola básica D.Pedro Escola básica do Castelo Escola básica de Vila Verde
Colégio da Nossa Sr.^a da Assunção	Agrupamento de escolas de Anadia:	Colégio de Santa Eulália do CASTIIS
	Escola básica de Anadia	Escola profissional vitivinícola de Anadia
	Escola secundária de Anadia	Agrupamento de escolas de Anadia

	Agrupamento de escolas de Aveiro:	
	Escola secundária Homem Cristo	
	Centro Escolar Santiago	
	Centro Escolar Barroca	
	Escola EB1 Vera Cruz	

Figure 2 - Map with the Partnership by Category



5.3.Sampling documents

Documentary analysis was used to identify the main actors, strategies, and events across time, providing an overview of the issues raised by the municipality, the IEC, schools, and the major national guidelines. Simultaneously, I also included a literature review of the learning organisations and collaborative learning framework in Portugal. This was revealed to be a useful step to frame the case study within the national

context. Documents were not used in isolation, but as a complement to fully understand the narrative build through verbal and visual means. This is the umbrella term to mention a wide range of written, visual and physical material produced by or/and about the Institute of Education and Citizenship (IEC) relevant for the study at hand. The idea was to capture its communication to the exterior; its internal communication and the texts produced by external agents (regional and national newspapers) about the IEC. On the whole 61 “documents” were analysed.

Overall, the category “documents” includes articles, newspapers, historical documents, leaflets, reports, promotional material, course schedules, mission statements, IEC homepage, and journalistic accounts. This task also entailed analysing course programs, didactic materials, and relevant pedagogical tool kits on science produced by the institute. Besides, I have looked for public record documents in the following forms: notices sent home to parents; memos amongst staff and monitors; formal policy statements regarding parents' and students' involvement; official records of parent attendance or presence at IEC meetings and/or public sessions. Moreover, I have analysed national programs such as *Ciência Viva* and *Living Science School* network to picture the broader scenario of science education programs at the national level.

Although several documents (promotional materials) were consulted and analysed outside the institute assets, most of the documents were for internal use and needed to be analysed at the institute assets due to the impossibility of bringing the documents outside. After assessing the accuracy and nature of documents, a system for coding and cataloguing them by themes was put into action. The same system of coding used for the interviews was used for analysing written text. Thematic analysis (Jennifer Mason, n.d.) was carried out to analyse written information to verify theoretical relationships.

6. The coding process – interviews and written documents

Based on the theoretical background of CLC and SLO, I divided data into categories. Categories are understood in the same way as Spencer; Ritchie and O'Connor (2003) put it: “(...) ways of grouping, displaying and discussing data thematically such

as comparisons between conceptual content be made or further lines of inquiry pursued (Spencer, Ritchie & O'Connor, 2003: 205)".

Thematic categories relate one piece of information with one concept in analytical theory and are, therefore, the indicators. The coding system by themes and sub-themes was used for all sorts of documents, entailing an extensive categorising of the selected information. In the end, twenty-eight node codes and forty-seven sub-codes were generated, and cross-check codes from interviews and documents. The coding process included identifying general themes and subsequent sub-themes within the transcription and combining the transcribed information and general themes. The first step (after the transcription process in the case of an interview) was linking codes/thematic dimensions to the paragraphs transcribed. This procedure of attributing codes to each material set is repeated in other material types like newspaper articles, supporting materials, and field notes. After gathering a consistent group of fieldwork materials coded, it is already possible to determine a group of main issues derived from the leading empirical indicators identified in the fieldwork materials.

Finally, I created an extensive process of categorization of the selected information. The list of codes was continuously reviewed as more interviews, and other documents were coded. The codes were verified by being applied to further interview transcripts, but most of the time stayed alike. More details on the coding process can be found in the coding manual (Appendix II). Besides the cross-sectional indexing, I have also used non-cross-sectional coding (holistic archiving) to build explanations based on both ways of "slicing" the data set. This process was important because it was a *reflexive practice* (Mason, 2002: 167; Spencer; Ritchie; O'Connor, 2003: 205).

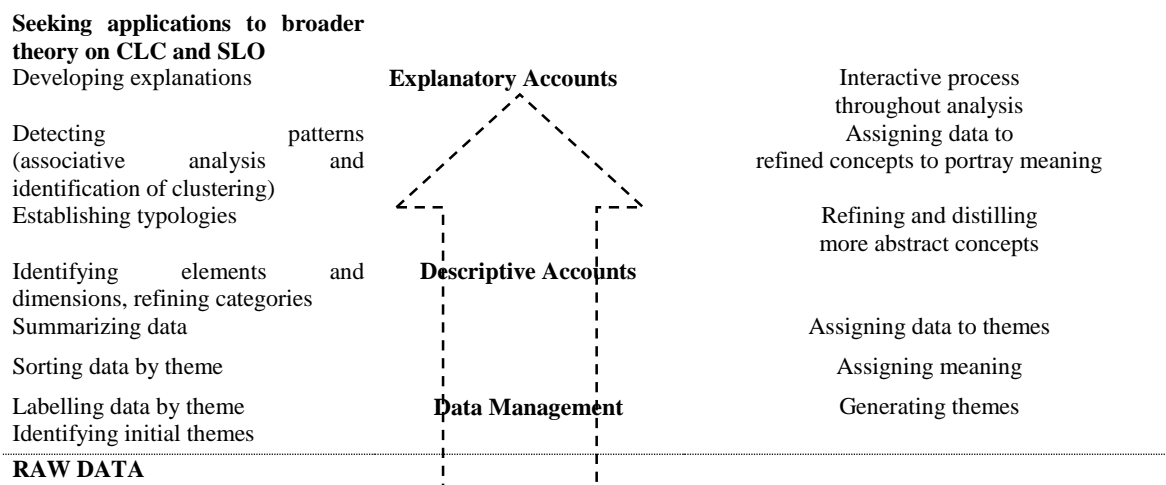
7. Analysing data

According to Spencer, Ritchie, J. & O'Connor (2003), the analytic process requires three forms of activity: *data management* in which the raw data are reviewed, labelled, sorted, and synthesized; *descriptive accounts* in which the analyst makes use of the ordered data to identifying key dimensions, map the range and diversity of each phenomenon and develop classifications and typologies; and *explanatory accounts* in

which the analyst builds explanations about why the data take the forms that are found and presented. Indeed, data analysis was based on an interpretative or reflexive reading (Mason, 2002) in a sense it evolved me in the constructing or documenting a version of what I think the data meant and represented for the interviewees and made me infer from them. My concern was to capture interviewees' interpretations and understandings and balance those versions with my interpretations. As Mason recalls a reflexive reading locate the researcher as part of the data he/she has generated, and seek her/him to explore their role and perspective in the process of generation and interpretation of data (Mason, 2002: 149). Or, in Burawoy's (1998) words, a reflexive model of science is "a model of science that embraces not detachment, but engagement as the road to knowledge (Burawoy, 1998: 5).

I have applied the analytic hierarchy developed by Jane Ritchie and Jane Lewis, (2003), which refers to how qualitative 'findings' are built from the original raw data. This scheme helped me not lose ground while undertaking different analytical tasks and helped me gain an overview and make sense of the data (figure 3).

Figure 3 - The coding stage in the cross-sectional analysis in a qualitative analysis based on interpretations of meaning (Adapted from Ritchie and Lewis, 2003: 212)



Methods of triangulation of data sources were applied to guarantee the validation of data. The findings' consistency was double-checked, and I have established converging lines of evidence called "triangulating evidence" (Yin, 2012) to make the findings as robust as possible. For instance, this process embraces checking what happened or what was said in a specific meeting with different elements on the same occasion. This process

was also crucial in the task of avoiding only to have access to what Yin (2012) called “institutional mantra”, i.e., the official discourse developed over time for speaking with outsiders (such as researchers, press, funders) that may not represent neither the practices developed by the institution nor the real participant’s feelings and perspectives. Making direct observations and using multiple sources of evidence turned out to be utterly necessary to reassure that the information acceded was as spontaneous as possible.

Results were approached by combining methods and data, thereby overcoming the weakness of single approaches. To reach this goal, I have compared and cross-checked the consistency of information derived at different times and by different means. I have followed the criteria suggested by Patton (2002: 559), namely:

- A) Comparing observation and field notes with interviews;
- B) Comparing what people say in public and in private;
- C) Checking for the consistency of what people say about the same thing over time;
- D) Comparing the perspectives of the different groups of interviewees on the same topic;
- E) Checking interviews against official programs and documents and other written evidence can corroborate the interview respondents' report.

Comparing all this information (content analysis) allowed me to identify argumentative and explanatory patterns that would be part of this study's narrative. This is not meant to suggest that coding was a synonym of analysing, nor that data was displayed in a form that was ready for analytic commentary. What is relevant to say is that using qualitative data analysis software was of great help in analytical support, i.e., coding, memo writing, data linking, search and retrieval, data display, and graphic editing.

For this study, a word processor, *Microsoft Word*, and the qualitative analysis software MAXQDA (V12) were used. The MAXQDA software has significantly facilitated organizing, re-arranging, and managing the considerable amount of data. For instance, after coding all interviews, the passages were compiled in specific codes to be printed out. In the same manner, searches for specific text strings could be conducted across all the interviews, and relevant paragraphs containing the searched string could be compared. The use of this software considerably assisted reflection on data and connections between the data.

8. Ethical Issues – a self-reflexive account

This study results from my planning and reasoning, where people who are part of the dynamics under study did not have a word to say concerning research design, data analysis, or concluding. To some extent and until a certain point this was a participatory exercise. I am referring to the process of asking people involved their opinions on the topics studied and the best strategies to reach people I wanted to interview, for instance. What is more, I have made part of countless events, and this study benefited very much from their comments and thoughts on the topic under study. However, the development of complete participatory research was not carried out (Bryman, 2012; Chevalier, J.; Buckles, 2013). To overcome this, I have engaged in a dynamic of proximity with my informants and participants. This means I have established a close relationship with participants from the Institute of Education and Citizenship which turned out to be crucial to avoid the sense of detachment between researchers and participants (Shulamit Reinhartz, 1983).

Moreover, this revealed to be essential to avoid falling into the traditional unbalanced power relation. To entail a dialogue with participants, I opted to reveal full details about the thesis and the topics under study. The research design was presented in the IEC premises in two public events open to everyone interested in it. I have always disclosed my research goals and the research scope to all the participants and entailed a dialogue with them to be a learning and knowledge-sharing moment for everyone.

A presentation of preliminary results was also carried out at the Gulbenkian Foundation as part of a seminar on innovation in education carried out in May 2018, wherein several teachers and school directors who were interviewed for the research were present. The concern of balance my active engagement and participation and maintaining a critical overview of the practices under study has been present through the PhD research, as the fieldwork notes witness:

I feel that being involved in activities may somehow take me away from the focus of critical observation. However, at the same time, participating in activities makes me better understand the meaning of actions and individuals' experience from their perspective. (fieldwork diary, 12.06.2013).

I cannot forget to maintain a critical distance from the field (fieldwork diary, 13.05.2017).

The second concern relates to recognising that all knowledge is situated knowledge (Haraway, 1988; Harding, 1991). In practical terms, this is to say that all information gathered was considered relevant and valid in those terms, and the result of this research is my view of the events, based on my interpretation of data. Wherein a political position is assumed: collaborative learning practices, participatory processes, and exchanging knowledge arrangements are challenging schools' community and are contributing to the democratization of knowledge and power and restructuring learning territories.

The third concern relates to the fact that this thesis results from a Portuguese researcher working in and about Portugal over materials in Portuguese, which are presented in English. After collecting the materials, I faced the challenge of representing my interviewees in English, without compromising the original meaning of their words. I first translated the quotes. The complexity of this task is well known (Eco, 2003; Venuti, 1998) and the dilemmas associated with this are widely acknowledged (Temple & Young, 2004) as well, and essential methodological, epistemological, and ontological questions bloom. In Temple and Young (2004) words:

(...) methodological and epistemological challenges arise from recognising that people using different languages may construct different ways of seeing social life. The relationships between languages and researchers, translators, and the people they seek to represent are as crucial as issues of which word is best in a sentence in a language (Temple & Young, 2004, p. 164).

All these approaches to knowledge and how it is produced, acknowledge that my location within the social world influences how you see it.

The fourth concern was the fact that many interviewees were young adults and students. Apart from a detailed explanation of the study and the guarantee that everyone could suspend their participation at any point in the research, a consent form was asked to be filled in by parents/guardians to authorize their participation in the study. All students were interviewed outside school facilities and have signed a consent form where all the conditions under which this research is being developed were explained and the research goals and purpose (Appendix I).

Chapter 5 – The Institute of Education and Citizenship and the growth of an interconnected Learning Living System

Introduction

In the previous chapter, we have presented the methodological research strategy, and we have elaborated on how this strategy has guided data collection and analysis. In this chapter, we intend to demonstrate how a single-case study can be the basis for significant explanations that can be useful in other contexts. To do so, we start by presenting why we have chosen to enrol in case-study research (Section 1). As our purpose is to reach a deep understanding of a single case study set in their real-world context, we consider this would not be fully understood otherwise. Afterwards, in section 2, we introduce and describe the case study and its context and its units of analysis in the form of a case report. This is a way of emerging at a micro-political level and, consequently, providing the reader with a deep insight into the interactive, strategic, interpretive, negotiable and collaborative aspects of IEC's practices, interpretations, and effects the regional scene. In this section, we also shed light on the reasons for choosing the Institute of Education and Citizenship (IEC) as the unit of analysis in studying collaborative learning practices towards the democratization of knowledge/power over knowledge. On the other hand, we propose to describe the broader context to frame in-depth examinations of a subject of study. The case report resulted from data analysis that linked study propositions to research questions.

Throughout the entire chapter, we justify having chosen a single case study to remark the singularity and uniqueness of the subject under study and the richness of the study findings and explore the IEC practices and its influence in a real-life context.

We close the chapter by discussing the meaning of educational innovation for interviewees, and its implication on how this community challenges traditionalistic perspectives on learning. Innovation is not a new topic in the educational field but continues to be a subject widely discussed (OECD, 2015; OECD, 2013a; Serdyukov, 2017; Owen, 2014). Although educational innovation is not central to our research, the concept assumed for the interviewees became evident to us during the fieldwork stage. Almost all interviewees talked about the innovative character of the learning experience or the obstacles to innovation at schools. Furthermore, the concept of innovation has been analytically useful to explain the learning community's contours, practices, and

boundaries. Indeed, it has been crucial to relate the learning community to other learning experiences.

1. Justification for choosing a Case-Study Research

Case Study research is very prevalent in the education field of knowledge, and literature has significantly expanded in the last few years²². Although, the subtopics can vary greatly, what makes a case study in education is their focus on questions, issues, and problems broadly related to teaching and learning (Merriam Sharan, 1997). Some authors focus their understanding of how case is defined or delimited - as a subject of study - (Stake, 2005; Savin-Biden and Major, 2013). “The case” is under this understanding, the object of study: a school, a university, or the science’s laboratory where a particular teaching practice is happening. “The case” can also be an individual, for instance, a child or the school director or other school staff. Differently said, a case study is where to draw the boundaries around a study (Savin-Baden and Major, 2013: 152). Other authors focus on the specific approach to research that characterized the case study as a research method, as more than just how to delimit the study (Creswell, 2005; Yin, 2003). For authors such as Yin (2003, 2011), a case study is a research approach. Yin, defines a case study as “an empiric enquiry that investigates a contemporary phenomenon within its real-life context where the boundaries between the case and the context are not perfectly clear” (Yin, 2003: 13).

Savin-Baden and Major's (2013) proposal is that a case study is none of the previous extremes, yet it is all of them. “A case study is an approach to research that focuses on a specific case. It employs case study research methods that draw upon other research approaches” (Savin-Baden and Major, 2013: 154). From their perspective, which we agree with, researchers should understand these three perspectives in a multifaceted way and work with the three altogether. Researchers must understand the

²² A case study was introduced in the field of education studies by educators such as Simons, (1980); Stake (1995); Stenhouse (1988); Yin (1989 [2003]), who undertook case study research at schools during the 70s and 80s. Much of these works focused on the biographies of those involved in schools and were firmly based in narrative and more often than not focused on evaluation.

concepts of the case, case study methods (and how they differ from other qualitative methods), and the case narrative.

Although the differences understand what developing a case study research means, a consensus is reached when defining common features that support its definition (Bryman, 2012; Merriam, 1997; Yin, 2003, 2011). A case study tends to be a bounded entity, which means it is focused and intensive and narrow in scope. It has clear boundaries, and there is a finite number of people to interview, a limited number of documents to review and analyze, and a finite number of observations to be made (Savin-Baden; Major, 2013). A case study is also holistic in its approach, meaning that it seeks to describe the whole case alongside the relationship of the parts to the case (Yin, 2012). It is particularistic as it focuses on the particular rather than the general, and contextual because it is necessary to account for the context whether historical, social, cultural and economic (Yin, 2003, 2011, 2012). Finally, it is concrete in its descriptions so that meaning about the case can be conveyed to readers (Savin-Baden and Major, 2013). Indeed, case study research goes way beyond the analysis of isolated variables. For this reason, case study data is very likely to come from multiple sources of evidence and provide detailed descriptions from where insightful explanations can arise. Again, in Yin's words "the case study's strength is its ability to deal with a full variety of evidence – documents, artefacts, interviews, and observations – beyond what might be available in the conventional historical study" (Yin, 2003: 7, 8).

The purpose of a case study is not representing the world, but to represent the case itself. Hence, a case study is intended to portray, analyse and interpret the uniqueness of real individuals and situations within specific contexts through accessible accounts and to present and represent the reality (Cohen, et al., 2000: 79). Adelman (1980) would say that a case study is "an instance in action". The "single instance" is of a bounded system, a class, a child, a school, a community. For this reason, the case study emphasises a detailed contextual analysis of a limited number of events or conditions and their relationships.

Our point of departure for a broader reflection on collaborative learning practices in the education field is the *Institute for Education and Citizenship* (IEC) - an institution of non-formal education that functions as an intermediary between schools, universities, research centres, and the community in which it is based. IEC is located at the parish of

Mamarrosa, at Oliveira do Bairro municipality, in the central Portugal region. Beyond its function as an institute of popularization of Science, IEC portrays itself as:

An intermediate in the role of promoting the integration of science in general education in schools and communities aiming at producing strategic educational change at schools, in close collaboration with universities and scientific research centres (IEC organic statute 2013; 2015).

Thus, their primary focus is on the educational process, especially within science-oriented studies, and on individuals' engagement to specific local/scientific problems in which a set of skills, knowledge, and values can emerge²³. By and large, the IEC claims for a new structure for community-based learning and research, leveraging the democratization of schools-community-university partnerships.

The first specificity of this case would be the compound and multifold nature of the IEC. Thus, and despite being the central unit of analysis, I also have nested units within the central unit, “embedded sub-cases” (Yin, 2009, 2011; Patton, 2002). These “embedded sub-cases” represent the connections established amongst our subject of analysis and its partners: the schools, the municipality, the universities, and the research centres acting within the overall holistic case.

On-site research of the case involved A) observing (structured observation and participant observation); B) informal talking and interviewing people (in-depth semi-structured, individual and collective interviews; C) and examining written documents (desk research). Using these methods simultaneously turned out to be essential to this research because this combination made me able to validate findings and cross-checking information (Mason, 2002). The second specificity of this study is its research questions’

²³ The activity of the Institute of Education and Citizenship focuses primarily on issues related to education. The education of experimental sciences assumes, in the studied period, a fundamental centrality for us to understand how the IEC itself understands the issue of citizenship. In fact, the dimension on citizenship was not the chosen angle to develop this investigation. Instead, we focus on how the educational and teaching/learning processes developed by CLC have contributed to a broader understanding of the role of the collaborative learning community on the creation of a learning open system that produces effects in individual and collective terms. This was the dimension that, either through the fieldwork phase proved to be central in the activity developed by the collaborative learning community. However, it is still relevant to understand the meaning of the concept of citizenship behind the IEC actions (and also for the other members of the collaborative learning community). There is an understanding of citizenship as practice, in the sense referred by Osler, Audrey (2010) “The everyday citizenship engagement in which each individual can participate, in working alongside with others to make a difference (Osler, 2010: 114). In this way, citizenship is a everyday political, social, economic, and cultural activity in which people engage voluntarily to shape the community, locally, but also nationally or globally. Scientific knowledge is, in this sense, fundamental for the creation of critical, informed citizens, engaged with contemporary problems, of global or local dimension.

nature. According to (Yin, 2009) if we want to address either descriptive question “What is happening?” and/or “In what ways?”, or explanatory questions, i.e., “

How” and “*Why*” questions, as is the case, we benefit from embracing in a case study methodology (Yin, 2003, 2009). In fact, “why?” and “how?” were very much the driving force behind this research. Research questions were linked to data sources and data generation methods based on Jennifer Mason's (2002) (table 5, chapter 4). The case study method is also the preferred method when the researcher wants to know the impact or the effect of something /someone over something, i.e. “the impact or effect of an action or behaviour” (Yin, 2009). As this research intends to know the contribution of one institution over collaborative learning practices amongst the CLC, but it is difficult to separate the phenomenon’s variables from its context (R. Yin, 2009, 2012), the case study method seems to suit particularly well the research goals of this research.

This CLC is putting in close dialogue institutions, and people with effects in how knowledge is shared within the community. This dialogue has resounding effects on individual learning processes and collaborative learning practices of different education agents. We propose to study if this experience has encouraged the emergence of new learning dynamics at schools and whether it has a leverage effect on collaboration, agency and mutual learning.

The analysis of this case study raises questions that are central to this work. On the one hand, it challenges us to think through collaboration as an “organisational norm” – i.e. a set of rules that regulate the organisational structure, organisational interaction, and interrelated organisation functions. On the other hand, it helps us rethink the emergence of new participatory subjects: students/teachers and other intermediaries as non-formal institutions (IEC) and formal institutions (such as universities) in the network. We want to understand whether those in action are challenging, producing emancipatory practices and if these new learning dynamics are empowering institutions (schools) and people (students and teachers).

By and large, this case study provides the materials that allow drawing a matrix of analysis to support a deeper understanding of collaborative learning practices, collaboration processes, and exchanging knowledge arrangements that are challenging learning environments. This research's principal statement is that for the right of education to be imbued with meaning for all, conditions for people's participation in determining their educational requirements need to be created. This study stands for the

expansion of knowledge co-creation and agency; and for democratizing schools. In the end, we expect to offer an analytical overview of how IEC's approach is offering an innovative model to address these issues through the establishment of a collaborative learning community.

The question that drove data collection uncovered the Institute of Education and Citizenship (IEC) role in implementing educational and organisational practices based upon collaboration, participation, and knowledge co-creation towards schools' transformation. Due to the IEC's compound and multi-folded nature, and although it is the central unit of analysis, we kept a holistic approach (Yin, 2003). Hence, the holistic case is expected to provide input to discuss how collaboration and exchanging knowledge networks can influence public policies, reconfiguring participation/cooperation as an "organisational norm". We also want to understand how collaborative educational models are being implemented in Portugal and what kind of obstacles do they have to overcome in the national context to flourish and sustain a significant practice in Portugal.

While the results of a case study are not generalizable in the classical sense, it is argued that findings from a single case can be 'related to' (Bassegy, 1999), 'transferred to' (Guba & Lincoln, 1989), or 're-contextualized' (Morse, 1994) to other like contexts. Here, although the case we present is intrinsically interesting, we conclude and provide insights that we believe are of broader relevance.

The validity of case studies is determined by the reader, based on the study's evidence. Case studies do not possess the tools that other forms of research enjoy when judging its quality. Nevertheless, they should abide by the canons of validity. We have employed accepted definitions, used multiple sources and forms of confirmation to address research questions (e.g., triangulation of data), and established a chain of evidence, such that every step taken during fieldwork could be tracked. Besides, we have clarified the context, theory, and domain to which our case studies' contributions could be helpful. We have also used and established a strict procedure with the documentation and developed a case study database. Together, these tactics guarantee that results are consistent with the data collected and help to trace the route by which we came to data interpretation.

2. Case Study Report

2.1. Introduction

As previously mentioned, this case study report aims at providing information and analysis on the creation of a Collaborative Learning Community (CLC), a particular approach in exchanging and co-producing knowledge and in developing capacity building mechanisms through collaborative learning practices. This case study is an example of a collaborative learning community facilitated by the Institute of Education and Citizenship that brings together schools, research centres from different universities; biotechnology companies, local museum centres, and the municipality of Oliveira do Bairro.

We have chosen the Institute of Education and Citizenship and the institutions that collaborate with it, not because they are exemplary, but because they are examples of a local, collaborative bottom-up strategy of change in education in a rural area of central Portugal. Schools, along with the municipality and the IEC, sought to overcome the social determinism and a set of previously locally identified educational challenges. As we argue throughout this section, due to the IEC role of facilitation, capacity building mechanisms have been improved for the members of the network and knowledge-exchanging mechanisms has been put in place, and have improved learning of its members.

This report describes the nature of the case itself, its background, the setting where the case is bounded, important broad context information concerning social, cultural, and economic issues that can influence the case and the partners through whom the case may be known. This report is also based on the conjugation of different data sources, organised throughout the fieldwork phase, as described in the previous chapter. Triangulation of sources brought richness, breadth, and depth to the analysis. Data included testimonies from people who directly work with the IEC or actively participate in the IEC's activities - embedded level (Yin, 2012) - and written information (Reports; News; Official Documents). The embedded level represents all the nodes and connections established amongst our subject of analysis (IEC) and schools, municipality, and research centres linked to the subject of analysis and act within the overall holistic case. The concept of nested sub-cases or embedded subcase (Yin, 2003) gives us the

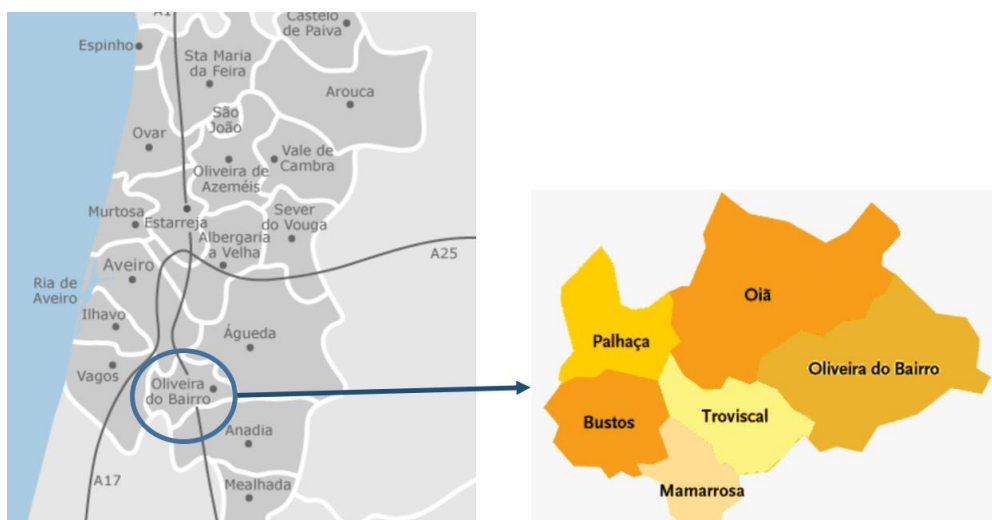
sense of a subunit fitting in with a larger unit, rather than it being implanted there (Thomas, 2011: 152). All in all, carrying out a case study research method allowed me to emerge at a micro-political level in education, which I believe provided this research with a deep insight into the interactive, interpretive, and conflictive/cooperative aspects of collaborative learning practices.

2.2. The unit of analysis

2.2.1. The context – the municipality of Oliveira do Bairro

Oliveira do Bairro is located in the NUT II - Central Region and NUT III – Baixo Vouga, belonging to the district of Aveiro. It is limited to the north by Aveiro, Northeast by Águeda, Sudeste by Anadia, by Cantanhede to the south, and by Vagos. It is characterised for being a small county which, along with Bustos and Troviscal, composes the Parishes Union of Bustos, Mamarrosa, and Troviscal (Figure 4).

Figure 4 - Map of Oliveira do Bairro and correspondent parishes



Back in 2005, among the initial concerns in the field of education in OB, we would find the existence of schools in a highly degraded state; high rate of pupil failure; a limited supply of vocational training; disruption of educational programs and projects carried out at the county level; high rates of unemployment; high rates of illiteracy amongst the population; high school dropout rates and low rates of students entering in higher education. After making the diagnosis, Oliveira's municipality do Bairro established that the municipality's primary goal would be to develop measures that could tackle the flaws indicated above. To accomplish these goals, it was proposed to build a new educational project for the municipality. Since then, *Oliveira do Bairro* elected education as the main priority of the municipality. This entailed modernizing all school buildings in the municipality, incrementing preschool coverage in the entire municipality, and creating a new educational project for the district to be led by the new department: Division of Education of the municipality of OB (CMOB, 2007)²⁴.

The role of the central government and, at certain levels of education, of regional government should be, according to the education charter of OB (2007), the “democratization of education and the provision of all conditions for it, carried out through the school and other forms of training, contribute to equal opportunities, overcoming economic, social and cultural inequalities (...) and for democratic participation in collective life (Education Charter of Oliveira do Bairro, 2007; Strategic Plan of OB, 2007).

A critical moment for the educational policies at the Oliveira do Bairro district is applying the transference of responsibility for the elaboration of the school charter and the strategic education plan. The Law no. 159/99 of September 14, no. 2 of article 19, transfers from the Central government to the Municipalities the responsibility for elaborating the Educational Charter²⁵. The OB *Educational Charter* and the *Strategic Plan for Education*²⁶ are currently understood at the municipal level as an instrument for future planning of educational equipment and buildings to be located in the municipality,

²⁴ CMOB (2007), Education chart of Oliveira do Bairro.

²⁵ The terminology of *School Charter* changed by Decree-Law no. 7/2003, of January 15, for Educational Charter, but more than that is understood as a planning document, complementary to the PDM (Plano director municipal).

²⁶ The Strategic Plan for education of the municipality of Oliveira do Bairro (2015) is a document guiding the municipality in the field of local education policies and is replacing the previous municipal education project.

according to the education/training needs to be met, to better educational resources, within the framework of the socio-demographic development of each municipality²⁷. This document's guiding principles are interconnected to civic participation in the educational field and calls for the mobilization and participation of the educational community.

The process of creating the Municipal Educational Strategic Plan of Oliveira do Bairro (MESPOB) was part of this dynamic of strengthening municipal responsibilities in the education sector to widen the spaces of citizens' participation. The MESPOB intends to identify the strategic axes to be developed in the territory in the next five years, identifying priority areas. To achieve the proposed objectives, the document counts on the active participation of all: citizens of the municipality, in general, members of schools and other public and private educational entities, associations, and local structures of local government and others.

It is worth mentioning that the municipality of Oliveira do Bairro (OB) and the school cluster of OB are amongst the small group of schools that first became part of the pilot project of decentralization/municipalisation of education in the country. Indeed, since the academic year of 2009/2010, only about 30 schools had been granted an autonomy contract by 2010. Oliveira do Bairro school cluster took part in the decentralizing experience. In 2015, from the 308 Portuguese districts, only 15 made part of this nationwide pilot-project, including Oliveira do Bairro. 2017 was the year in which the autonomy and curriculum flexibilisation project in primary and secondary education took ground nationwide. The national curriculum as a flexible project (Decision no. 5908/2017; Decree-Law no. 55/2018) means that it needs to be meaningful for different schools and students. This policy encourages teachers' use of practices that take into account students' previous knowledge, interests, rhythms and learning styles, and life experiences to promote learning and achieve the desired student profile (Decision no. 6478/2017) at the end of compulsory schooling (Leite, Fernandes, & Figueiredo, 2020). As a pedagogical experience, this pilot project is to be implemented to cover public and private establishments whose management, administration, and management bodies are interested in its implementation. The project aims to improve learning and allow the curriculum's management in a flexible and contextualized way. Schools opted to be

²⁷ Article 10 of Decree-Law no. 7/2003, of 15 January.

granted more autonomy by signing an autonomy contract with the Ministry of Education (Despacho n° 5908/2017; Diário da República, 2ª série, - N° 128 – 5 Julho de 2017). Conditions to be granted an autonomy contract include undertaking a self-evaluation and receiving a positive external school evaluation. These contracts permit the consolidation of autonomy in a pedagogical organisation, curriculum organisation, human resources, school social support, and financial management.

In addition to greater devolution of responsibility to local educational authorities, schools have been granted additional responsibilities in recent years. While levels of school autonomy remain modest compared to other OECD countries (OECD, 2014), new areas of responsibility include hiring part of the teaching staff (on fixed-term contracts, trainers for vocational courses), the organisation of enrichment curricular activities, curriculum management procedures to fit own circumstances, and the selection of textbooks from a list certified by the Ministry (OECD, 2012).

According to the Mayor of Oliveira do Bairro, the IEC is considered a project that helps to differentiate the municipality from the rest at the national level through the network of partnerships that makes it possible; for the grants and funding he gets; for its direct relationship with Ciência Viva at the national level and because it is a complementary institution to the school network, and it also allows schools in different municipalities to create relationships between themselves.

2.2.2. The Mamarrosa parish

Mamarrosa is a civil parish in the municipality of Oliveira do Bairro (OB). There are 23028 people in the municipality of Oliveira do Bairro, being most of them at the city of Oliveira do Bairro (INE, Censos, 2011). With 1406 inhabitants, Mamarrosa used to be considered one single parish, but in 2013 due to territory reorganisation, Mamarrosa is attached to Troviscal and Bustos parishes²⁸. Together these three parishes form one parish union with approximately 6430 inhabitants (INE, Censos, 2011). Mamarrosa (1406 inhabitants) is the poorest and the smallest (6,32km²) from parishes' union. Most of its inhabitants work outside the parish, and 11, 27% of people in Oliveira do Bairro are unemployed (INE, census 2011). Mostly, people in Mamarrosa shifted from

²⁸ União de freguesias - <http://www.uniaofreguesiasbtm.pt/>

the primary sector to the secondary and tertiary sectors²⁹. The fact that Mamarrosa is located between two capitals of the district (Coimbra and Aveiro) has little effect for the moment in terms of literacy achievements, especially in scientific literacy. According to the IEC's director, in a peripheral context that is being considered of profound social and cultural inequality compared to urban centres, "schools are being a privileged agent of social reproduction". One can read from the IEC activity report:

"The IEC is located in a context believed to be of deep social exclusion that results in part from 'low education, lack of information and lack of self-confidence'. This scenario is believed to help to maintain a logic of social and cultural decapitalization of local populations with consequences that are felt across generations: it has created a vicious cycle that is transmitted from generation to generation and that happens even in children at the school age. The school itself is responsible for perpetuating the vicious cycle of exclusion, because physical and pedagogical conditions are deficient and there is disconnection among family, community, and school, and the school ends up reproducing society." (IEC Annual Activities Report, 2009).

Thus, social and cultural context within the IEC sphere of influence is seen as an exclusion context for exercising "*active citizenship*", mostly due to a long low education tradition. On the one hand, the lack of scientific literacy and school failure are considered by key stakeholders as significant problems wherein the IEC is placed, with consequences in terms of young people lacking self-esteem and confidence, lack of critical thinking, and scientific and cultural and political disaffection. On the other hand, from the schools' side, the major challenges that were identified by school directors are - the lack of identity as a cluster; the lack of collaborative practices among the school community, and the difficulty of establishing a two-way collaboration and dialogue amongst schools, universities and the municipality; plus, the lack of time to innovate in teaching as a professional practice - are the major challenges mentioned by the members of this CLC.

The social and cultural equipments in the union of parishes are the IEC (Mamarrosa); Escola de Artes da Bairrada (Troviscal); and the Instituto de Promoção Social de Bustos³⁰ (IPSB) (Bustos). Amongst cultural and social associations in Mamarrosa one can find the ADASMA (Associação de dadores de sangue da Mamarrosa; Associação de Melhoramentos da Mamarrosa (AMM); two folk dance

²⁹ Câmara Municipal de Oliveira do Bairro (2008), Diagnóstico Social do concelho de Oliveira do Bairro.

³⁰ The institution was extinguished in 2017, and it was acquired by the Municipality of Oliveira do Bairro. Since 2018 the institution is part of the school cluster of Oliveira do Bairro.

groups; the cultural group of Mamarrosa; one philharmonic band; the football club and the house of the people of Mamarrosa.

In 2008, the IEC head office moved from its director's home to a fresh new building in the centre of Mamarrosa, which was initially bound to be the parish council. This was also when the IEC was given a new building at the centre of Mamarrosa parish (Photo 1 – Appendix III). Photos 2 to 9 gives the vision of the interior of the building and its different learning spaces Appendix III).

The fact that the institute is settled in this village is the first aspect mentioned to be innovative by the interviewees, especially by the IEC staff:

When everything happens in the cities, launching a project as the IEC in a village with these characteristics is bold and even pretentious some might think. (...) Most of the people I have spoken about this before did not believe I would do something like this in this place. On their minds, this was an idea doomed to failure”, said its director during a public event. (IEC staff)

Indeed, there is a real commitment from the part of the local government in transforming Oliveira do Bairro into a relevant district in what is concerned with science and science education. As mentioned by the president of the municipality during the interview:

More scientists came to the schools of Oliveira do Bairro than the schools of the other municipalities altogether. We are this interface, and we help the university to be relevant here, in Oliveira do Bairro. I would like the city to be recognized as the first city that heavily invested in education, as an European city of scientific culture. I want science and education to be the mark of the city.

The IEC staff acknowledges the president's commitment and the effort the city is doing.

[IEC staff] It is, in fact, a pioneer county. The municipality of OB is very open to the inter-municipal action of Oliveira do Bairro, Águeda, and Anadia. There is an ambition to have the three councils connected as “educational districts” that depend on the ministry of education.

The importance of having this political commitment from local power instances can be said to be crucial to the success of this experience once learning communities model and even schools as learning organisations recognize the relevance of structural factors – they depend on structural and political platforms to deal with the complex process of organisational change.

2.2.3. The IEC's nature and goals

The Institute of Education and Citizenship (IEC) is a non-profit institution devoted to improving education (and science education in particular) in rural areas, wherein scientific knowledge is inaccessible by other means. The IEC is an institution of the interface between science and society, which has established partnerships with twelve schools and school clusters from ten municipalities; the city council of Oliveira do Bairro; two public universities³¹; the Biocant-park (the first Portuguese venue entirely devoted to Biotechnology); museums and with *Ciência Viva* National Agency Center's. For the first time, these institutions have been collaborating regularly. What is more, IEC calls for the establishment of full decentralization of the education sector, in which local authorities, as the municipality and schools have greater autonomy and responsibility on education at a regional level. The IEC has the main focus on teaching science to contribute to the formation of active, engaged and well informed young citizens, providing them with conceptual tools and skills to struggle and pursue their paths, whether connected or not to science.

In 2013, the former Minister of Science, Technology, and Higher Education, Mariano Gago said of the IEC that: “[...] [IEC] personifies a model of the interface between science and society through close collaboration between schools and universities. It is this model that responds effectively and sustainably to the new agendas of the knowledge's society of the XXI century”. Furthermore, the institution is expanding its diffusion, and its partners are increasingly diversified in its sphere of action (schools, museums, social solidarity institutions) and geographical location³².

As an institute of interface, the IEC organisational model consists of creating a system where unrelated actors and institutions meet, interact, and learn with each other regularly. This aspect is especially relevant in contexts where it is particularly challenging to establish these partnerships. As it was revealed by a researcher that use to give advanced science courses at the IEC premises:

[...] I could not imagine how difficult it could be for schools to getting in close contact with researchers. Sometimes, researchers want to do things [with schools], so they want, but they would not meet each other for some weird reason. When the IEC comes to action, the innovation of this

³¹ In particular, the Centre for Neuroscience and Cell Biology and the Department of Life Sciences at the University of Coimbra and the Department of Medical Sciences of the University of Aveiro.

³² As shown in figure 2 of chapter 4.

project is to put them [schools, universities, and research centres] in close dialogue. Facilitating this contact, this dialogue, and organising these things [advanced science courses for teachers and students and study visits to research centres] is overall, helping both sides. (Researcher, UC).

A school principal referred an essential aspect of the relationship of the IEC with schools:

The IEC does not speak in a schoolmasterly way with schools, and they do not interfere with schools' autonomy. There are no impositions, as sometimes happens with universities when they with authority over schools. It is vital to ask schools to do their projects. (School director).

The IEC is establishing communication with the other institutions and setting the kind of horizontal relationship they want to establish among this community. A secondary school teacher gave us his opinion about the distinguishing characteristics of this learning experience. Indeed, some schools have the will to contact the university he says, but the gap between both institutions is too high to be attainable by themselves. The distance between the two institutions is felt as being insurmountable. This is where the IEC makes the difference. Through its action, the gap is being shortened. As we were told in the interview:

When some teachers feel they need some support in strengthening knowledge, teachers naturally say: "let's talk to the IEC". Because before, what happened was that teacher identified the need to deepen knowledge, but there was a barrier between teachers and the university and what they used to thought was: "ah! it's the university, and they are not open to me" (...) so what used to happen in these cases? They close themselves up and do not advance in their knowledge. [...] The relationship we established with the IEC allowed us to be more close to the university. They have opened that door and their [IEC] intermediation made it easier for us. (Teacher, Oliveira do Bairro).

Furthermore, the IEC strategic planning undergirds the idea that tackling school failure and standing for better education opportunities in this rural area is not an endeavour of schools, parents, or teachers in isolation. Instead, all community members should be convoked to come up with educational solutions that suit them best. Hence, an effective solution can only be collectively designed. An integrated, effective response can only be reached through collective work, i.e., in a regional education network. The strategy developed by the municipality was to create conditions for the learning community to prosper, which aims to respond to the educational challenges identified by the municipality. The functioning of this learning community and the resulting creations is what distinguishes this learning experience.

Its institutional policy relies on "*science for all*" (Deboer, 2013) as a political and educational achievement. Therefore, an effort has been made to create a shared experience that requires making science suitable *for all*, not just in theory, but also in

practical terms. Thus, non-formal science initiatives have been reported to be more effective than formal schooling in making students aware of the scientific issues and engaging them in science (Campbell & Hunt, 2004; Deboer, 2013). Efforts should be made to combine both types of science education. This is one of the main goals of IEC.

McCowan (2013) addresses this issue by underline that we must accept that formal education is both desirable in terms of certification and often flawed in providing learning experiences. The ideal would ensure that people have access to formal and high-quality non-formal education (McCowan, 2013: 176).

The relationship between the community, non-formal institutions and traditional schools are addressed by several authors including Alves (2014); Alves; Varela, (2012); McCowan (2013) and Ribeiro, Caetano, & Menezes (2016), with both highlighting the collaborative role of schools and non-governmental institutions and communities in building partnerships between schools and the community and contributing for the promotion of active citizenship and a democratic process of learning throughout life, which is not limited to spaces and times of educational systems. The diversity of voices suggests that there is a pluralistic learning environment that is at the core of a democratic learning process.

IEC's role has been portrayed as being of crucial importance not only by the members of the network on a micropolitics domain (for families; for young people and children as students, and for teachers as professionals) at the school level (for schools as an open learning system), but also at the governmental level (through FCT and Ciência Viva National Agency, but also the Ministry of Education for the mobilization of the scientific community for the improvement of science education in schools and development of the territory³³) towards the achievement of equal education opportunities in rural areas and in helping to close the gap between science and society. In the end, the IEC reaches its goals if it can help students, teachers, schools, and universities in

³³ Among others, the IEC has won the Living Science in Education Award 2013. In 2014 the FCT dedicated an article to the IEC in its monthly newsletter FCT 2014), Culture of education and citizenship in the small town of Mamarrosa. FCT Newsletter, N° 11 (October, 2014). Moreover, during fieldwork, I have attended to several public events at the IEC venue wherein, at least, in three of these moments, ministers and former ministers of education (Mariano Gago in 2013; Nuno Crato in 2015) and higher education and science (Manuel Heitor in 2016 and 2019) have been present and have made a public speech on the importance of the IEC in the domains of science, society and education at the national and regional level.

developing collaboration mechanisms for co-producing knowledge and improving learning as an “integrated system”.

IEC’s methodology has inputs from local schools, universities, teachers, and groups of parents/guardians. Furthermore, their courses' educational planning and design are centred on a problem/topic-based approach; interactive, flexible, and based on participatory methodologies³⁴. For instance, applications to participate in these courses are open both to teachers and students. As so, it is frequent to find teachers learning alongside with students in the same class – as classmates – learning the same topics, seating on the same seats, which is an innovative practice in the Portuguese education system, where most teachers work according to a strict - internal hierarchy in the classroom. Moreover, IEC organises contents, teaching time, and learning groups differently from the Portuguese education system in general. Instead of structuring content in terms of subjects, organising by grade year, and extended hour units of 90 minutes, there are content-oriented learning situations in mixed-age learner groups, where students and teachers learn altogether about the latest breakthrough scientific topics by an experienced scientist on that field of knowledge. This is not exclusive practice from the IEC, yet it is not usual to see it in the Portuguese public school.

As stated in the annual activity report, the IEC's primary goals have been “the promotion of science education in this region, as well as, the creation of scientific culture on rural areas for children and young people” (IEC, annual activity report, 2011). To accomplish these goals, IEC places considerable emphasis on the evolution of a multiplicity of formal and non-formal partners.

Overall, connecting all these institutions contributes to IEC accomplishing its own specific goals:

1. Making schools working in collaboration with each other;
2. Putting research centres and schools in close dialogue so to learn with each other;
3. Enhancing student guidance systems;
4. Improving academic success amongst students, particularly within science-oriented studies;
5. Providing schools with well-equipped science laboratories;

³⁴ The pilot project of the ministry of education of Portugal was announced for the academic year of 2017/2018, as an effort for flexibility in the curriculum and school autonomy (DGE-ME).

6. Increasing the presence of a science culture at schools and engaging parents and teachers in this endeavour.

IEC is putting in close contact schools and universities so they can learn with each other. By collaborating with the IEC, schools have been establishing strong collaborations with universities and the Biotechnology park to become more appealing for new students and improve and diversify students' and teachers' learning experiences. The “leverage effect” turned out to be quite evident with neighbouring schools requesting to become partners too. For a school to become a partner school, it must accomplish specific goals as being committed to providing physical conditions to establish and equip a science laboratory. Besides, before receiving science courses in the school, teachers³⁵ need to participate in the courses at the IEC premises beforehand. In case of a lack of funding possibility, a school can apply to fund programs to equip school laboratories, such as the Gulbenkian funding program, Ciência Viva funding program, or specific funding programs respective municipality. With few exceptions, partner schools had applied to this line of financing.

2.2.4. The IEC's activities

Overall, the institute organises three different kinds of activities for students and teachers at schools and the IEC venue and activities for community members at the IEC venue.

- I. Advanced studies (Science-Oriented courses: IEC venue, schools); Conferences (at the IEC premises, at schools and school libraries);
- II. Exhibitions, Science festival; study visits to research centres; scientific internships at research centres during school holidays; Science clubs at schools; science tutorials;
- III. Activities for community members: courses and technical support (Informatic, English, Sewing, Guitar).

³⁵ These teachers are called pivot-teachers, who are going to be the link between the IEC and the school for bureaucratic and pedagogical matters.

Since its beginning, in 2010, IEC was able to expand its collaborations to create a real community of highly dynamic local agents, which extends to schools, municipalities, and *Ciência Viva* and cultural associations from a perspective of promoting science in rural areas in central Portugal. This connection transformed IEC into a facilitator of the dialogue between universities, research centres and schools to sustainably innovate science education. Their purpose is to find pedagogical solutions together with the schools' agents, whether they are students, teachers, principals, family members or the local community. In other words, the IEC is implementing a bottom-up approach to education, a regional solution to overcome the educational challenges identified in the field. Hence, the way IEC is helping to deconstruct prejudices around science and scientific facts, in the sense that the more and better-informed people are, the more prepared they are to work differently and to be open to change.

When government policies fail, citizens can have their voices heard and have active participation. Today, we work on open and integrated science in society and open knowledge to society. Not every child reached by this initiative is going to be a scientist, but every child has the right to be an informed citizen and to be able to make conscious choices. Therefore, those who do not follow sciences have the right to contact sciences this way, during school years. (...) it is the opportunity students have to contact directly with scientific research and to the joy of discovery. (Ciência Viva, Director).

This issue has been highlighted by teachers and school principals, who have stressed the establishment of new learning practices, the development of new courses, the implementation of new projects, and creating a new collaborative organisational culture³⁶, as significant outcomes from their partnership with the IEC. Collaboration and teamwork became an essential part of this organisational culture and collaboration between schools and universities has resounding effects that go way beyond courses planning and curriculum design, as we analyse further on.

2.2.4.1. Advanced-science courses

Advanced science courses and science courses for primary school students were the activities most mentioned during the interviews and considered the ones that directly impacted each one's academic and/or professional learning. For this reason, we devote

³⁶ By organisational culture we mean the organisation's expectations, experiences, as well as the values that guide members' behaviour, and are expressed in member's inner working and interactions with the external environment.

more attention to our empirical analysis to both the advanced courses in experimental science sciences and science courses for primary and secondary school students.

The Advanced Science Courses are held at the IEC premises every Saturday, and science courses held at schools on weekdays³⁷. Those courses are called Advanced Courses in Experimental Sciences for primary school students; Advanced Courses in Experimental Sciences for students of the 3rd grade and Advanced Courses in Experimental Sciences for secondary schools.

The institute organises advanced science courses for students from six to eighteen years and teachers. The courses unfold in the first cycle schools (the first one in the fourth year), the second and third cycle (the fifth and sixth years; and the seventh and the ninth year respectively) and in the secondary schools (from the tenth to the twelfth year). In addition to the schools' courses, the IEC facilities have a prototype laboratory to develop the same courses. Among the main themes of the courses are neurosciences, biology, chemistry, physics, among others. In 2016, more than five hundred students participated in courses at the IEC, and over a thousand attended the courses in their school.

We asked interviewees about the most significant responses given by the IEC's activities and practices to tackle school challenges. The question posed to the interviewees was: What distinguishes your experience with the IEC compared to other learning experiences you have participated so far? Those who directly participate in these courses, and who understand its impact on their daily life at school, are teachers, students and school's principals. For this reason, we have collected their answers and gathered by major subjects (table 11).

Table 11 - Innovative features of the IEC advanced science courses referred by teachers and students

Innovative features - students	Innovative features - Teachers and School Principals
Involving teachers and parents in the learning process	Refreshing teachers' scientific knowledge – teachers' training
Interactive classes with a strong practical component	Bringing students and teachers close to each other and building up trust relationships with students
Broadening teachers' profile	Mutual learning and teamwork among members of the learning community
Engaging educators and teachers in reflexive practice and experimentation	Learning by contact with real-life situations contents and application of scientific matters to daily-life; plus learning by doing/practising

³⁷ These courses are held at school during the period devoted to extracurricular activities. Each school is given the autonomy to choose the range of activities that is available to their students.

Learners mixed-age groups	Learning for the sake of learning – achieving good grades was not the primary goal
Being close to researchers from the university	Guarantying small class sizes
Strengthening bonds and improving collaboration between students and teachers within the classroom	Teaching staff (science monitors) are younger than in schools
Courses are not mandatory	Developing partnerships between schools, universities and research centres

For the first time, schools and universities have learned how to work with each other to improve student’s learning.

Knowledge is typically translated in the forms of ideas, practices, research papers, technical inventions, or products and is increasingly the result of collaborative relationships among individuals, groups and organisations (Phelps, et al., 2012). Consequently, teamwork culture turned out to be the cornerstone towards developing new schools’ projects, as the *Easy Park* project in the secondary school of *Oliveira do Bairro* that is further detailed in this chapter. Hence, teachers, school leaders, researchers and IEC members started working together to submit projects for funding; students, teachers and researchers developed new projects and found new strategies and solutions for engaging more students in school projects. For this to happen, students collaborated either as monitors, tutors or as young researchers on these projects. These new ways of working and this newly formed relationships lead to the emergence of new knowledge.

2.2.4.2. Advanced Courses in Experimental Sciences for 4th-grade students

This institute has introduced non-formal teaching of science-practice in primary schools, the Advanced Courses in Experimental Sciences (ACES), for children from the 4th grade. There are ten different courses for 4th-grade students (Ex. History and science; ecology; experimental sciences; Mathematics, etc.). Thus, IEC has promoted practical work in 24 primary schools (including single schools and school clusters) in the last 5 years. IEC activities are quarterly, lasting ten weeks per quarter, 90 minutes per week, and students participate voluntarily on the school’s schedule and after parents/guardians formal authorisation.

Although IEC is a non-formal school, its work is being developed alongside formal education institutions. Experimental science courses and book and reading courses take place at primary schools (private and public) in the following cities: Santa Maria da Feira (1), Aveiro (4), Miranda do Corvo (8), Oliveira do Bairro (8); Figueira da Foz (4), Águeda (2) and Anadia (1). Apart from the partnership with schools, the IEC also established a partnership with Figueira da Foz's regional museum centre.

There are two different kinds of courses organised for 4th-grade students: Advanced Courses in Experimental Sciences (ACES, Physics, Chemistry, and Biology) in which students deal with advanced concepts usually considered too advanced for their age; and courses devoted to the promotion of books and reading, especially on the following topics: human evolution; the history of Portugal, history of science and history of art. Courses are developed and planned by the IEC staff and executed by science monitors with 4th-grade teachers.

As formal classes have around 25 students each, school teachers split the class into two. Half of the group has been given the science course in one week, and the other half remains with the school teacher, attending a regular class. The following week is the other way around. This arrangement allows monitors and teachers to give small groups (10/13 students) a class at the classroom, or the laboratory.

The IEC has already activated the OB school cluster's five-centre laboratories where practical science classes are taught to 4th graders. Throughout the year 2015/2016, it was possible to cover the entire network of school poles in the municipality of OB. All 4th-grade students from the public schools of Oliveira do Bairro and Miranda do Corvo municipality have ACES at their school. Students from four primary schools in Figueira da Foz go every week to the regional museum to attend the science course.

This project emerges as a museum project, and then, in an attempt to show the local scientific and pedagogical community that museums also have this capacity, we do not only house for storytelling and storing objects, but we also are houses that call for the participation of the younger populations on science, which are around us anywhere. (Science courses monitors, Figueira da Foz)

Students from Águeda, four schools in Aveiro's district, and one school in Santa Maria da Feira also have the school course. Monitors have specific training to teach these courses, which is provided by IEC's staff. Monitors are all young professionals/researchers from the sciences, and so is the IEC's staff. Typically, non-

formal education does not lead to certification. However, IEC gives each student certification during a solemn ceremony, which happens at the end of each course. The feedback on these courses have been very positive:

“Kids like the courses very much”. One monitor told me. The reason lies in three main factors: lab coats, the ritualistic entrance to the laboratory, and using name badges and the fact it is being given by someone else than teachers.

There is the practical aspect that kids like a lot and the ritual part of going into the lab and putting on the lab coat (...) this is highly valued and then, as the teachers are not giving classes, kids like it a lot. It is different from what they live in the school environment. (...) subjects are also more advanced than usual, but they pick things up very well. And the fact that they had a practical part and getting to know the context of the lab is also positive. They do not have lab experience at school. Many of them had never been in a laboratory; it is a different experience and a different environment. (Monitor of science course, 4th grade, Miranda do Corvo).

The learning community is constituted by more than schools and universities. Other institutions integrate into the learning community under study. It is the case of the municipal Sea Museum Centre in Buarcos, Figueira da Foz. The museum centre combines a set of institutions that are a branch of the municipal learning system despite not being formally part of the school. These institutions are part of the municipality's local educational strategy, contributing to the city's educational mission. Indeed, the project “science courses for students of the first cycle”, organised by IEC and the Sea Museum Centre, contributed positively to the school cluster's external evaluation. The inspectors responsible for the assessment visited the museum centre to see how the project is being implemented there.

What we do here [at the museum] is part of the school's educational project, and they [the inspectors] wanted to see it working. They wanted to take the same path the kids do [to attend the experimental science courses], and then they came here, to see the project by themselves. Afterwards, the director of the school cluster ended up telling me that the evaluation went very well and that the visit to the project in the museum had contributed to a fair assessment of the school. (Figueira da Foz, Monitors).

The process of co-designing IEC's science courses counts with universities and school teachers and directors, which provides schools with tailored solutions. Moreover, schools consider the IEC's activities when planning the extra-curricular activities of the following academic year. The fact that researchers from the IEC are a regular presence on schools (either as monitors of weakly science courses or as speakers in seminars and conferences organised by the IEC) make this institute an extension of the school community. With the scientific support from the Universities of Aveiro and Coimbra and

the Biotechnology Park - Biocant, IEC have ensured the experimental teaching of sciences at schools from ten different municipalities of the region 1st cycle up to secondary students (Photos 10 – 14 – Appendix III).

2.2.4.3. Advanced science courses for 3rd cycle schools and secondary schools

Other than this, IEC developed science courses for students and teachers from the third cycle and secondary schools. Students from schools not covered by this non-formal science class's schema can enrol in the same courses at the institute venue every Saturday morning. Each course has limited vacancies for no more than 10 to 13 students and 2 teachers. The concept of Advanced Studies refers to the intensive teaching of advanced concepts in scientific subjects. Courses last ten weeks in a total of 30 hours per course. The courses are taught by young scientists (from universities) who challenge students from secondary education and teachers to learn, interactively, mainly within the laboratory.

There are 36 different courses for students and teachers from secondary school and 4 different courses for students from the 3rd cycle (photos 15 – 23 – Appendix III). The subjects vary greatly. Courses can be on the following topics: cell regulation; microbiology; chemistry; stem cells; neurosciences; forensic psychology; biotechnology; microbiology; biomedicine; physics; applied mathematics; research practices and work methods a preparation for higher education, only to name a few. A model laboratory was set up at the IEC, which is equipped with the essential tools to offer experimental teaching. This type of laboratory was replicated in each school that has joined the project. All courses come with a manual and/or a protocol through which experiences are explained, and laboratory rules are clarified. In its foreword, the manual has an especial message to parents, teachers, and students. In this message, the IEC highlights the importance of science in everyday life “fundamental element for the development of well-informed citizenship” (IEC manual); and the importance of non-formal education in science to complement formal learning and to discover students' capacities that are not being entirely explored at school. Other than advanced science courses, guided visits to research centres are carrying out regularly and conferences at schools and the IEC premises.

2.2.4.4. Exhibitions, Science Festivals, scientific internships, science clubs; study visits to research centres

Parallel activities organised by the IEC include conferences and seminars from October to May each year at the IEC, at schools and school libraries. For these conferences, scientists from Science, Education, Health, and Social Sciences are invited to give lectures. The IEC encourages the creation of a Science Club in each school, with students, teachers, and parents' associations.

Science Festival in Oliveira do Bairro

The *Oliveira do Bairro Science Festival* is an event organised by the Municipality of Oliveira do Bairro in collaboration with the IEC, which took place at *Espaço Inovação*, Vila Verde, on October 13, 14, and 15, 2016³⁸ (2nd edition) (photos 24 – 29 – Appendix III). The Festival joins together schools, companies, universities, research institutes, Ciência Viva centres, autarchy, and local associations to share knowledge in different scientific areas through exhibitions, workshops and conferences. The event includes the participation of the schools of Oliveira do Bairro, Águeda Sul and Anadia, and the Professional Institute of Bairrada, the College Our Lady of Asuncion, Adolfo Portela Secondary School, and Bairrada Professional School of Viticulture and Oenology.

7,500 people³⁹ have participated in the event in 2016, mainly children and young people from schools in the central region. The *Oliveira do Bairro Science Festival* follows the recognition of the council as an "European City of Scientific Culture" awarded in 2014 by the European project Platform of Local Authorities and Communicators Engaged in Science (PLACES)⁴⁰ (2010-2014), based on the scientific activities that have taken place in the school cluster of Oliveira do Bairro and the Institute of Education and Citizenship (IEC).

³⁸The festival had new editions in 2017 and 2018.

³⁹ IEC's Annual Activity report (2016).

⁴⁰ PLACES is an European project that aimed to establish and develop the concept of European City of Scientific Culture and improve communication between the scientific community, decision makers and society. The project lasted 4 years, but its specific activities are expected to be sustainable in the long term.

In 2014, mayors from all over Europe, including the Oliveira do Bairro Mayor, signed the PLACES Declaration. A city of scientific culture pro-actively cultivates scientific understanding to facilitate economic competitiveness and an improved educational system that encourages innovation and scientific discovery. A city of scientific culture is where social and cultural development requires an understanding of science just as much as the humanities and where science supports democratic processes through evidence-based policymaking. On the other hand, in the European City of Scientific Culture, scientific evidence, advice, and demands and input from citizens should be strongly considered in political decisions. Policies should reflect outcomes of dialogues between citizens, researchers, and other stakeholders. These cities should promote science education and literacy, believing that informed citizens enhance decision-making on topics related to science and technology. A European City of Scientific Culture provides one or more access points to scientific knowledge where information and interactions between the political world and science, the humanities, business, and the general public are facilitated. Relevant infrastructures are scientific institutions or knowledge hubs in research and education that have regional, national, or international reputations for facilitating science engagement and societal dialogue on varying topics and developments. Science centres, science museums, and science festivals are considered central points in society's participation in, with, and for science.

2.2.4.5.Sciences' tutorials

Tutoring for helping students improving academic success are quarterly courses, with a duration of 12 weeks, two hours per week. Courses are based on the curricular programs in Portuguese schools. Courses focus on subjects wherein typically, students present more significant learning difficulties. In 2015, there were 1167 tutoring sessions on issues such as mathematics, biology, English, physics, and chemistry⁴¹.

Exhibitions at schools and the IEC venue

⁴¹ IEC's Annual Activity Report (2015).

Permanent and temporary exhibitions can be found at the IEC venue. The travelling "polar science" exhibition, for instance, was requested by 20 schools and institutions and had been travelling amongst schools.

Science Clubs

Science clubs are an initiative wherein the parents' association of four schools take great responsibility in obtaining funding from *Ciência Viva* for the establishment of Science Clubs in Schools. Exs: *Colégio Nossa Senhora da Assunção – Clube de ciência Jorge Paiva; Escola Secundária Adolfo Portela – Clube de Ciência Galileu Galilei; Escola Secundária de Oliveira do Bairro: Oficinas de Ciência; Instituto de Promoção Social de Bustos: Clube de Ciência Luís Archer.*

2.2.4.6. Activities for Community Members

Activities such as Art and Science exhibitions and courses on Computers, Painting, Sewing, Classical Guitar, Gymnastics, Crafts, and Children's Choir took place regularly in the form of quarterly courses lasting ten weeks, two hours per week. In 2016, 1909 adults and youths enrolled these courses⁴² (photos 30 – 35 – Appendix III).

The IEC joined this national initiative, collaborating with the QUALIFICA Centre based in the school cluster of *Anadia*, having already carried out two training actions, one for adults to complete the 9th grade and another to complete secondary school. The *Qualifica* Program is based on a qualification strategy that integrates educational and training responses and various instruments that promote adults' qualification.

As we can easily conclude, most of the IEC's activities are devoted to the schools and the school community. This might justify why IEC is reaching the school community more easily and is facing some difficulties in reaching the local community.

Being such a small parish, IEC very often mentioned the difficulty of involving the local population in the activities that have been organised. As a way of getting closer to

⁴² IEC's Annual Activity Report (2016).

the population, recently the IEC participates in the annual event *Viva as Associações*⁴³ and at the Science Festival of *Oliveira do Bairro* to get the institute known by the community of the main concerns of IEC's staff. During the interview sessions, I was warned by the IEC staff about the importance of participating in these events. An example was given to me:

(...) When we started the experimental science courses for the 1st cycle, the parents did not know that we were giving the courses. They thought it was more of a school activity. (...) Then, we started to participate in the "Viva as Associações" event. Because the IEC is an association ... you have to be where people are and bring them into your midst, if you want. Parents saw their children greeting the monitors; they looked at the sign saying 'IEC', and did not understand how their children knew these people [IEC staff]. So [we] were out there explaining who we were, and what we were doing. The event takes place in May, and we started having summer activities and started advertising summer activities. The parents started to know us, and now we have many kids in these summer activities. This is to give you an example of how to make yourself known in our community, as well. (IEC staff in the interview).

Another example comes again from the IEC's staff:

We had so many people at the conference last Thursday (...) Because they knew the person! Prof. Rosinda was originally from here! The event was a posthumous tribute to a member of the poetry and theatre group. She was 85 years old (...) and passed away 3 or 4 years ago, and we decided to make her a tribute. She was a teacher, a poet, and a journalist, and we tried to find her contemporary people, who have spoken about her different strands of poetic and journalistic work. The institute was packed because we meet people's interests. You cannot be on the sideline; otherwise, you live in a bubble. (IEC staff in the interview).

The activities developed by the IEC for the community aim to raise awareness on the importance of being an active and informed citizen and their actions intended to complement the training offered by the formal and informal education institutions, especially towards adults' training. Although the effort in developing activities to reach this goal, such as courses and public seminars within the IEC venue, there is still room for enhancing the IEC's connection to the community wherein is settled. The disconnection between the IEC and the local community is still one of the major concerns of IEC's staff and its directory board. The lack of proximity between the local community and the institute is a matter of general concern among IEC members. However, the IEC strategy to approach the community in which it operates is a topic that does not generate consensus within the institution. The fact that the institute is located in a remote location is considered by many as a disadvantage. However, on the IEC staff, they should make the most out of this aspect. Being inserted in a small context also brings the advantage of

⁴³ *'Viva as Associações'* is a showcase of the associative movement of the municipality of Oliveira do Bairro.

proximity between people and, consequently, greater openness for people to hear the message conveyed by someone they know personally.

In the IEC's staff opinion:

Here everyone knows you, so we have to take advantage of this to our advantage so they can hear us. Because people know you, they know your name. Contrary to what happens in big cities and as they know you, they are willing to listen to you, it is easy to reach them, and we have to know how to take advantage of our situation in a rural context that has disadvantages, but we have to take advantage of the positive things that this situation brings to us, and the proximity between people is one of those advantages.

In 2013, the IEC won the “*Ciência Viva - Education Award*”. Ten years after its foundation, in 2015, the institute was nominated by the National Agency for Scientific and Technological Culture (Living Science National Agency) to belong to the national “living science schools’ network”⁴⁴ alongside with two other schools of the same kind: the *Pavilion of Knowledge*, in Lisbon, and another one, the *Integrated Centre of Science Education*, in Vila Nova da Barquinha⁴⁵. This recognition came whilst the IEC had established most of its partnerships with schools. In 2015, IEC established partnerships with six school clusters (Águeda Sul; Miranda do Corvo; Oliveira do Bairro; Figueira Mar; Anadia; Aveiro) and six (public and private) schools (Colégio de Santa Eulália – Santa Maria da Feira -; Colégio Nossa Senhora da Assunção – Famalicão -; Escola Secundária Adolfo Portela – Águeda -; Escola Secundária Lima de Faria – Cantanhede -; Instituto Educativo de Souselas – Coimbra -; Instituto de Promoção Social de Bustos – Oliveira do Bairro. Besides, the University of Coimbra; the University of Aveiro, Biocant – Biotechnology park, Cantanhede; HUC; Centro hospitalar do Baixo Vouga e o Centro de Saúde de Oliveira do Bairro were also made partners.

45. Educational program that combine practical and experimental work in science education with the educational environment characteristic of a science center (*Ciência Viva* website). The IEC has signed a protocol with the Living Science National Agency and is committed to frame some of its activities in the *living science schools network*. The schools that are part of the IEC network and that participate in its programs become part of the network of living science schools: School cluster of Oliveira do Bairro; Frei Gil College - IPSB; Adolfo Portela Secondary School; Nossa Senhora da Assunção College.

⁴⁵ In the 2018/2019 academic year, the network of “living science clubs” was expanded to promote experimental science education, with a global investment of 2 million euros. In 2019, the network of *Ciência Viva* schools increased to 11 schools nationwide.

2.2.5. Participants

The number of participants has been increasing every year since IEC's foundation. In 2015, more than 1200 participants⁴⁶ (students and teachers) attended courses organised by IEC at schools, and 695 participants (students and teachers) attended the advanced courses at the IEC premises. In the same year, 523 members of the school community attended the conferences co-organised by the IEC and the schools.

What is more, 377 students from first grade participated in the experimental science courses at schools from 5 different municipalities, and 8742 people participated in the courses organised at 1st and 2nd cycle schools. Other than this, activities such as seminars and conferences were organised at the IEC venue; painting courses, guitar lessons, English classes, and health courses carried out at the IEC venue. More than 1100 people have attended public sessions organised by IEC and the schools. School visits to research centres reached more than 4000 students, and courses for adults (Programa Nacional Novas Oportunidades; Projeto *Qualifica*) were attended by more than 2000 participants. Moreover, training for teachers in experimental sciences was provided to 33 professionals. From 2008 on, these numbers have risen as is shown in table 1. In 2016, the same schools and school clusters sustained the partnership with the IEC. More than 1000 participants⁴⁷ (students and teachers) attended courses organised by the IEC at schools, and more than 500 people have attended courses at the IEC venue. For the first time, the IEC developed a course through skype for one school in Brazil (Colégio Maria Auxiliadora) attended by 320 students. 544 participants (students and teachers) attended the advanced courses at the IEC premises. In 2016, more than 1000 members of the school community attended the conferences organised at schools.

In the same year, all students from the fourth grade participated in the experimental science courses at schools from 6 different municipalities, and 128 people participated in the courses organised at 2nd cycle schools. Other than this, activities such as seminars and conferences were organised at the IEC venue; painting courses, guitar lessons, English classes, and health courses at the IEC venue. More than 1000 people have attended public sessions, such as conferences and seminars organised by IEC and the

⁴⁶ IEC's *Annual Activity Report* (2015).

⁴⁷ Information from the IEC's *Annual Activity Report* (2015).

schools; 14 school visits to research centres reached more than 3800 students, and more than 50 participants attended courses for teachers. Moreover, training for professionals such as police forces and psychologists on forensic sciences was attended by more than 70 professionals. For the time being, none of the partnerships was discontinued.

3. Educational innovation, a situated process

The complexity and dynamic nature of innovation processes where political, personal, cultural and institutional dimensions converge have stimulated, especially since the 1980s and 1990s, the reconceptualisation of innovation paradigms (Bolívar, 2000; Hargreaves, 2005; OECD, 2008). Likewise, all stakeholders' collective action in the enactment of collaborative learning is considered innovative because it contributes to disseminating a broader and more sustainable process of change in educational practices (Hildreth & Kimble, 2005; Sugrue, 2008). In fact, since the 1980s, scientific research on educational innovation has been based on the need for a comprehensive approach to promoting collaborative learning in an open living system (M. Sackney, 2011; Stoll, 2010). Concerning this approach, Information and Communication Technologies (ICT) have become an essential part of the innovation process. However, they are not considered as an exclusive condition or synonym of innovation itself. In the literature, much less attention is paid to technological process innovations (as a subset of process innovations and often related to E-government), governance innovations and conceptual innovations (De Vries, et al., 2014). In the systematic literature review made by De Vries, et al. (2014) evidence shows that the studies are primarily focused on internal administrative, often technology-driven, process innovations. Product innovations are also frequently mentioned. However, governance and conceptual innovations were less often studied. Recently, there has been uplift in studying governance innovation, often using concepts such as “collaborative innovation” and “open innovation”. However, these are still not dominant (De Vries, et al., 2014, p. 21).

In what concerned to this study, our approach suggests that restructuring the learning organisation implies the existence of new strategies and new teaching-learning commitments between teachers and students and a more inclusive perspective in the

educational community (Hargreaves and Shirley, 2012; Coral and Sackney, 2005; OECD, 2013b). Moreover, this text suggests that innovation (and the perception that something is innovative) depends mostly on the context in which it is introduced and "should not be reduced to a small number of decontextualised educational practices independent of the place where it is applied (OECD, 2013: 28)". In other words, innovation is defined by the complex mixture of elements in a given context, and not by a specific individual and decontextualised characteristics of the social, economic, cultural and political place. As such, this argument rejects that innovation is a universal set of particular practices. Instead, it is a continuous process that depends on local agents' interpretation that leads to an improvement.

According to Serdyukov (2017), "innovations must lead or have the potential to lead to significantly improve the quality of education, its expenses and the equity of access to it" (Serdyukov, 2017: 5). Other authors embrace the idea that innovation can contribute to improve the quality of public services as well as to enhance the problem-solving capacity of governmental organisations to deal with societal challenges (Damanpour & Schneider, 2009; Walker et al., 2011, in, De Vries, et al., 2014). This approach is in the same line as the common understanding of the interviewees concerning the learning process undertaken by IEC's learning community.

Following (Hirsch, 2002; OECD, 2013b) this study understands that practice is innovative when the people involved considering it is transformative of local reality. Part of this transformation challenges the visions and the ways of acting and has changed the institutions involved in this learning community. Indeed, there are several procedures by which the IEC challenges those more traditionalist perspectives in its context of intervention. The role of the IEC was referred to be crucial, not only by the members of the learning community at a micropolitical level (for families, for students and teachers), at a meso level (for schools) but also a macro level (through the National Agency FCT and *Ciência Viva* Network).

Moreover, this constellation of people and institutions that constitute the learning community facilitates creating new local solutions and unique learning opportunities in their context. Thus, the chapter's relevant excerpts revealed that the value of practices does not result from the novelty or its exclusivity. Instead, its innovative character rests on how these practices are combined and perpetuated over time, not being occasional practices that vanish over time. It is also innovative because it improves the

educational experience for those who have been experienced, whether they are students, teachers, or school directors. This holistic approach highlights that it is not isolated, nor episodic practices that improve the learning experience. It is instead a collection of longstanding practices that enhance the shared context. Thereby, this study does not claim that specific practices "make miracles". Its distinctive character comes from the collective effort to change collective behaviours, and not from isolated practices.

3.1. Innovative elements of the learning experience with the Institute of Education and Citizenship

We sum up in table 12 the perception of interviewees⁴⁸ about the innovative elements of the learning experience with the Institute of Education and Citizenship.

Table 12 - Distinguishing elements of the learning experience with the Institute of Education and Citizenship

1.	i) The IEC induces the mobilisation of the scientific community for the improvement of science education practices at schools;
2.	ii) The ways this mobilisation contributes to the achievement of equal educational opportunities in rural areas are considered innovative;
3.	iii) The IEC strengthens the link between science and the community where schools are settled by putting in contact schools and universities
4.	iv) The IEC is contributing to increasing critical thinking among the schools' community by challenging learning programs.
5.	The IEC facilitates the contact between students, teachers and researchers
6.	vi) The IEC facilitates the exposure of schools to the external environment - the collaboration with other schools; the collaboration with universities, research centres, museums and significant science funding institutions
7.	vii) School directors envision the IEC as an integral part of the school - school community adopts the institution as being an extension of the school
8.	viii) The IEC is implementing a bottom-up approach to education, a regional solution to overcome the educational challenges identified in the field.

Overall, the elements stressed by the interviewees as being highly distinguishing of this case study are: i) the mobilisation of the scientific community for the improvement

⁴⁸ We have considered the IEC staff and directory board; school directors, the president of the municipality and the Ciência Viva national Agency director. We wanted to have an institutional perspective in this part of the analysis. We are going to consider other individual perspectives later on in this chapter.

of science education practices at schools; ii) the ways this mobilisation contributes for the achievement of equal educational opportunities in rural areas; iii) strengthening the link between science and the community where schools are settled and iv) contributing to increasing critical thinking among school's community. In the words of the IEC staff:

What has been innovative in this case is the fact that regardless of being settle in a disadvantaged environment in literacy, especially in science, and despite the proximity to Aveiro, or Coimbra, we allow these kids to be in advantage concerning the kids with more access to information (...). The other part of innovation is that, we do things to narrow the gap between knowledge and the community, it is innovative, offering the tools to make people think about the world around them, not everyone does! (IEC Staff).

As such, for interviewees, another innovative character of this learning community relies on the fact that v) this experience exposed schools to the external environment. In this sense, schools became *open systems*, meaning that are complex and interdependent systems wherein learning occurs beyond its walls, through connections that go way beyond conventional structures and partners (Clarke, 2000; Senge, 1990; Chen & Mowafaq, 2013; Schechty, 2009). Here, the critical element is the collaboration with other schools and collaboration for most of the schools, for the first time with universities, research centres, museums and significant science funding institutions namely, the Calouste Gulbenkian Foundation and the 'Ciência Viva' national agency, and the local government.

Literature has been suggesting isolation of schools and the separation between university research and school practice, as well as the over-centralisation of decision-making policies (De Souza, Castro, & Rothes, 2013) (Fullan, 2006; Giles & Hargreaves, 2006) (Carbonnel, 2001; Zanten, 2002) as inhibitors of innovation and change. Following the same line of reasoning, other studies (Sackney & Imants, 2000; Sackney, 2011; Stoll, 2010) pointed out the need for greater community engagement with school, highlighting as well the urgency of a less closed, isolated and corporate dynamic at schools. Similar approaches underlie that innovations can gain greater relevance and support among the population by the emergency of *systems of influence* that comes out from networking systems and communities of practice (Wenger-Trayner, Etienne, 2015; Wenger, 1998; Wheatley & Frieze, 2009). According to these authors, through the networks established between schools, research centres, and universities, innovative contexts can flourish. According to these authors, the collaborative networks are a key vector of mobilisation actions, creating conditions that favour an active and involved intervention and the diffusion and imposition of new behaviours. The network's value in the system is to focus

on its capability to increase learning through interaction and sharing (Cozzens, 2008, p. 792).

Therefore, in what is concerned with the case study under analysis and referred along with the present chapter, national and international acknowledgement of the IEC involves recognising that its work goes far beyond its facilities. School directors, teachers and students understand the IEC to be an integral part of the school. Therefore, the institution is adopted by its school community as being an extension of the school. By facilitating the dialogue between schools, universities and research centres, and by promoting the dialogue with national founding organisations, the IEC is acknowledged to be a key element in the school learning system by schools, universities and by agencies for the promotion of scientific and technological culture, as the *Ciência Viva* Agency.

According to the *Ciência Viva* director, the IEC should be framed within the “social movement for science” [as it is the case of *Ciência Viva*], meaning that has been appropriated by institutions, families, schools and the society in a broader sense. Quoting the *Ciência Viva* director:

The IEC is framed within the inquiry-based science education movement, wherein this entire generation is also very open and much more focused on other museums and other cultural settings and the school today... you learn a lot outside the school. Everything concurs to form more critical citizens, who question and unknowingly have an active philosophical spirit. (Ciência Viva, Director).

The importance of this movement, and the IEC, as an integral part of it, is related to forming a generation of people who are more active, more critical as citizens and more participative in public policies. As citizens, they have tools for transforming the world they live in, not being so dependent on external forces. One of the dimensions most mentioned by the director of *Ciência Viva* is that students contact scientists, both at schools and the IEC premises, through weekly advanced science courses; conferences and seminars; and the university internships promoted by the IEC.

Part III – Empirical evidence

Chapter 6 – Critical Policy and Measures Analysis for Learning Schools and Learning Communities to Thrive

Introduction

As all the other spheres of our social life, the management, and school dynamics are determined, guided, and conditioned by legislative acts. Therefore, determining whether the law, ministerial programs, governmental initiatives, and nationwide projects are facilitating or, instead, are inhibiting elements of the learning school's development, it is thought, a pertinent issue. We know that schools do not change to learning organisations suddenly. Instead, they need the right conditions to do so. Support for this transformation is not only the responsibility of schools and educators. They need government support, and policymakers play an essential role in this task.

We have devoted the following chapter to the analysis of the Portuguese educational policies and governmental initiatives carried out in 2017/2018 as to verify which ones are contributing to schools' transformation into learning organisations and in facilitating the creation of learning communities or instead, working as an obstacle to this endeavour.

Following the introduction, we present the Portuguese policies, actions, and national initiatives that contribute to leveraging collaborative practices and improving individual and collective learning among the learning community under study (section 1). Besides, throughout section 1, we discuss autonomy in schools and the decentralisation policy in Portugal. This section expands the student's profile at the end of compulsory education and the curricula flexibility's policy (2017/2018). We undertake this discussion because we believe it enriches the analysis of features such as, agency and collaboration among actors, which transform schools into more democratic institutions. In this context, not only students are considered learners, but also teachers, school principals, and community members. In the same section, we elaborate on the impacts of establishing mega-school clusters and the municipalisation process in transforming schools into learning organisations. As we go through the chapter from macro-policies to small-scale practices, in section 2, the focus is on the school's community considerations about significant challenges of the so-called policies and initiatives at the school system. We wanted to identify the interviewees' perceptions about the main schools' challenges and understand how this community deals with these challenges is shaping and leveraging collaborative practices. First, teachers and school directors talk about schools' significant

challenges, and then we give voice to students on the same subject. Evidence has revealed a set of tensions and dilemmas that members of this learning community are experiencing. We wanted to understand how this educational experience helped overcome the challenges identified and how it contributed to the tensions and the so-called dilemma.

1. Critical Policy Analysis towards the implementation of learning schools and for the development of learning communities

We believe that some Portuguese policies, governmental initiatives, and national actions help schools make further progress in transforming schools into learning organisations and facilitating the constitution of learning communities. At this stage, we claim that there are at least three current policies in the Portuguese education sector that we should look at carefully: 1.1) raising school's autonomy and decentralisation policy; 1.2) providing more curricular flexibility⁴⁹ and setting up the students' profile after complete compulsory education, and 1.3.) Municipalisation and mega-school cluster's policy. In addition to these policies, there was also a set of measures taken nationwide i) a decrease in the number of students per class; ii) the creation of a national plan for the promotion of school success that has more than 3000 measures defined by schools in addition to the iii) inter-municipal and municipal plans to combat school's failure, in a global investment of 100 million euros. Indeed, the Project for Autonomy and Curriculum Flexibility join other programmes and initiatives and builds on the premise that no single initiative, pilot, or programme can achieve full reform of the Portuguese education system. The range of initiatives includes The National Skills Strategy; the National Programme for Promoting School Success; the New Pedagogical Orientation for Pre-School; a reinvestment in in-service training (for teachers); the new law for inclusion Decree-Laws n° 54/2018; changes in assessments (focusing on formative assessment and

⁴⁹ Giving public schools the freedom to choose what to do in up to 25% of the curriculum.

diversity of instruments); INCoDe.2030 (a strategy for promoting digital competency); the National Reading Plan; the National Education Strategy for Citizenship.

We take a closer look at the Pilot Projects for Pedagogical Innovation (PIIP); Strategies for inclusion and social cohesion in Europe from education (INCLUD-ED); and the Innovative Learning Labs Initiative (LLI).

The aim of PIIP is promoting the quality of the learning experience for all students by strengthening the autonomy of schools in designing and adopting their educational projects, which "may include the introduction of organisational and pedagogical changes, namely at the pedagogical level and curriculum management aimed at responding to their specific needs and, at the same time, promoting greater alignment of educational practices with the dynamics of today's society"⁵⁰ (DGE-ME). This initiative's fundamentals were formalised through Order N° 3721/2017 of April 7th during the 2016-2017 school year. This dispatch authorises the execution of pilot projects of pedagogical innovation (PIIP), under a pedagogical experience regime for three school years. In 2017, the ministry of education launched a pilot project – implementing an autonomy project and curriculum flexibility for primary and secondary schools for 2017/2018. This ministerial initiative started as a pedagogical experiment called a “Project for Autonomy and Flexibility”.

The INCLUD-ED⁵¹ project includes many countries around Europe and is based on horizontal dialogue, transformation, and creation of meaning and equality. There are more than 700 learning communities worldwide. The pilot project INCLUD-ED in Portugal (2017/2018) seeks to transform the education system into a learning community. In Portugal this movement is just starting, with the constitution and implementation of interactive groups and round tables with students in ten schools and school clusters in collaboration with the universities of Évora; Porto / ISCTE; U. Algarve; Lisbon University - Education Institute.

The Directorate-General has developed the "Innovative Learning Labs” initiative (Laboratórios de Aprendizagem) (2014) in collaboration with European Schoolnet (EUN)⁵². The INCLUD-ED allows a set of schools to become learning communities (in

⁵⁰ The information available at the ministry of Education website: <http://www.dge.mec.pt/ppip>. (Webpage visited in May 2017).

⁵¹ We provided detailed information on the European project INCLUD-ED in chapter 2.

⁵² European Schoolnet (EUN) is a network of 31 European Ministries of Education, based in Brussels, Belgium. It is a non-profit organisation that aims at supporting and contributing to the

its pilot project version) through the implementation of interactive groups and a set of methodologies that were already tested internationally. The AEI introduces new computer tools and project-based and inquiry-based learning methodologies within the classroom. It aims to disseminate methodologies for integrating information, Communication, and Technology (ICT) curricula validated in European pilot projects. The “Innovative Educational Environments” (*Ambientes Educativos Inovadores*), also known as “Future Classroom Lab” (*Salas de Aula do Futuro*) have been launched in several Portuguese schools and seek to be a learning laboratory, a space of innovation for teachers and students, wherein methodologies as *Project-Based Learning and Inquiry-Based Learning* are developed. These new spaces, inspired by the project Future Classroom Lab., developed by the European Schoolnet, have been implemented gradually throughout Europe, and in Portugal is being adopted by a growing number of schools.

1.1.Criticism of decentralisation policies in education

Although the widespread agreement on the need and utility of the constitutive principles underlying decentralisation policies, several reasons have generated criticism among academics, educators, and analysts regarding the decentralisation of education in Portugal and its implementation nationwide. According to several critical voices (Calheiros, Lima, & Barata, 2012; Elias, 2016; Barroso, 2016; Barroso, 2013; Viais, 2018), these policies do not provide effective pedagogical, administrative, nor financial school autonomy. Overall, Portugal's criticism highlights that we could do much better than what has been done concerning decentralisation.

The 2016 CNE report *Processos de Descentralização em Educação* unveil the complexity of decentralisation and the diversity of opinions and angles of analysis that the topic assumes in Portuguese society. The report embraces the criticism of authors, who consider that the government initiative does not solve schools' challenges and removes part of the power attributed to them, thus diluting schools' institutional character.

promotion of innovation in teaching and the learning of European schools, working in partnership with Ministries of Education, schools, teachers, researchers and potential industry partners.

Authors such as Elias (2016), for example, believe that the decentralization of competences should guarantee an increase in the quality of the public education service; equal opportunities; territorial cohesion, and respect for schools' autonomy. In this sense, he argues that there is no valid alternative to schools' real autonomy, so schools should be given more space for the decision to deepen the paths of the future of decentralization. Besides, Barroso reflects on the meaning and importance of decentralisation in territorialising educational policies in Portugal. The author discusses some of the arguments used to criticise or promote decentralization and the *Programa Aproximar*, considering that only with engaged municipalities, schools, teachers, participatory citizens, and a regulatory state is it possible to establish a regulation that calls it “socio community” that it involves changing the roles of the main actors in the administration of education.

Nevertheless, scholars such as José Almeida (2016), consider that the measures that allow decision-makers to get closer to local protagonists are positive and, therefore, the program now in an experimental phase may allow interesting working hypotheses at the local level. Batista (2014) highlights that more than transfer competencies imply a redistribution of power, resources, and authority.

According to the analysis taken on the OECD report (2018), the Project for Autonomy and Flexibility is perceived to conflict with the main objectives of many parents, teachers, and students in the education system – namely, obtaining high grades on the country's high-stakes national exams (OECD, 2018). The challenge of public, parental, and political pressure for accountability in scores and rankings was already observed at the 2012 OECD Policy Review of Evaluation and Assessment in Education for Portugal when the government tried to balance formative and summative assessment. The key challenge is creating conditions to sustain their paths' coherence, generating a climate of motivation and the will to build independent schools (Barroso, 2016: 24). We sustain that, in practical terms, decentralisation in Portugal is narrow in scope. It ignores the need to build up a “*new local educational order*” – using Ben Ayed concept (2009) – which means taking into consideration the plurality of institutions and individual and collective actors in policy definition and development (Barroso, 2016: 31). In this sense, we need to conceive the educational system as a polycentric network with different control and autonomy levels.

João Barroso (2013) also notes that the State has retained its strategic centrality and fundamental control over the public education system's provision through this decentralisation model. As so, decentralisation means transferring the tactics and some instruments of an enforceable nature for the periphery. What is more, the same author continues underlining that decentralisation initiatives have only been a manoeuvre for introducing endogenous privatisation on the public system and the promotion of competition to create educational markets (Barroso, 2013). As Lima (2019) underlined, the rhetoric on autonomy clashes with a context of bureaucratic and centralized practices, either through the action of deconcentrated structures or, more recently, through the intensive use of an electronic administration, refining its instruments of individualized surveillance and remote control over actors and their practices.

Other criticism has been raised concerning these initiatives under the argument that they mask the real intention of reducing costs and facilitating control mechanisms by contracting computer supervision and evaluating results. Barroso considers a contradiction between the strengthening of municipalities' competences and the policies of freedom of choice, while the author believes that this only creates the illusion of change (Barroso, 2013: 26).

Besides, critical voices of these initiatives underline the constant changes that the education sector is subjected. Those critiques propose a pact of stability for education in Portugal, which defines a medium and long-term strategic plan favouring student and teachers' stability at schools (Viais, 2018). Indeed, teachers and school directors also criticised the lack of stability in this sector. As one school director stated:

I am tired of weaving in and out ...we are tired, and even when I try to inject a new attitude [among teachers], in many cases is not an easy task. Besides career and progression issues, salaries and the increasing number of working hours ... the way people feel they are treated, plus the feeling of not being supported at a higher level [governmental level] has been causing great disappointment [among teachers]. And this is a very significant obstacle to innovation. (School director, Secondary school)

Most of the interviewed school directors believe that we need to apply new decentralised governance models that might accentuate a participatory and deliberative democracy. That is a model that should take the leading players (parents, political representatives of local communities, and their most important social actors) as the primary agents of this regulation (Barroso, 2016: 25). All respondents share the view that

education is everyone's responsibility and that schools should be associated with all local stakeholders. The co-responsibility is only possible by creating a learning community and collaborative networks to transform local autonomy and state control into creative tensions.

1.2. The IEC, the school's autonomy, and the curricular flexibilisation policies

In addition to greater devolution of responsibility to local educational authorities, schools have been granted additional responsibilities in recent years. While levels of school autonomy remain modest compared to other OECD countries (OECD, 2014), new areas of responsibility include hiring part of the teaching staff (fixed-term contracts, trainers for vocational courses); the organisation of enrichment curricular activities; curriculum management procedures; and the selection of textbooks from a list certified provided by the competent Ministry. Several schools opted to be granted more autonomy by signing an autonomy contract with the Ministry of Education. Conditions to be granted an autonomy contract include undertaking a self-evaluation process and receiving a positive external school evaluation. These contracts allow the consolidation of autonomy in a pedagogical organisation, curriculum organisation, human resources, school social support, and financial management.

Barroso (1996) distinguishes autonomy in two different forms. For this author, autonomy can be decreed or built. Both logics are present in the school autonomy process. In the first case, autonomy appears to implement the policies of decentralisation and school autonomy; in the second, autonomy emerges from schools' functioning, in the implementation of strategies and their actors' action. Thus, in addition to the decreed autonomy, schools develop autonomous forms of decision-making in different domains; they develop built autonomy (Barroso, 1996). Autonomy is a built phenomenon resulting from different school actors' action, and it does not come only from top-down impositions. Based on the assumption that autonomy is gradually built up inside the school, it seems evident that the rules can facilitate or hinder this process.

Since the project for autonomy and curricular flexibility (PACF) is recent, medium and long-term results are still preliminary and impossible to predict accurately.

For this reason, the recent OECD summary of preliminary findings (2018) of the "project for autonomy and flexibility" recommends, as an overall strategy, to intensify collecting evidence about the impact of the pilot (including evidence of improved student engagement and outcomes; of improved teacher well-being; of good practice at all levels).

As mentioned in the previous chapter and concerning our case study, the intervention in the education field by the municipality of Oliveira do Bairro combined with the Institute for Education and Citizenship aimed at ⁵³:

- Introducing the practice of experimental sciences in schools, involving students in laboratory activities;
- Involving students in reading;
- Bringing schools closer to research centres and universities;
- Promoting equality and motivation of students in schools to avoid the school's dropout;
- Encouraging the participation of parents in schools;
- Organising an annual "science festival" in the municipality of Oliveira do Bairro.

The *OB Education Charter* and the *Strategic Plan for Education* ⁵⁴ are currently understood at the municipal level as an instrument for future planning of educational equipment in the municipality, according to the education/training needs that need to be met. This document's primary goal is to enhance educational resources within each municipality's socio-demographic development framework. The guiding principle of this document is civic participation in the educational field, and it calls for the mobilisation and participation of the school community. The process of creating an Educational Strategic Plan for Education of Oliveira do Bairro was part of this dynamic of strengthening municipal responsibilities in the education sector to identify the axes and priority areas to be developed in the territory for the next five years. To achieve these goals, the Educational Strategic Plan for Education counts on the active participation of all interested parties: citizens of the municipality; members of schools and other public and private educational entities; associations, and local structures of local government. The IEC took part in this task and managed a dialogue with the other interested parties. As can be read in the strategic document "*Acontece no IEC*" (2012), the autonomy of schools must accomplish a few requirements following the autonomy policy, such as:

⁵³ Information from the Activities Report 2016, IEC.

⁵⁴ The Strategic Plan for Education of the municipality of Oliveira do Bairro (2015) is a document guiding the municipality in the field of local education policies and is replacing the previous municipal education project.

hiring teachers directly by the school; adjusting curriculum to ensure diversity in school and school education, while ensuring knowledge in fundamental subjects; C) schools and municipalities must develop different teaching and social support strategies for students (pedagogical differentiation strategies).

1.3. Students' profile after compulsory education and curricular flexibility

It is expected that at the end of compulsory education, students must master the core of compulsory disciplines, and developed several competencies⁵⁵. This set of transversal capabilities is structured around an understanding that disciplines, per se, are not providing enough tools to help students be change agents. Instead, this understanding involves mobilising knowledge, skills, attitudes, and values to meet complex demands. In this sense, flexibility and curriculum autonomy are an opportunity to tackle key curriculum design issues such as “curriculum overload” and “managing time lags”, that is, it represents an opportunity to shift from “more hours for learning” to “quality learning time” (OECD, 2018). For this reason, a new paradigm of learning is based on teamwork and collaboration that allow effective communication between the various members of the broader academic community and between different disciplines and scientific areas – transdisciplinary (OECD, 2018a).

Indeed, curricular flexibility is an instrument for pedagogical differentiation and operationalisation of the profile mentioned above, based on a transdisciplinary, exploration of thematic areas and projects to deepen the acquired knowledge. In practical terms, it is an instrument that allows exploring different ways of organising school times, making possible pedagogical differentiation, interdisciplinary nature; developing projects, deepening knowledge; working in pedagogical teams. Due to the significant increase in school autonomy, it is up to these schools to manage 25% of the weekly workload per year of schooling or training provided in each of the axes (ME-flexibility and autonomy, May 2, 2017).

The students' profile points out into a school education in which students of this global generation build and sediment a humanistic-based scientific and artistic culture. They mobilise values and skills that enable them to interfere in individuals and societies' lives and history, make free and informed

⁵⁵ Direção Geral de Educação, Ministério da Educação (2017) “Perfil do aluno à saída do ensino superior”.

decisions on natural, social, and ethical issues, and be active, conscious, and responsible participants. (Martins, 2017: 10).

The strategic document lists ten priority areas expected to have implications on pedagogical and evaluation practices, making learning and curriculum management more flexible.

Among the goals of curricular flexibility are the following: the valorisation of arts, experimental science, information and communication technologies, as well as, the integration of regional and local components; the acquisition and development of research, evaluation, reflection, critical and autonomous information mobilisation to solve problems and reinforce students' self-esteem. The essential learning is the skills and knowledge of each discipline to be acquired and developed by all students.

The project has been implemented on a pedagogical experience basis in the 2017/2018 school year. This has allowed authorities to monitor and evaluate it, which is critical to its improvement. Overall, signing an autonomy contract requires schools to:

- a) Take responsibility for the local implementation of national education policy;
- b) Guarantee of equity in the service provided;
- c) Be accountable for a quality service;
- d) Offer of own curricular plans and/or adaptations of the national curriculum;
- e) Promote citizenship, inclusion, and social development.

Each school can recognise different levels of competence according to the autonomy action plan proposed by each school. Autonomy can be granted in, at least, one of the following areas:

- a) Developing educational excellence and innovation projects;
- b) Promoting the improvement of school success;
- c) Creating flexible curriculum modalities;
- d) Teaching orientation towards entrepreneurship and connection to the world of work;
- e) Including regional and local components in the curriculum;
- f) Offering courses with their curricular plans;
- g) Developing innovative management plans.

The purpose of these policies is to allow schools to call for more independence in pedagogical management; schedule management; recruitment of non-teaching and teaching staff, and budget execution management.

1.4. Municipalisation and Mega-School cluster policy

The process of municipalisation comes under the scope of the public policy movement, often characterised as decentralisation. Changes in governing and regulating public administration emerged in the 1980s, in a broader context of the transformation of state functions and the transference of accountability to local administration level in different governance areas, among which education (Seabra; Carmo, 2012: 9). The proposal of decentralising competences in the area of education in primary and secondary education gave municipalities an intervention role in complementary curricular schools, with local authorities assuming full responsibility for non-teaching staff. "municipalisation" also allows those schools' services such as cafeteria, stationery, library, educational, and psychology support to be subcontracted to private operators. One of the proposal's novelties is the so-called "efficiency factor" that divides the Ministry and the local authorities' efficiency gains.

The report of Seabra and Carmo (2012) pointed out that one of the main goals of the decentralisation process is to provide municipalities and schools with new channels of communication and cooperation that would contribute to closer monitoring of the school and educational reality to respond more effectively to a set of shortcomings and problems identified. The report concludes that these communication channels were built based on increasing relational dynamics. This widening process is based, in part, on the greater flexibility of the procedures, but has as setback some inefficiency in terms of formalization of the practices.

The decree-law nº 75/2008 expanded funding responsibilities of municipalities from pre-schooling up to lower secondary education (2008) for infrastructure, school social action or hiring non-teaching staff.

On February 12, the Decree-Law no. 30/2015 was published. This decree establishes a regime of power delegation to the municipalities and inter-municipal entities in social functions. It established "inter-administrative contracts" (Elias, 2016, p. 61) which mean, in practical terms that, through pilot projects (in 52 municipalities at the national level), the State transfers to local administration, social and pedagogical management skills. Overall, it represents a partnership between the government and each of the chosen municipalities. Under this law, 15 schools have participated and have signed voluntary autonomy agreement contracts, being Oliveira do Bairro school cluster

one of the enrolled schools in the pilot-project (2015), with an autonomy contract. As stated before, there are critical voices of this model of decentralisation and, in the case of Oliveira do Bairro, this disapproval was mirrored in the local newspapers through the testimonies of teachers from the Bairrada region:

(...) We are in favour of decentralisation, and we support giving power to schools to take certain decisions. Still, we also believe that other competencies should continue underneath the Central Government domain. Education should not be a competition between municipalities. (...) What we fear about this is that, in the end, everything is concessions and losses for the public school in the name of the program "Aproximar Educação" which, paradoxically, move us away from a true decentralisation process and from quality and excellence parameters for which we have always stood for⁵⁶. (JB, June 17, 2015).

Among the main criticisms of the process of municipalisation, there is a stress on an unwanted re-centralization of competencies that were already taken from schools to the municipality, "wounding to death the little autonomy schools used to have"⁵⁷.

According to Licínio Lima (2015), these are measures that aim decentralising power yet, and perversely, they are re-centralising the power of strategic decision. In the author's opinion, it is a way of introducing new ways of protecting local power, controlling and managing it; restricting their legitimate autonomy through ordinary legislation, contracting processes, the imposition of specific ratios, among other micro-management mechanisms (Lima, 2015, in CNE, 2016: 29).

Several critics also pointed out that the use of market mechanisms and even the replacement of these public powers by private entities are part of these dynamics, and legitimise themselves by the need to modernise, to reduce bureaucracy, and struggle against the inefficiency of the State (Seabra; Carmo, 2012: 9). The justifications for municipalisation use political imperatives - neoliberal projects of "liberation" of civil society from the intense and heavy control of the state; cultural imperatives - in the sense it promotes more intensively community participation; and pedagogical imperatives - more student-centred teaching.

Overall, criticism against school municipalisation is mostly related to the concern that, along with autonomy, the process might contribute to schools' politicisation, making schools more volatile for political change and may not contribute to improving the

⁵⁶ School teacher's testimony taken from the Jornal da Bairrada.

⁵⁷ School Council N° 1/2015 was released at Caparide, 16th February 2015.

educational process. Indeed, these criticisms are valid and reflect real concerns of teachers, school principals, and all those who contribute to schools' improvement. However, the educational project presented here would certainly not have the same contours, if it did not have the support of the City Council and great openness and trust expressed by schools. It would be different if the school cluster and the municipality were not part of this educational enterprise. The existence of these projects within schools was only possible due to the sense of openness expressed by schools to the external environment, especial to the activities suggested by the IEC. The decentralisation process in Oliveira does Bairro that allowed schools of the municipality to choose to work along with the IEC in science-oriented subjects. As a result, other schools enrolled in this project after seeing the OB schools cluster results. Also, *Oliveira do Bairro* is a municipality that highlights the role of Education in developing the territory. Since the beginning, the municipality has also supported the institute by providing financial support, physical conditions to its implementation at the Mamarrosa parish, and the development of joint activities with the municipality schools. One can read at the Education Charter of Oliveira do Bairro that the role of the central government and, at certain levels of education, of regional government should be the "democratisation of education and providing all the conditions for it, carried out through the school and other forms of training, contribute to equal opportunities, overcoming economic, social and cultural inequalities (...) and for democratic participation in collective life" (Education Charter of Oliveira do Bairro, 2007; strategic plan of OB, 2007).

2. Giving the school community a voice on learning and on school's changes

We have collected students, school directors and teachers' major concerns about the school system and their own learning experience. Our goal was to understand whether the policies abovementioned consider those challenges or, on the contrary, these policies and measures are only passing over interviewees' concerns. We analyse information that came out from the interviews made to school directors, teachers, students, IEC staff, and the political representative of the municipality of Oliveira do Bairro. Overall, we believe that the presented challenges bring analytical density and complement a critical analysis of educational policies' implementation since they bring to the debate issues that the

stakeholders themselves consider to be relevant challenges to Portugal's educational sector. We have selected sixteen challenges topics which were gathered from an extensive list wherein challenges of the Portuguese school system. We grouped these challenges into four groups (curriculum policies; school management; teaching-related issues; classes/classroom management issues) and sixteen sub-groups. All these challenges are linked to an umbrella policy element, which guides the analysis. Table 13 shows the link between educational policies and the school challenges identified by the interviewees. There is no ordering here by magnitude or importance.

Table 13 - Link between educational policies and significant challenges of Portuguese schools identified by the interviewees

Education Policy Elements		Challenges	Interviewees				
			teachers	directors	students	IEC director y Board	Municipality's representative
Curriculum policies	Curricular flexibility and decentralisation policy	lack of time	•	•	•	•	
		CV is utterly lengthy	•	•	•	•	
School management	Decentralisation policy	manage school tensions	•	•	•	•	
	Municipalisation and Mega-School cluster policy	school mega clusters		•			
		municipalisation		•			
	Decentralisation policy	school dilemma-effective learning VS school marketing plan	•	•	•	•	
	Curricular flexibility and decentralisation	competition among schools	•	•			
		lack of collaboration with universities	•	•		•	•
	Municipalisation and Mega-School cluster policy	physical school environment (spaces and equipment)			•		•
Teaching related issues	Curricular flexibility and decentralisation policy	work overload and lack of motivation	•	•	•	•	
		ageing teaching staff	•	•			
		Teaching training	•	•	•	•	•
Classes/classroom management issues	Students' profile after compulsory education and	classroom's features - inappropriate class size	•		•	•	

	curricular flexibility	loss of practical character of classes	•	•	•	•	
		using questioning to promote critical thinking during classes			•	•	•
		real-life learning situations	•		•	•	

Teachers, students, and school directors have mentioned similar challenges, proving that, more often than not, groups share the same concerns, understandings, and perceptions about learning, schools, and educational policies.

Concerning the challenges of Portuguese schools in what is related to curriculum policies, school teachers, school directors, and students agreed that curriculum length and the lack of time to address all the curriculum subjects negatively influence learning practices. Concerning school management, the onus is on managing schools' tensions between effective learning and collaboration and, the urgency for schools to attract new students and compete at a national level with other schools and have a marketing plan. There was also consensus on the need to transform this conflictive tension into an innovative pushing forward mean. School municipalisation and the creation of mega-clusters were also challenges mentioned by school directors.

Concerning teaching-related issues, the consensus between directors and teachers was also reached on teachers' workload and lack of motivation, the lack of training on scientific topics, and teaching staff's age.

Moreover, the lack of scientific literacy and students' school failure are considered by IEC's staff and Oliveira de Bairro's municipality as the main challenges in this context. This fact has consequences in young people lacking self-esteem and confidence; lack of critical thinking and scientific, cultural, and political disaffection. At the school level, on the other hand, the lack of group identity, the lack of collaborative practices amongst the school community, universities, and schools are the main obstacles mentioned by the IEC's staff members and by school directors.

2.1. Teachers, school directors and students talk about school's challenges

Overall, teachers and directors revealed apprehension about the Portuguese school system. It is at the macro level that the most significant sources of dissatisfaction and disenchantment are described. Teachers' and school directors' concerns have the most significant repercussions in their daily lives at school and their professional life. Their concerns are mainly intertwined with macro changes that generate professional devaluation and uncertainty, lack of public recognition, and heavy workload. Those concerns are related to the government's educational policies and measures without embracing long-term strategic envisioning. As so, the school community, they say, have to deal with unceasing changes; with an undesirable amount of bureaucratic workload; less time to prepare classes; changes defined at the central level concerned to the classroom (number of students per class; indiscipline; curriculum overload; fulfilment of programs; exams). Along with these issues, teachers add that they have to deal with unmotivated students. According to teachers, curriculums and programs are utterly long, and students are poorly prepared in terms of previous knowledge, adding difficulties for teachers to cope within the classroom.

Teachers are also concerned about the weight given to teachers' and students' assessment and schools' evaluation (external, internal) and the excessive importance given to national exams, instead of intangible dimensions of learning. Another concern is the excessive importance given to schools' positioning in the national rankings, and the need to develop "marketing strategies" to attract new students to a specific school (competitive culture) was also mentioned as a negative factor.

2.1.1. Curriculum policies

Teachers, school directors and students underlined *lack of time* as a critical resource for any meaningful learning and creative teaching practice. Indeed, "lack of time" was a topic mentioned, not only by teachers but also by directors and students.

Time is a crucial element of collaborative activity and is necessary to develop and to connect learning communities. Developing a learning school, i.e., developing individual and organisational capacity for learning, takes time to bear fruits. But time is often seen as a luxury which many teachers do not feel they have. Many teachers with

whom we have talked through this issue, admitted being resistant to implementing new practices. More often than not, they do not even try to be more creative or innovative in the classroom, as they found it very time consuming and requiring extra energy they do not feel like expending, since their central aspiration is to accomplish the academic program in due time. During interview sessions, I was told as an expression of complaint that teachers do not even have time to think. As stated by a biology teacher from a secondary school:

(...) to be innovative implies having time to think and finding out creative solutions to explain something complicated and explain differently and creatively [to students]. We do not have that time, either outside or inside the classroom. Curriculums are way too long, and we are completely overwhelmed with bureaucratic work. We need time to prepare classes and prepare tests, and mainly, we need time to think! I have much experience so that I can prepare a class in 5 minutes. Am I innovative? Am I thinking outside of the box? No, I do not have that time! We need time to think of innovative things that could work in the classroom. It's true [what students say about classes being boring]: teachers spend all their teaching time on the blackboard. It is true! It's all true! The bottom line is, I do not have time to do anything else. I have many years of this, but I cannot say that I am innovating. (teacher, secondary school).

According to Fullan (2003), change is the result of innovating, whereas it is a phenomenon directly related to the culture of collaborative work. Nevertheless, when teachers are overwhelmed with individual work, it is difficult for change to happen. Teachers are trapped in between the will to be innovative and the need to achieve the goals demanded at a mid-level often overwhelmed with bureaucratic work. This pitfall arises from the emergence of control over schools associated with the regulation of education, present in managerialism, accountability, evaluation, political-bureaucratic conformity; therefore, the question to be asked is how directors and teachers can manage school tensions, reconciling the requirement to respond to the system's guidelines and to attend to their habits, routines, and behaviours that are not always consensual.

2.1.2. School management

In addition to the lack of time, and being teachers overloaded with bureaucratic work, school directors and teachers believe that school mega-clusters' existence jeopardises a distributive kind of leadership based on the assumption that proximity, participation, and engagement are crucial for good leadership. As municipalisation

appears to be a source of tension between teachers and the government, so is the mega-school clusters' constitution.

Portugal reorganised the school network by closing schools with fewer than 21 students or performing below average, and implementing school cluster policy in 2005. Municipalities participated in this effort through the Agreement on the Reorganisation of the School Network (*Acordo Relativo à Reorganização da Rede Escolar*, 2010) between the government and the National Association of Portuguese Municipalities. Under this agreement, municipalities identified which schools would be closed and co-ordinated redeployment measures with the central government. This decision was grounded in pedagogical explanations, but especially for economic reasons. Teachers and school directors disagree on this policy's advantages, pointing out the main difficulties that this policy brought to schools' management.

(...) the great difficulty is the creation of a school cluster culture, isn't it? Each school has its own [culture], and you have to sit all people down to dialogue with each other and create the feeling that the organisation is a bit yours, as well. (...) It takes time. It's a demanding and time-consuming process. (School director, school cluster).

Principals agree that the only possible way of creating a learning community is through: "much participation, much presence, collaboration, involvement, listening to people, asking for suggestions, people feel they are heard and sometimes participate in decision making ... I think that's how it's done ... there's no other way" (school director, school cluster).

However, the difficulty of creating a school's cluster culture is often referred by the principals of school clusters. All respondents believe that a learning community's constitution helps create workgroups and a cluster's culture among all.

Nevertheless, it was mentioned that the presence of mega school clusters does not consider the school's different traditions; and the challenge of creating a collective identity. Intertwined with this, the directors of school clusters referred to the existence of a 'crisis of identity' - with schools losing the familiar environment they used to have, which allowed close monitoring of students and the interconnection between teachers many cases, barely know each other. Nonetheless, directors also mention that not everything is negative in school clusters: "we now have coherence in management 'good practices' that we have opened up to all schools within the cluster".

School directors also mention the lack of an effective autonomy in practical terms: “our teachers are limited by what they have to accomplish; they are snowed under by the curriculum. I think that is one of the great differences [considering the IEC courses]”.

2.1.3. Teaching related issues

Teaching as a professional activity was regularly mentioned during the interviews. First, the ageing teaching staff and emotional distress of teachers are topics of concern. Almost all the interviewees refer that teachers are an ageing professional group, and lack generational turnover. Also, the difficulties for young professionals in accessing the profession, and the difficulty in recruiting and keeping talented teachers in the education system were a challenge. Teachers reflected on this issue and school directors, link this matter to the difficulty of change at the school level:

(...) our teaching staff is getting old, the average of teachers' age is more than 45 years old, or even older thus, there is no generational renovation, and it is challenging to ask professionals for changes, if they have been doing things the same way for more than 30 years (...) it is difficult to ask them to change. (...) And there are other problems linked to this, several teachers do not know how to access the internet or make fair use of a computer, for instance. (school director, Secondary School).

The 2016 Professional Teacher Profile report, presented by the Directorate General of Education and Science Statistics (DGEEC) shows that the total number of teachers has decreased for all levels of education and that in 2014/2015 was the lowest since the beginning of the 21st century. Comparing to ten years ago, it was a decrease of about 25% of professionals embracing the profession, corresponding to a reduction of more than 42,000 teachers between preschool, primary and secondary school (DGEEC, 2016).

What is more, the average age of practising teachers in Portugal is relatively high. According to data from the National Education Council (CNE) in 2018/2019, about 36% of teachers were over 50 years old. This trend has been worsening, as the DGEEC (2016) reports teachers over 50 to represent 39.5% of the total teaching in national schools. Teachers with 40 up to 49 years old, represent 77.3% of teachers at the most advanced age levels. Also, the number of teachers who have up to 30 years old and work in public schools does not reach 500, representing only 0,6 % of all those who teach in national schools (CNE 2020).

Another topic many times mentioned during interview sessions was the need for more teacher training, especially in breakthrough science-related subjects. All the interviewed teachers confessed being outdated on science, due to lack of time for research. Students reported the lack of teachers' advanced scientific knowledge and the advantage that would be having teachers who would be at the same time, scientific experts. Teachers do not know [more advanced subjects] and, even when they know, "they do not have that passion because they aren't specialists", several students say. Simultaneously, teachers felt they need more training in specific subjects. Besides, many interviewees referred to the advantages that would be keeping in close collaboration with universities. They complain about being overwhelmed with other school-related tasks, such as bureaucracies, meetings, and other mandatory tasks. Indeed, Portuguese teachers spend more time working than others OECD countries total According to the Teaching and Learning International Survey report (TALIS report, 2013), Portuguese teachers' working hours is 45%, comparing to the average of 38% of the other OECD countries) (OECD, 2016).

I have more work now than back when I started my career as a school teacher. What patience do we [teachers] have to create whatever is necessary with this workload? None! I tell you, none! Doing something differently? Motivating children? None! What I want is finishing the class as soon as possible. (Teacher, secondary school).

Some teachers also confessed having ceased attending professional training because often this training is not of their interest and above all, do not cover scientific topics they consider relevant for their professional practice:

To be completely honest with you, I've stopped going to professional training because it has got very little interest in scientific terms, and the pedagogical part no longer interests me. I have 30 years of teaching practice, so it does not interest me. Through the IEC courses, I have found a way to keep me updated in scientific terms which were my flaw. (Chemistry teacher, secondary school).

2.1.4. Classes/classroom management issues

Teachers referred to the inappropriate class size (there are way too many students in the classroom) with negative consequences in learning and classroom management. OECD evidence shows that reducing class size is not, on its own, a sufficient policy measure to improve the performance of education systems, and is a less efficient measure than increasing the quality of teaching (OECD, 2016b); many teachers complain about the fact that large classrooms are way too challenging to manage. According to OECD

data ((OECD, 2017a)), teachers in Portugal report spending 76% of their lesson time on actual teaching and learning. This data means that 24% of their time is reportedly spent on administrative tasks and keeping order in the classroom (8% and 16%, respectively), comparing to the OECD countries' average of 8% and 13%). They also report spending 21 hours per week, on average, teaching; 9 hours preparing lessons, and 10 hours marking students' work (OECD, 2016b). It is also challenging to manage many people in the classroom. Besides, the average time teachers can spend with each student in a class period also drops. Also mentioned by interviewees was the progressive loss of practical character of classes and the decreasing physical space between students and interactions became more complicated. All these elements concur in interviewees' opinions for building the school's negative social representations. Only 10% of teachers in Portugal believe that teaching is a valued profession in society (OECD, 2016).

Students referred to the lack of classes' practical component and curriculum overload as obstacles to learning. Indeed, concerning the difficulties most often felt by students, the latest CNE report (2020) indicates that, regarding school work, 87.2% of students attribute them to the fact that 'the subject is too much', 84.9% of 'matter is boring' and 82% of 'matter is very difficult', these being the most mentioned aspects.

The students of this study also referred the low quality of school infrastructure and the lack of laboratories and laboratory materials (physical school environment related to spaces, equipment, and tools within the school) were also mentioned.

When asked to portray an ideal type of school, teachers and directors referred to the advantages that would be shrinking class size; improving teachers training; and the need for curricular and pedagogical differentiation:

(...) In my opinion, the ideal school would be one which could have smaller groups; one with teachers who would be able to implement pedagogical differentiation effectively; and this is only possible in smaller groups (...) so to work differently with those who are different and not let any student behind. Yet, with large classes, with teachers overloaded with classes and students, with hectic schedules, it does not work as it should. There is no close relationship with students, and education implies closeness and affection. (School cluster director).

One of the more important challenges referred by the interviewees was the tension between collaboration and competition. It is, though, in this tension, that the learning community structure itself. The challenge is transforming this conflict in a creative force able to push institutions forward. The next sub-section we discuss school's dilemma.

2.2. The school dilemma: the duality of competition and collaboration

While acknowledging the learning community's potential and relevance, it is nevertheless necessary to consider the difficulties and limitations of its implementation in practical terms.

School directors have identified several obstacles to creating learning communities and transforming schools into learning organisations, for instance, the existence of mega clusters, which causes dispersion (physical and symbolic). By consequence, it makes distributed leadership even more challenging to achieve. Indeed, schools with different traditions and cultures make it difficult to create a cluster culture of collaboration and engagement. Moreover, too bureaucratic rationality has been an obstacle to teachers' initiatives, creating very few collaboration opportunities. In fact, in Portugal, as in other countries, collaboration and collegiality are being put in place alongside high bureaucracy and high levels of teachers' workload, with greater public scrutiny and the managerialist logic and a performance and accountability agenda.

Also, schools in Portugal are caught between the tension of political rhetoric and the reality of practice. The transformation of schools into learning organisations depends on the collective effort of improving learning opportunities for all the community members, yet, centralised accountability systems undermine these notions' development (Bolívar, 2000; Afonso, 2001). On the one hand, political rhetoric and norms direct the school towards democratisation and autonomy; on the other hand, in practice, there is a logic of accountability, namely through the external evaluation of students, external evaluation of schools, and inspection processes. Although schools show some internal differences, they present more political, structural, and morphological regularities, than differences, reflecting the mentioned determinations. Many of the schools' principals interviewed have confessed facing this dilemma. On the one hand, they are willing to do differently to participate in collaborative learning processes with more impact on effective learning. However, they are under great pressure from society at large (and parents in particular) to achieve high scores. A few school's directors during the interview sessions addressed the topic:

(...) the spirit of parents isn't any different. They want the easiest; they want their child to be delivered to a school that gives better grades because these kids compete at a national level. What matters is to go to university. This is a race! I understand them! We live in this dilemma! Schools

live in this dilemma. (...) How do we get out of here? We face this significant concern. (School director, school cluster).

The irony of having schools situated between competing paradigms is that accountability systems push schools in both directions: on one hand, meritocracy and student outcomes have been a touchstone for school. On the other hand, a learning system based on notions as collective learning and social interaction is an ideal that some of them are trying to achieve. Thus, schools have the role of resolving competing paradigms, mirroring a neoliberal perspective of subjects and institutions. It is, though, a paradoxical system. This dilemma impacts schools where collaborative work is understood as a tool to increase students' learning experiences. In these schools, competition for students' good grades is a reality; they compete for a good position at the national ranking and try to attract new students to survive in a competitive world.

We are always competing for students because they choose the schools they want to go ... it is kind of tricky to manage this, because somehow, deep down, we need to have marketing strategies to attract students. We invite many elementary schools around here to see our activities and to participate in these activities, and our school is top-rated. This is because of our supportive measures, but there are many other factors. At this time, schools have been struggling to have attractive things for students to do, and they [teachers] are trying to change the paradigm of teaching within the classroom. (School director, secondary schools).

One of the main reasons schools value so much to be in this learning community is that it allows having plenty of activities valued by students and parents as very good/high-level learning experiences. With schools and students being judged by their academic achievements in examinations, the external environment's pressure for quick and tangible results poses a significant challenge to school efforts to become a learning school (Retna & Pak Tee, 2006). It requires a bold decision not to be constrained and to move away from some frameworks' "rigidity". Balancing being creative and innovative within the context of a standards approach, mixing hands-on approach, testing, failure, and experimentation isn't easy for most educators and schools (Stoll, 2010).

School directors consider the unbalanced relationship between school competitiveness and collaborative learning as obstacles to creating learning communities and making it difficult for a collaborative culture to thrive and sustain in schools. Besides, teachers and school leaders often find it challenging to promote creativity because of what they describe as "the immense pressure" of focusing on standards or being "very burdened by being driven by targets" or feeling "overwhelmed by bureaucratic demands".

Ball (2003) states that this logic behind managerialism, the market, and the "terrors of performativity" call into question teachers' collegiality and authenticity. In the author's words, this competitive performance culture generates insecurities, anguish, and guilty feelings; in short, it generates "a staged fantasy" to be seen and assessed. Obsession with "rankings" and evaluations with efficiency and effectiveness, with standards and tests, with accountability procedures and school rankings comparing their "quality" in terms of "results", leads to the commodification of the schools and teachers' work in the context of reformist agendas that have introduced new forms of control and accountability in schools, under the pretext of regulating and monitoring their work (Ferreira; Flores, 2012: 213). Beyond these logics, contemporary educational reforms have generated, among teachers, the feeling that changes are external to them and only have a spectator's role (Ball, 2003: 213).

Several school directors referred to feel squeezed between two conflicting paradigms. It is crucial, though, to understand how principals and teachers can manage school tensions, answer system's guidelines, attend to their routines and habits, and develop school's change and learning improvement. Indeed, with schools competing for students, good grades are better positioned at the national schools' rankings. As one Biology teacher told us during an interview:

Students' outcomes improvements are immediate. Kids have taken off, top students have taken off ... their enthusiasm ... the way they face the act of studying... their maturity... their understanding, all of these have increased immensely ... and grades have skyrocketed! In terms of biology, we now are the best school in our school cluster. (Teacher, Águeda).

Indeed, as we could testify from the interviews, schools' culture is closely related to the pressure of the neoliberal movement on institutions towards its "educational effectiveness" (exam results and completion rates). The influence of the neoliberal, global, and European's movement pressure for excellence and effectiveness is reflected in school's organisational context and is expressed in several axes: the quality and diversity demands of the training offer and the services provided, and their impact on people/society; the orientation of learning processes towards final results; the planning of an ever-widening range of activities and the attempt to implement innovative teaching practices. Indeed, the conflict between learning to know and learning to display knowledge for evaluation is very present. As reported by Lave and Wenger (2003):

"testing in schools and trading schools is perhaps the most pervasive and salient example of a way of establishing the exchange value of knowledge (2003: 112)".

During the interview, several students have referred to the pressure they felt/ or their colleagues felt, about getting outstanding grades for university admission:

I felt the pressure and the school demanded a lot from us (...) one of the mistakes I made was living only for my studies. Now, I try to do other things and not give as much weight to the grades as I used to give. The worst phase for me was the 11th year. It was the 1st year I had exams for university admission. I had to have those grades, and if I hadn't, I felt so stressed out (...) simply because I thought I had to have those grades. it was a problem I had to handle. (Student, University of Coimbra).

It is probably the case that survival is, as with all other organisations, the long-term goal that drives schools' day-by-day existence. The increasing struggle to survive, which can be explained by the low birth rates without replacement through immigration, and public policy developments lead to declining school enrolments and schools' closings. Besides, families' role in the education system and its mode of regulation can be assessed by considering their ability to choose their children's school. In public education, the so-called "school letter" prevailed for a long time, the school being assigned by geographical criteria (Batista, 2014: 124). Today, the initial allocation continues to be made by geographic criteria, although families can enrol their children in a public school of their choice through an application and provided based on its availability (OECD, 2008). Where parents have vast options for enrolling their children, there is an increasing pressure to be competitive. As referred by a school director, this is a variable that has to be always on the director's minds:

I have insisted that we should have experimental science courses at the elementary school in Oiã [1st cycle school] because many students are getting away from Oiã and going out of our school cluster. We provided Oiã School with the courses so to try to attract students to our schools. The students from Oiã outflow a lot from here and they go to Aveiro, Águeda and the advanced science course was decisive, in some cases for having chosen this school. (School teacher, school cluster).

Besides, along with the financial crisis, budget cuts have been imposed and impacted available funding. According to the study carried out by the European Parliament (2015), Portugal made severe cuts in the public education sector, with schools being closed and the unemployment rate among teachers from public schools rousing 151% due, among other things, the decreasing of students support in schools and the

extinction of non-curricular areas⁵⁸. Recent policies and practices included: increasing the average number of students per class; reducing teaching hours in the curricular reform and sports; integrating more schools into school clusters and merging existing school clusters; optimising resources of the Mathematics Programme (*Programas de Matemática II*), the National Reading Plan (*Programa Nacional de Leitura*) and the School Library Network (*Rede de Bibliotecas Escolares*) (OECD, 2014). Reducing costs, also demanded reducing the number of teachers hired on fixed-term contracts (not integrated into the public education system) and non-replacement of retired teachers.

We sustain that implementing collaborative learning mechanisms and practices sustain schools in a turbulent and changing environment. Indeed, community members understand collective learning mechanisms as a way of reducing a certain sense of uncertainty (Schechter, 2008: 180). The option is, between democratic education and the neoliberal education" says Boaventura de Sousa Santos (2016):

The philosophy of democratic education points to a 'citizen society', multifaceted in its inclusiveness while promoting the minimisation of inequality and promoting the maximisation of respect for difference, democratic society of high density, that is, democratising much for in addition to the political system, in family relationships, in the community and the productive space. (Santos, 2016: 3, 4).

The concepts underlying this philosophy are citizenship, democracy, learning community, cultural diversity, social responsibility. Philosophy has to be applied both in the educational process itself, in the management of schools, in study plans, in living standards (Santos, 2016, p. 4). We argue that learning communities and learning schools' framework are powerful tools in restructuring education towards a democratic arrangement. They stand for a philosophy close to *democratic education*, described by Boaventura de Sousa Santos (2016).

The IEC helps to overtake this tension and get close to a democratic education as it facilitates the learning experience between different institutional actors, who seem to improve not only the individual learning experience of students, teachers, and researchers. Instead, from the collective point of view, it seems to make the school more democratic, as it offers a set of pedagogical experiences that are highly valued by teachers

⁵⁸ European Parliament (2015), Study - The Impact of the Crisis on Fundamental Rights across Member States of the EU - Country Report on Portugal - PE 510.020 - Committee on Civil Liberties, Justice and Home Affairs.

and students. Moreover, students recognise that they manage their study time more efficiently by participating in these activities than before participating in these courses.

Collaboration with the IEC seems to fit the needs of schools, teachers, students and parents/guardians. On the one hand, schools now have differentiating learning experiences for both students and teachers. Students agree that their participation was essential (directly or indirectly) to raise their knowledge of science-related disciplines. Teachers also agreed on the importance of their participation in the courses for enhancing professional learning.

Striking a balance between competing demands rarely lead to an either/or choice or even a single solution. We need to think in a more integrated way. In a world of interdependency and conflict, people successfully secure their well-being and that of their families and communities only by developing the capacity to understand others' needs and desires.

Chapter 7 – The Learning Community: An Ecological Perspective of Learning, Exchanging Knowledge and Democratising Partnerships

1. The Learning Community: an ecological approach

Confronting the literature on Collaborative Learning Communities (CLC) with a real-life case study is crucial to understand how CLC works in practice and a particular context, with all of its specificities. Thus, the “body of knowledge” of this study is not just contained in desk research. The literature on this topic is undoubtedly essential, yet it only tells us part of the story. It does not constitute the full body of this living practice. From the perspective of Wenger-Trayner, E.; Wenger-Trayner, B., (2015), with whom we agree, the body of knowledge is constituted “by the community of people who contribute to the vitality, application and evolution of the practice” (Wenger-Trayner, E.; Wenger-Trayner, B. 2015, p. 13). As with any community, this is a case made of multiple experiences, realities, interpretations and ways of seeing and living the learning environment. Each element of this community have a particular form of living, feeling and interpreting this experience; this is, therefore, a community of divergences, of pluralism, where diversity of interpretations come to the forefront. It is, though, a pluralistic perspective of the learning community and the agency of each one of its constitutive elements.

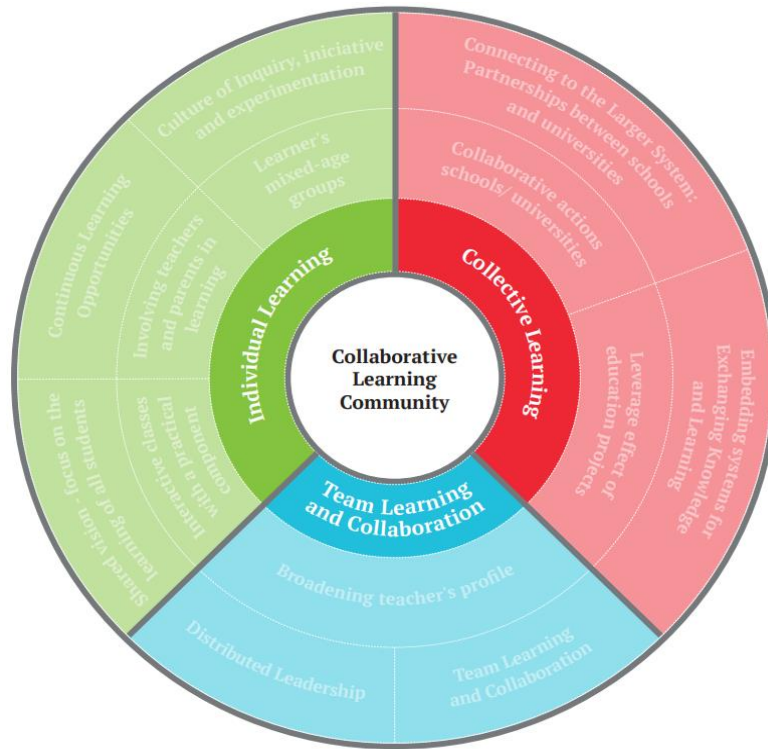
In this chapter, we problematise how, in a learning community, multiplicity can interact, producing new versions of the reality, new translations of the world that create new learning experiences. The set of institutions and individuals that constitute this learning community multiplies the analysis angles and makes it a unique and innovative experience - a real learning laboratory, wherein each one is learning how to work and act within the community. Combining multiple voices can also produce a two-way critical stance through a mutual engagement process in reflection and questioning practices. On the one hand, uncovering how this community is undertaking its activities and learning practices is crucial to think about how collaborative learning communities (CLC) work critically. On the other hand, it is also vital to understand how forms do CLC change by their members' experiences and learning processes. Besides, it is also relevant to questioning how schools might act as learning organisations.

Throughout the present chapter, we highlight the collaborative and relational character of this learning experience. We approached learning as an open system connected to other systems. This approach suggests that learning is embedded within a social and physical environment, meaning learning as an integral and inseparable social

and relational dimension. By assuming an *ecological perspective of the learning community*, we highlight the learning system's interdependency. Our ecological perspective presents a world of interconnected and interdependent parts held together by the purpose and meaning of the system in which they function (Sackney, 2011: xxii). This defining aspect of an ecological perspective, allows us to be better equipped to detect and analyse the patterns of relationship, systems of influence, and networks of connection that interacted to shape and direct the observable actions, interactions, events, and outcomes the schools we observed.

We argue that IEC has a crucial role in mediating the foundation of a collaborative learning community and providing necessary steps for transforming schools into learning organisations. We stress an *ecological approach of the learning community*, highlighting the complexity of relationships and the interdependency among the elements of an open learning system. This ecological approach creates a complex relational landscape of learning and experimentation where people and institutions are brought together. To encompass all this complexity, we consider that constituting this collaborative learning community have resounding effects mainly at three interlinked axes of action: A) at individual learning of each member of the community; B) contributing for the creation of a collective experience of learning; C) producing collaborative joint actions between school and universities (figure 5). The three axes are the figure's inner circle representing an ecological approach of the collaborative learning community. The borders that divide the three axes are porous and necessarily interwoven. As this is a dynamic system, there is no line separating the dimensions; however, we separated it to facilitate the analysis and the reading. These borders' porosity allows negotiations and resignification of practices and actions, and actors and spaces change and recreate itself. In this border, the relation between the members of the collaborative learning community and the external environment allows us to conceptualize these spaces as places of promotion of democratic involvement of various actors.

Figure 5 - Core dimensions of the Ecological Approach of the Collaborative Learning Community



In the dimension about individual learning, we uncover how the learning community members consider this experience has been contributing not only to improve students' learning but also to teachers' professional learning and contributing to changing schools' learning dynamic. Overall, we argue that belonging to the collaborative learning community, creates specific learning conditions for educational change, namely: Interactive classes with a practical component; Learner's mixed-age groups, and involving teachers and parents as learners have been playing an essential role in improving individual learning. Equally important to the schools' learning dynamic is that schools of this study are developing mechanisms to create a shared vision - focus on the learning of all students; a culture of inquiry, initiative and experimentation; and continuous learning opportunities for school staff. These studied schools' elements make them more close to the *integrative model of learning schools* (Kools and Stoll, 2016).

On the dimension collective learning, we argue that the connection to the external environment is particularly visible through the established partnerships among schools, universities and research centres. Hence, we highlight the collaborative actions between

schools and research centres; the horizontal and continuous dialogue established; its 'leverage effect' on different educational agents' engagement, of different 'repertoires of knowledge' and experiences. Besides, we discuss how these partnerships are contributing to expanding knowledge democratization and learning.

We elaborate on broadening teachers' profile as an important collaborative learning experience and teamwork on this learning community members for the dimension team learning and collaboration. We also elaborate on team learning and collaboration and distributed leadership as dimensions of the learning organisations' integrative model.

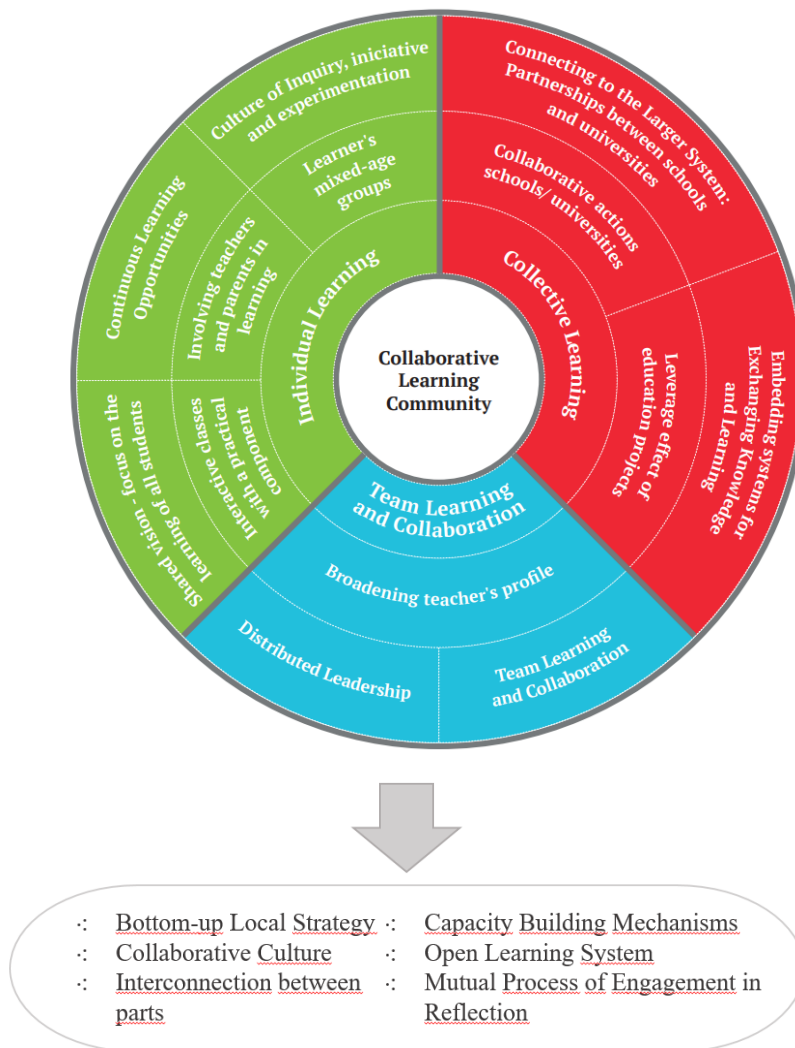
As we argued in chapter 3, these configurations produce resounding effects on the school's dynamics. Thus, the learning community's effects are also felt at the school level, with schools approaching the learning organisations framework. Table 14 found an abridged version of the dimensions of the learning schools' integrative model discussed by the interviewees. Each group of interviewees presented what they consider to be the intangible outcomes of transforming schools from teaching to learning organisations. This information is further developed in the next pages, every time we elaborate on each learning school's dimensions. We divided the information into groups of interviewees.

Table 14 - Intangible outcomes achieved by transforming schools from teaching into learning organisations according to the interviewees

Learning School's Dimensions	Students	Teachers	school directors	monitors/researchers	IEC Staff and Dir. Board
<i>Developing a shared vision with a focus on the learning of all students</i>	* Involving teachers and parents in learning	* Reinforcing motivation * Exchanging knowledge and learning experiences * Courses aren't mandatory * No evaluation pressure * Improving academic outcomes	* Equal learning opportunities and experiences for all * Courses expanded to other subjects and age ranges		* Policy of valuing local actors and decentralizing education * Increasing critical thinking
<i>Creating and supporting continuous learning opportunities</i>	* Broadening educators' profile	* Teaching training * Up-dating scientific knowledge * Bounding with students	* Open to dialogue with teachers and staff * Tailored conditions for professional learning	* Improving strategies of science communication	* collective learning practices between IEC staff members * Broadening teachers profile
<i>Promoting Team Learning and Collaboration</i>	* Mixed-age groups * Strengthening bonds between students and teachers	* Mutual learning * New learning dynamic within schools	* New collaborative projects between schools and research centres * More funded projects between schools and universities based on the IEC's science courses model	* Teamwork as an organisational norm among the learning community	* Schools connected through IEC's activities
<i>Establishing a culture of inquiry, initiative and experimentation</i>	* Rethinking the content of Learning * Interactive classes with a practical component * New academic path – open horizons	* Fully equipped laboratories * Learning by doing * Younger teaching staff	* New infrastructures (laboratories) * “Belonging” to the collaborative learning community	* Teaching based on specific science-related subjects * Sharing pictures of scientific breakthrough findings * Learning by hands-on experimentation * Courses stimulate new interest in science	* Differentiating educational practices * Students effective learning process * Learning by doing and interactive methods
<i>Embedding systems for collecting and exchanging knowledge and learning</i>	* Strengthening bonds between students and teachers	* Interdisciplinarity of the IEC's courses and other activities * Few students per class	* Sustainability and leverage effect of the courses and other activities at schools	* Sharing and discussing with students the latest about science * Few students per class enable all to experiment	* Students and researchers in close contact
<i>Connecting to the external environment and the larger learning system</i>	* Extending capacity through partnerships	* Schools and universities working along and embracing mutual learning * Schools open to the external environment * Public acknowledgement of the collaborative culture	* Partnerships between schools and Universities * Open to other partnerships * Collaboration with parents and families increased	* Lessening the gap between science and society	* Connecting research centres to schools * Strengthening the educational mission of other local institutions: museums, research centres and local government
<i>Distributed Leadership for Learning</i>			* Changing into school's distributed leadership * Sharing a vision with teachers and staff		

In figure 6, we show the complexity of the ecological approach of the collaborative learning community graphically. The collaborative learning community is positioned at the core, responsible for creating an open and interwoven learning system that entails changes at the learning community members (intermediate circle), and the school level (outer circle). The outer circle of figure 6 represents the dimensions of the integrative model of the learning schools that are present in the schools of this collaborative learning community. The challenge is to identify in which dimensions are the schools of this case study closer to the integrated model of learning organisation (which is an ideal type, as referred in chapter 3) and in which dimensions can this collaborative learning community make improvements.

Figure 6 - An ecological approach of the collaborative learning community



Hence, our case study shows that this open learning system turned into something tangible due to the profound commitment of teachers, students, families,

principals, policymakers, researchers from research centres and museums, and researchers and professionals from the Institute of Education and Citizenship, working alongside with the municipality. All of them constitute what we argue to be a collaborative learning community (CLC) under the framework explored in chapter 2. We have described in detail the members of this CLC in chapter 5.

All in all, we argue that this CLC discloses a bottom-up response developed collaboratively by local agents to the challenges identified in the education field. This bottom-up strategy is claiming a collaborative culture to create an open learning system, one in which mutual processes of engagement and reflection are present at different levels of the system itself. Only this way is going to lead to the sustainability of the practices.

As referred in chapter 2, a learning community is a system that is connected to the broader context, which includes diverse partners, networks and professional learning communities. Thus, it is a complex, interdependent system wherein learning occurs well beyond the school's wall through connections beyond conventional partners and structures. Indeed, findings indicate that due to IEC's facilitation role, capacity building mechanisms have been improved for the learning community members. As detailed in chapter 2, building personal capacity entails an in-depth and critical deconstruction and reconstruction of one's professional knowledge. Interpersonal capacity addresses the development of relations and collaborative practices whereby ongoing professional learning becomes a constitutive norm. Last, organisational capacity means building organisational structures and systems that support and value personal learning, facilitating and encouraging collective learning. This model asks educators to build personal, interpersonal, and organisational capacity to embed these new images in their schools (Sackney, 2011: 156).

At the personal level, building capacity is a process of looking at existing knowledge and practice; reflecting on the effects of the practices; and experimenting with new knowledge and practices to search for more energizing learning experiences for students, colleagues, and oneself. Interpersonal capacity equips educators to develop collective understandings, collective commitments, and collective responses as they align practices with the educational meanings and purposes hammered out by the community. Organisational capacity brings people together; focuses their work; and provides knowledge, resources, structures, and expectations to support deep learning. The model assumes that knowledge is personally and socially negotiated and constructed, and

learning flows from and through the knowledge gaps and embedded knowledge of individuals and groups of people. It also assumes that the domains of capacity are intricately connected and mutually influencing, and that, together, they constitute the learning ecology of the school (Sackney, 2011: 156).

In the present case study, the capacity exists at the three interconnected levels. At the personal level, teachers in this study invested in their growth and development by allocating time and resources to invest in teachers' professional development and giving students the possibility to learn beyond the national syllabus. Teachers have shown they are life-long learners, as well as school directors, researchers, and students. At the interpersonal level, teachers had established collaborative relationships with their colleagues and students and researchers from the university. Organisationally, these schools built capacity through structuring processes and other stakeholder groups, such as universities and research centres, and, in one case, regional museum. It is worth mentioning that at the *governmental level*, Portugal Ministry of Education takes collaborative learning communities as a specific measure for improving education success effectiveness, giving support and developing a sense of alignment with measures implemented at the school level and to widening its implementation in schools nationwide.

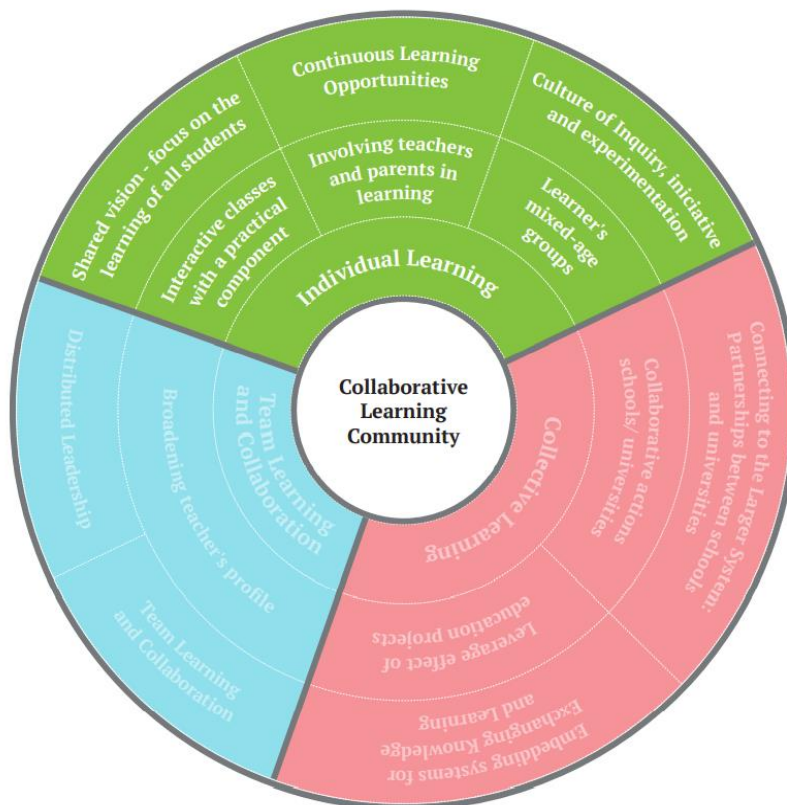
Besides, a knowledge-sharing dynamic has been created and has ensured successful outcomes in its members' learning practice. Similarly, mechanisms for developing collaboration strategies amongst schools were established. They empower the local government and give schools the support needed to take risks to redesign their relationships with other schools and, in some cases, with broader community-based services.

Moreover, we argue that the external environment's connection is particularly visible through the established partnerships among schools and research centres. Hence, all these features improve students' learning experience, teachers' professional learning and the overall collective learning dynamic. IEC is organising with schools, courses, seminars, conferences and debates to disseminate science to the broader public, an example of the effort to interwoven with the external environment. Another example of this intention is the link to other schools, universities and research centres. Developing these partnerships and collaborative arrangements have played a crucial role in creating exchanging knowledge mechanisms and new collaborative mechanisms.

1.1.Improving Individual Learning

We start by analysing how this learning community has been developing teachers’ and researchers’ professional practice and students' learning (green) (dimension *individual learning* – Figure 7).

Figure 7 - Individual Learning



We are going to analyse the elements that constitute the dimension of *individual learning*. We have compiled these elements (Interactive classes with a practical component; Learner's mixed-age groups; Involving teachers and parents as learners) from the interviews made to the learning community members (students, teachers, school directors, IEC monitors and researchers). In their opinion, those are the critical issues to bear in mind, when thinking about their experience in the learning community. We also intended to understand how elements of the integrative model of learning organisations

were present in the schools studied. We use the integrative model elaborated in the third chapter of this thesis and explore data from the fieldwork stage. We argue that the schools studied to share the common concern of sharing a vision with a focus on the learning of all students; creating a culture of inquiry, initiative and experimentation; and creating continuous learning opportunities. Some dimensions are better to accomplish than others. As referred previously, LS is an ideal model, so our goal was to understand in which dimensions are these school closer to this ideal and in which dimension there is room for further improvement.

All these dimensions are interlinked with each other, as previously referred to in this chapter. This is an ecological approach that implies that all boundaries are flexible, mutable and all dimensions relate. For this reason, several topics referred to one dimension are also elaborated on other dimensions. We can find highlighted in light blue in figure 5, the elements that we explore in the next sub-sections about individual learning.

1.1.1. Involving teachers and parents as learners

The advances on the legislative acts⁵⁹ turned parents' voice in school, mainly through parents' associations. However, this participation is sometimes more symbolic than effective, which means that the impact of parents' involvement in school activities and decision-making remains limited (Batista, 2014). Among the constraints identified, there is a large number of representatives of parents recruited from among teachers - the "parents-teachers", quoting Silva (2006) - or even school practices that hinder the

⁵⁹ The participation of parents and guardians in the school is a right enshrined in the law. This right is contextualized in different legal norms, namely, in the Universal Declaration of Human Rights.

Families saw their participation in school life reinforced with the publication of the Basic Law of the Educational System in 1986 and subsequent amendments, because they were given an intervention status in the educational process.

Decree-Law no. 372/90 of 27 November - new legislation for associations of parents and guardians - regulated the constitution regime, the rights and duties to which such associations are subject, which is why parents / EE started to assume an important role in the school.

The participation of representatives of parents and guardians in the general council - a strategic management body responsible for defining the guidelines for the school's activity - is a reality, due to the autonomy, administration and management of public establishments in pre-school education and basic and secondary education, published in 2008 and amended later. In the last amendment to the aforementioned regime - Decree-Law no. 137/2012, of July 2 - parents or guardians are recognized the right to participate in the life of the school group or non-grouped school.

relationship between parents and teachers or the representation and the presidency of external actors in the General Council, despite the legal possibility (Batista, 2014: 124).

Indeed, parents' participation ⁶⁰ in schools' daily routines was one of the most significant challenges reported by school directors. This aspect was repeatedly mentioned during the interviews and schools' strategies to bring parents or guardians closer. Although most IEC practices with schools include younger students (children and adolescents), it is also open to adult learning. Some activities were designed to bring parents and teachers together; to facilitate their learning, or build a collective sense of learning. Very often, it was for both purposes.

I made the bridge between the IEC and my students and the students of my colleagues at school. I publicised the activities and used myself as an example; I attended the courses over all these years. I motivated them by telling them to come and to follow my example. It started like that. (Mother and teacher from 2nd cycle school)

As mentioned above, several teachers⁶¹ participated in the courses as learners. Teachers attended these courses in similar circumstances in the classroom with their students. They sit side by side. Students often explain things to teachers, especially in studies related to technologies, social networks and its operating modes, or even how to handle new laboratory equipment, such as a micropipette, a relatively new tool in the laboratory. The fieldwork notes witness the presence of teachers and parents as participants of the advanced science courses held at IEC premises:

It is Saturday morning, and the classroom is packed. There are four adults sited among the other participants who must have between 12/13 years old up to 15/16 years old. I don't know how old they are, but there are several different age range groups in the classroom. (...) I had the opportunity to speak to one of the adults during the morning course break. It is the 2nd advanced course he takes. He first came because of his son. The son was not sure about the course he would choose (his son was thinking about chemistry though) and the father thought it would be interesting for his son to take the advanced chemistry course. As he liked the experience, he opted to enrol in a 2nd course and opted for the advanced neuroscience course. This time he no longer came with his son. (fieldwork diary, 3/9/2013).

Several teachers revealed us the reasons why they consider essential participating in these courses along with their students [at the school setting]:

When I attend [science courses], I transmit an image that, as a teacher, I am also interested in learning like them [students]. Everyone in their role, but I am interested in learning and giving them the idea that learning is happening throughout our lives. (Director of the pedagogical council and teacher, school cluster).

⁶⁰ It was also difficult to interview parents for the purpose of this study. We ended up by interviewing two mothers who are also teachers of biology in schools that collaborate with IEC. We talked about IEC's activities with other parents but in an informal way, during event's coffee breaks. This information was assembled within fieldwork notes.

⁶¹ These teachers happen to be parents of students who attend IEC's activities.

There is always a teacher who also attends the course, and it is funny because teachers switch position with students and become a classmate, which is still exciting and essential. Students realise that knowledge is not something unreachable and that it is something that is learned and has to be built, and they realised that teachers also learn. They [teachers] are always learning and do not mind sharing experiences. (Director of the pedagogical council and teacher, school cluster).

(...) It is an opportunity to connect in different ways with students; “we learn with them in the same learning environment; we share experiences, and we bound to each other differently. We create a horizontal relationship. (Teachers, high school).

The IEC director also referred that, surprisingly, the receptivity to IEC on school has never been a problem. If the IEC staff was afraid of not being well received at schools in the early beginning, very quickly, they have realised that there was no reason to be frightened. As referred by IEC’s director:

(...) I thought it was going to be difficult not to create antibodies in schools with teachers. We were cautious in the first two years (...) we started protocols with schools, but we didn't go to schools until teachers and students came to IEC and take the courses themselves and then we had teachers as allies. We didn't go to school to convince teachers that our courses were excellent (...) we wanted to build the path side by side (...) we were cautious about that.

Teachers reported many times the advantages for their professional learning of having IEC as a partner. Indeed, most professional development activities for teachers are still traditional by nature, directed at the individual teacher and often not situated at the workplace, such as workshops, informative meetings, courses, and training sessions (Reynders et al. 2015). Research on professional learning has shown that professionalization is more effective when teachers collaborate and activities occur at the workplace and are integrated into daily practice (Van Veen et al. 2010). The literature also shows that professional learning communities (PLCs) may provide an environment for working and learning in collaboration with colleagues (Bolam et al., 2005; Fred, et al., 2019; Stoll, L.; Louis, 2007). By participating in PLCs, teachers are actively engaged in their professional learning and that of their colleagues, presumably enhancing their teaching practice, ultimately leading to improved students’ achievements. However, collaborating with students is not very usual, and literature on this subject is scarce.

As teachers reported, this is also an opportunity for teachers to act as joint developer and learners on science-related issues, which are in great expansion and fast development. If we take the biology field of knowledge as an example, most of the teachers working at secondary schools nowadays ended university before the DNA structure was discovered and molecular biology was not fully established as a discipline yet. Unlike chemistry and physics, which are more established sciences, molecular

biology evolved considerably in the 2nd half of the 20th century. A researcher in this field states that “these teachers were trained in the 1980s before introducing a systematic component of DNA structure. Besides, the molecular biology in undergraduate degrees and the evolution of biology is recent”. School teachers also recognise this fact:

In Biology, thousands of scientific articles emerge every day, and we have a challenging time keeping up to date with everything that is released in science. We try, but we are overwhelmed with work. It is excellent to hear researchers, who talk about breakthrough science, and they have been helping us to keep updated scientifically. It is unthinkable for me to stop taking the courses because I learn something new every day with my students, which is curious. (teacher, secondary school).

(...) in neurosciences, changes are enormous! I learned, for example, that a neuron did not divide, did not change. Therefore, it is essential for me because even to teach, I should be minimally updated, even to feel more secure, with more freedom ... I think in that sense, [the IEC] give me more freedom and security to perform my duties. (mother and teacher, secondary school).

Moreover, and according to the IEC director:

Universities were very negligent in preparing these teachers, and then the Polytechnic Institutes have done no better than the universities (...). The university should have created teacher training programs with entirely different CVs and give them pedagogical training. Those could have been good teachers, scientifically competent, which is not the case nowadays. University science programs are very superficial. What teachers learn here [at IEC Science advanced courses] is not easy to translate into teaching. I don't intend to recycle the teachers at all.

As recalled by Bredeson and Scribner (2000) and Hargreaves (2003), teachers-as-learners are critical to systemic educational reform, and school improvement focused on enhancing learning outcomes for all children in public education. For example, teachers' professional learning is offered as a primary educational reform strategy intended to: a) helping schools and teachers developing more rigorous curriculum standards; b) designing meaningful academic assessments; c) facilitating organisational change; d) guiding school improvement plans; e) improving teachers' knowledge and skills to enhance student learning outcomes professional learning is critical (Bredeson and Scribner, 2000, p. 2).

In this case, the partnership with IEC was the first step for teachers and school directors to create “new ways of doing” and, consequently, recreate a professional identity, by modulating relationships of accountability and “belonging” within the community. In this case, new ways of acting include rethinking practices. New ideas come from new relationships since people have expanded their networks into unfamiliar educational territories. New ideas included implementing new classroom

configurations⁶², school-wide activities or special events, materials and resources, seminars, conferences and workshops, or alternative engagements with students, parents, and colleagues. As educators implement these ideas, they move through an interactive process of action and reflection, and capacity to promote student's learning increases as teachers find alternative practices that are successful in improving student performance and improving teacher's professional performance. As one teacher said:

[During the course] *It came to my mind a lot of new ideas, extraordinary things that I could do with my students in the class, or ideas for asking questions on the test or even ways of explaining some topics that could be useful. Sometimes we want them to understand better something, and we cannot come up with new ways of explaining something, and it has helped me a lot on this. (...) The richness of science is much greater, and scientific knowledge is always changing and changing so fast, and today things are no longer what they were. Science subjects are differently approached, and this is fundamental for us, teachers. No matter how hard we try to keep up to date with scientific topics, we are not always successful in achieving that goal.* (Teacher, Águeda).

Teaching change entails integrating new materials and scientific findings, curriculum implementation or necessary improvements in the teaching process. This is also taken as an opportunity to maintain a horizontal relationship and mutual learning between students and teachers. These particular learning communities' arrangements create a space wherein students feel it is crucial questioning, being curious and inquiring teachers and fellow students for the sake of learning, even though it is not directly associated with the academic curriculum:

(...) here, the proximity between teachers and students was great; they asked us to ask questions, which was a relief because I was not looked as a picky person, nor did they cast me a sideways look. Because at school when you ask a question, not the teacher, but directed to your classmates, the smart kids, look at you like "- What? Didn't you know?" and people can feel intimidated. Here at IEC, it doesn't exist this. (Jorge, student).

As several interviewees reported: "people felt empowered by belonging to this network". These activities have been improving teachers' engagement, and collaboration habits are also being reinforced between schools. Consequently, this empowers teachers and school directors not to be afraid to take risks, do things differently, and redesign their relationships with other teachers and sometimes with other schools. Indeed, school teachers and school principals are more aware of their practices and pedagogical decisions, but also they inquiry the social fabric of science education and, ultimately, the power structures and processes inherent in educational institutions'. This level of

⁶² Extracurricular courses include classes with a maximum of 10/12 students; groups of students are composed by mixed-age students and teachers, both acting as fellow learners.

systemic awareness and analysis provides “a solid foundation from which to consider how individual and collective practices and school goals might be improved” (Sackney, 2011: 64).

1.1.2. Interactive classes with a strong practical component

IEC organises content, teaching time, and learning groups of science-related courses differently from most Portuguese schools. Instead of structuring the content based on each school year and long-term teaching units, IEC creates learning situations geared towards scientific scope, in groups of students of varying ages, where teachers are also included as learners. These are clearly and entirely optional, it is part of the informal curriculum, even though they are planned and in close dialogue with the formal curriculum. The formal and the informal curriculum are a dynamic interplay of teaching and learning processes, content, and experiences in and out of the classroom.

From these particular cases, the informal curriculum's innovative content has been mentioned and is considered a complement to the formal curriculum. Contents are guided for practical and advanced courses structured around scientific subjects and not divided by disciplines or traditional curriculum. These subjects are taught having in mind its application to real-life situations. It is the students themselves who referred the differentiating features of their learning experiences: “The fact of joining several different years in the same group makes a difference and helps the younger ones to grow and to see things differently (...) (Ivone, student)”.

Other students also underlined the science-oriented subjects, the interactive methods, and the hand-on learning process lived through the science courses:

The courses are well structured, and the subjects are advanced. Teachers say much more [than the school's teachers], and there is more freedom in these courses. Another thing is the practical aspect that is undoubtedly an advantage. (Lara, former student).

I liked the courses because they were very hands-on. They differ [from the classrooms] because the content is different and the class is smaller, we are more comfortable and learn more. (Catarina, student).

The effects of these courses on students have highlighted that they could relate academic issues and learn about breakthrough scientific topics.

Another difference were the subjects (...) when I came here, I realised that the issue we are taught at school is sometimes a bit outdated (...) and that maybe there should be an update, something IEC does. It gives us updated things (Jorge, student).

When I came to IEC, I began to relate the contents of the subjects I gave here with those of the school, I started connecting things, and my notes reflected that. I began to have more facility in these subjects, especially in biology and geology. (Lúcia, former student).

Besides, students consider the contents of science courses either too advanced or too specialised to fit the school science curriculum⁶³. Students have mentioned this aspect as being positive. Indeed, all the interviewed students were very much motivated to learn and reported not feeling challenged by school contents anymore. These courses also have a practical application in real life, and every student quickly identifies its application and interest of the matter on its own personal or familiar life. One example of this could be of one student that by personal reasons got interested in topics related to human health, and more specifically with haematology and wanted to go with her father to doctor's appointments to learn more on the subject:

(...) I already knew I wanted to pursue the health field of work; thus, this was reinforced by the course's participation because many teachers were also medical doctors. The haematology session was crucial during the course on stem cells. My father was attending haematology appointments, and I told him I wanted to go these appointments with him. I was utterly amazed by this scientific field. It was a great asset to me and have helped me define the area of expertise. (Student).

Teachers also reported students' impact, especially in developing new interests on broader topics and acquiring new research skills.

I extracted DNA, things they have never done ... I learned new things which my colleagues still do not know, and with other courses, I became aware of the existence of areas of knowledge I did not know. I became interested in new issues. (...) in microbiology, we made experiences that on classes, we had no chance of doing for several reasons: lack of time, materials, laboratories, etc. (student, IEC).

Besides, it also impacted both students and teachers positively in learning science and science-related issues. Simultaneously, the proximity contributed to closing the gap between science researchers and university teachers, who can help students find the best academic path for each of them.

Learning is most effective through their [students] participation in these courses, no doubt! This is because they do more than just listening. They understand the different stages [of experimentation] because if they do not do well, the experience does not work. Therefore, they realise the importance of the different phases in the experiment. It's completely different when you try, and you'll try to do it yourself. (Teacher, Oliveira do Bairro).

⁶³ Courses led by IEC can be, for instance, on biomedicine and neurodegenerative health diseases, stem cells, toxicology, biotechnology and advanced therapies, microbiology, biology.

The fact that rose all this interest and enthusiasm was the real-life cases presented [in forensic studies course]. They [researchers] gave us examples of all the cases in which they had already worked or were working at the moment ... it was fantastic. (Teacher, Águeda).

1.1.3. Learners mixed-age groups

One of the most common ways the IEC regroup learners are by being flexible about age grading is using deliberate strategies for mixing older and younger learners. There is a variety of reasons offered by the literature for mixing up ages in the learner groups: 1) as a stimulus for learning; 2) as a way of encouraging diversity and contacts that otherwise would unlikely to occur; 3) the possibility of role-playing including in peer teaching; 4) and the possibility of reducing bullying and fostering good social relations (Flecha, 2015; OECD, 2013b). Learners in mixed-age groups have heterogeneous competencies and abilities, but this heterogeneity is not perceived as a disadvantage. It is, instead, an essential condition for learning.

This practice was also extended to schools in other activities not related directly to the IEC activities at the school premises. As stated by one teacher:

At this time, I have students who are already tutors of the youngest. In this way, what we prepare here is a kind of tutoring with master students who are tutors of my students [secondary school], and these students, in turn, are already tutors of the students of the ninth grade (...) thus generating this chain, which we call a "chain of help". (teacher of secondary school and president of the pedagogical council).

In students' opinion, mixing up learners of different ages and mixing up students and teachers in the same class enhances proximity between both groups and strengthens bonds. These practices have immediate effects on students and teachers' relationships, motivation and learning. In the teacher's words, a new chain of help was built upon teamwork and collaboration. The "chain of help" put the onus on the collaborative process, which generates a sense of interdependency, mutual responsibility, shared commitments and shared understandings juxtaposed with individual perspectives, personal insights, and unique knowledge bases.

While working together, students build new understanding by challenging others' ideas and defending their own. Overall, collaboration allows creating a different

product through the combination of different perspectives, talents, and ideas, which is quite different from what each of the participants could have created on his/ her own.

As a result of new motivation, and because this experience has shown that it is positive to do things differently, new projects have emerged, a new school's dynamic was created, and school directors and teachers emphasised a sense of belonging to a new school's culture. Simultaneously, as reported by teachers and school directors, a new collaborative culture between schools and universities has been consolidated, and teamwork is now part of schools and research centres' organisational culture.

1.1.4. Learning schools: sharing a vision; creating continuous Learning Opportunities; developing a Culture of Inquiry, Initiative and Experimentation

We argue that for the dimension individual learning, our case study allows us to elaborate on three dimensions of the integrative model of schools as learning organisations, namely developing a shared vision with a focus on the learning of all students; Creating and Supporting Continuous Learning Opportunities; Establishing a Culture of Inquiry, Initiative and Experimentation. These dimensions are directly linked to other elements of individual learning, namely: involving teachers and parents in the learning process and regrouping educators and teachers. Both elements are going to be analysed in this chapter.

Providing all students with the same kind of learning experiences was present in all the interviews made to teachers and school directors. One of the main concerns of school principals was to provide all pupils of the respective schools or school cluster with the same learning opportunities. Therefore, courses occurring at the school setting were expanded to other subjects, age ranges, and knowledge areas. No student with the will to attend these courses were left behind, school directors ensured. As we were said: “We attempted to involve kids from all schools so that the impact of the IEC on schools, especially on students, would also be made naturally on the learning side. (...)” (School cluster director, Águeda). Indeed, a negotiation between schools and the IEC ended up opening the possibility of participation to all the students interested in the courses. Besides, students and teachers considered that involving teachers and students at the same learning activities; the fact that there was no obligation to participate in the courses and

since the assessment was not utterly relevant in the courses, were considered relevant for sharing and spreading a vision among school community with a focus on the learning of all. Also, teachers underlined the fact that pedagogical contents go way beyond subjects of the formal curriculum; the reconfiguration of time of learning and the interdisciplinarity of the different subjects is reinforcing learners' motivation to learn and are concurring to create a new shared vision within the learning community with a focus on the learning of all students. The IEC staff have added that these activities help students be critical thinkers and actively engaged citizens. The IEC is also making a position in the municipality by becoming an essential stakeholder in developing a policy of valuing local actors and decentralising education.

Although the effort made to reach all students, school directors, teachers and IEC staff share the ambition to create opportunities in other knowledge areas, these learning experiences can embrace even more students. The aspiration to be provided with new courses in different fields of knowledge such as informatics, literature, history, human rights, mathematics, political science, to name a few, was often referred by all the interviewees' groups. Yet, students were the group that has referred more times this fact:

I know people from other areas who would like to take these courses, but in their areas of knowledge namely, geology, economics, history (...) there should be [these courses] for this type of areas. For example, political science I would love, I find it super interesting. I would fancy developing the part of the argumentative power (...), and even in terms of general culture, I think I would love it. (André, Student UC, Chemistry).

For its part, the IEC shares with the other interviewees the desire to expand these courses to other areas of knowledge, also mentioning that it would be necessary for other institutions or even schools to take this initiative. This was precisely the case. The schools themselves have developed exclusive programs for the courses, which are very similar to the IEC courses, but on other areas of knowledge, as it is elaborated on section 1.2.3.

Overall, as elements to be considered for further improvement, it would be desirable to make such a vision into something that is shared among all schools' staff and other key stakeholders and not only among the most interested ones. The involvement of staff, parents and external partners in this envisioning, are possible fields of improvement. Also important would be to broaden the activities and the courses to other areas of knowledge and make more courses available for families.

In what is related to transforming schools into learning organisations, it would also be essential to elaborate on creating and supporting continuous learning opportunities. This dimension is also interwoven with the element broadening teachers' profile and involving teachers and parents in the learning process. Students have mentioned a positive aspect, broadening educators' profile, i.e., having scientists and other professionals as monitors helping teachers and students be scientifically updated. Researchers and monitors of science courses also recognised that these courses have helped them improving science communication skills and enhancing collective learning practices among staff members.

In the case under analysis, teachers were involved in courses and admitted enhancing their scientific knowledge, building more confidence and self-esteem and creating strong bonds with students. Professional learning was focused on student learning and on the need for keeping teachers updated. This is part of a changing practice that has been implemented in schools so far. Staff is also fully motivated and engaged in finding the learning they felt needed, instead of the “useless training”, which teachers do not consider relevant for their professional growth and are not considered a plus on professional knowledge development. The interviewed teachers wanted to be updated scientifically to be more confident in their classes and feel they are doing their best to improve students' learning.

Indeed, the collective dimension of the teaching practice is achieved through collaboration with students and researchers. In other words, the complexity of the pedagogical work requires collective competences. Overall, it is about investing in groups that can enrich each other to face common challenges and a shared envisioning. In this perspective, the collective and collaborative condition of teaching practice materialises in an investment by the university in training articulated with the school and vice versa. In this way, the capacity for communication between institutions is expanded, conquering workspaces that can bring the learning community into contact. As Nóvoa (2017) points out, through the creation of joint research and training spaces between schools and universities, the possibility of rethinking common challenges and investigating teacher education's epistemologies in a collaborative perspective is created. This conception does not correspond to a subjective notion, but another rationality for education research and educational practice.

Regarding teachers' professional training, Nóvoa (2017) implies creating a new institutional place, a hybrid position, i.e., a location that, being firmly grounded in the university, is a gathering space democratic sense a broaden use of the term. According to the author, "building a new place for teacher training, in a border area between the university and schools, filling a void that has prevented thinking of innovative teacher training models" (Nóvoa, 2017, p.10). In this place of convergence and collaboration, the teaching profession takes place both for training and for its affirmation and public recognition. It is, though, not only a matter of taking the university to schools or bringing schools to the university, but of building a new place, together, in collaboration, valuing everyone's knowledge and experiences (Zeichner, Payne, & Brayko, 2015). Today, we know the potential of collaboration for learning, and its democratic features and mobility between universities and schools is essential Nóvoa (2017). However, only with cognitive justice, we can achieve an authentic encounter between two worlds which, very often, live apart:

Only in this way will we build professional teaching communities, which are communities of learning and training, and not merely reproductions of an "empty theory", which so often marks university thinking, or of an "empty practice", unfortunately so present in schools. (Nóvoa, 2017: 12).

We state that learning community whose richness lies in the enrichment of practices and the teaching profession, namely through teacher's involvement in pedagogical innovation or research and teachers' integration, is interdisciplinary workgroups. It is this co-responsibility that makes it possible to build proper professional training. For it to take place, it is also necessary to assign to teachers the role of learners and active participants in decision-making and policy implementation processes and not to transform schools into a mere "field of application". As Nóvoa (2017) reminds us, building a partnership requires a clear understanding of the different functions. Still, always with equal dignity among all and a real capacity for participation, that is, for decision making.

Neither schools nor universities, alone, can train teachers, and even together, schools and universities won't be able to train teachers well without relating to the knowledge in the communities that the school has to serve (Zeichner et al., 2015: 132).

Directors reported being open to dialogue with teachers and staff and implicated in providing the right conditions for professional learning (time, resources, and infrastructures). On the other hand, researchers reported that belonging to this

collaborative learning community has given the right conditions to improve science communication strategies, skills, and the right opportunity to connect the general audience with science. The IEC staff also considers that they are developing a robust collaboration and collective learning process amongst the institution with resounding effects on establishing a relationship with schools and students.

Nevertheless, to be entirely effective, a broaden strategy must be implemented. This strategy could turn this practice into something continuous and spread (without being mandatory) to other teachers and students. One strategy to do so could be to broaden these courses' subjects to other learning practices, such as the conferences, seminars; and other public (in terms of age ranges).

Also relevant in the framework of learning schools is establishing a culture of inquiry, initiative and experimentation. This dimension comprehends experimentations and innovation and school supporting teachers in their bold practices. According to students, some examples of inquiry orientation of their schools are thinking critically on science subjects in the IEC courses and the other courses that were developed afterwards. Also, students mentioned how to use learning time, as the interactive and experimental character of these courses; and the mixing groups of learners. Also relevant for students is the practical and interactive component of classes. According to teachers, this allows students to experiment and not to feel afraid of failure. Especially crucial because current prescriptive pedagogies rely on child's, teacher's and school's need to succeed, combined with fear of failure to motivate performance, construct individuals as instrumental learners, rather than emancipated learners with the notion of social justice (Desjardins, 2015).

Similarly, school principals should be consistently exposed to school leadership's best theories and practices for teaching and learning to thrive (Hamzah et al., 2011). In this regards, self-appraisal is a valuable instrument to promote learning and inform professional development that could be used more often within our case study. However, for self-appraisal to have value for teachers, it is essential that teachers might conduct their self-appraisal in private, with nothing hinging on the results. Otherwise, teachers would have little incentive to report honestly about any problems they face in their teaching, which might be used against them in an accountability-oriented process (Santiago, Gilmore, Nusche, & Sammons, 2012).

Students also reported feeling more unrestricted to find out possible academic paths amongst areas of knowledge they did not know previously. Besides, new infrastructures, laboratories and proper equipment are also essential to giving students and teachers the right conditions for experimentation. Teachers mentioned that learning occurs by contacting young science researchers and contacting real-life situations or breakthrough scientific subjects as essential elements of school's effort to create an inquiry culture and a learning environment where experimentation and learning are a cornerstone. Many researchers have underlined the fact that the syllabus hampers school teachers, and that is, in their opinion, the great advantage of IEC courses, as they are allowed to teach science more freely. Besides, researchers felt that students are motivated and curious about science by learning by contact with real case life situations and putting a hands-on-approach into place.

Effective data used by teachers, school leaders, and support staff has become central to school-improvement processes (Stoll & Kools, 2017). As suggested by researchers, this practice could be spread to all staff members and families. Although lack of time for creativity and innovation in the classroom has been a topic often addressed in interviews and in the literature, teachers' participation is not mentioned by teachers as a burden in an already busy schedule. On the contrary, teachers reported perceiving these courses as important moments to think on new scientific issues and imaginative pedagogical solutions for their classes. Respondents generally saw this as an opportunity to change their practices, which they only do because they have participated in these activities; otherwise, they wouldn't have had the time to think about it. Implicit in most professional learning endeavours is an expectation that the courses' information is used later for their professional benefit. This fact led teachers to decide to change how they taught some subjects and led some teachers to create new school courses.

1.2. Collective Learning

Based on the particular context studied, in our analysis collective learning encompasses:

- i) teachers and students scanning for ideas of new courses and new projects, building up new shared goals and figuring out innovative ways of reaching common goals;
- ii) teachers and students attending the same advanced science courses and learning in the classroom together, both assuming the role of learners;
- iii) researchers, monitors and teachers sharing methods, ideas and knowledge;
- iv) teachers and school leaders and monitors /researchers making aspects of their work available and accessible by adapting the discourse to others;
- v) teachers and researchers are working together.

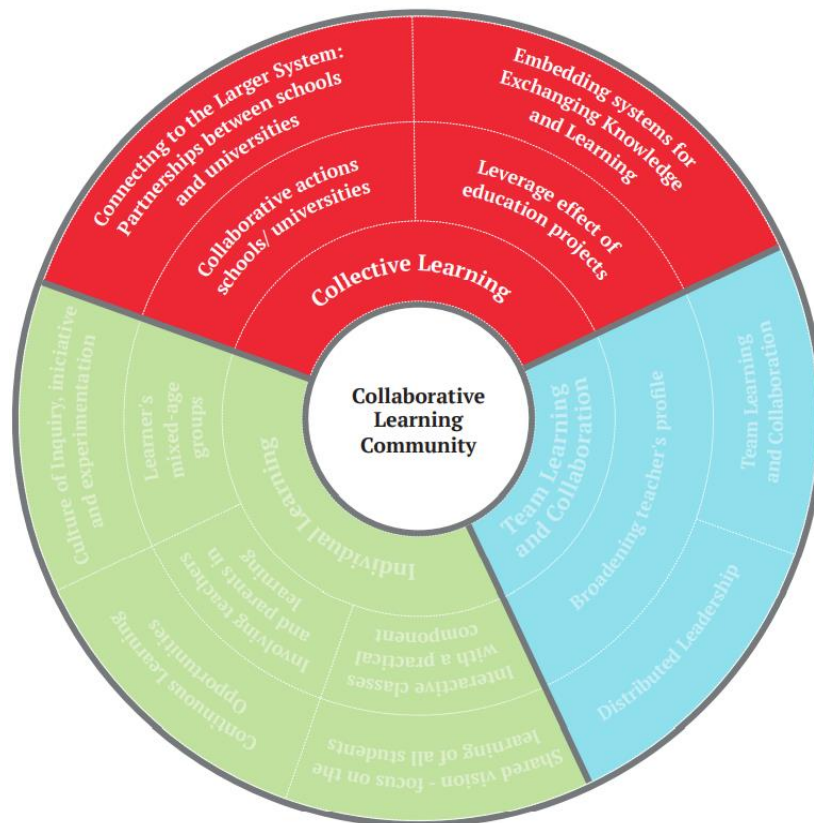
In practical terms, this led to teachers deciding to change their way of teaching their respective courses and creating new courses at schools or widening these courses' pedagogical repertoires, including robotics, physics or ancient Greek culture. Our analysis revealed that partnership with IEC was the first step for teachers, school principals and students to create 'new ways of acting' and, as a consequence, to recreate new school's identity based on new habits of interaction and on the notion of "belonging" to this learning community. Indeed, IEC's work has offered people new ways of acting and experiencing themselves in the learning community. It is way much than inviting people to join the group and institutions to become partners. It is, instead, an invitation to become part of a reconfigured open learning system. As stated by the IEC's director:

Only together, in a network, you can do it. It is a regional solution, integrated locally. It is a bottom-up movement in the sense that it is schools and community members who tell us about their needs and their ambitions and bring this information to us and then, indirectly, to the ministry. (Arsélio Pato, publicly speaking, 2016).

Moreover, sustained and effective collaborative partnerships with all schools, universities, research centres, and museums appear in this analysis as an essential step towards knowledge democratisation. It is also an opportunity for members to co-construct new knowledge, as they learn from peers' different experiences and practice elsewhere.

This sub-section explores how these practices have also contributed to collective learning and provided conditions enabling schools to change into learning organisations. We have compiled these elements (in red) from the interviews made to the learning community members (in red) (Figure 8). In their opinion, those are the critical issues to bear in mind, when thinking about their experience in the learning community.

Figure 8 - Collective Learning



One of the main arguments of this work is that knowledge, subjectivities and school change into a more democratic institution are built upon the practice of collective learning. Collaborative practices are transversal to schools and the IEC's different spheres of action: collaborative practices between students and teachers and collaboration between schools and universities. Part of this collaborative process is related to co-designing and co-planning of courses and other activities along with researchers and monitors are also an element to consider. Besides, creating an alumni association within the IEC structure is an example of increasing collective learning. These practices occur within the classroom or at the school venue and are also used as a platform for launching these actors and knowledge co-created outside school settings, as it was the case with the *Easy Park project*. This project is going to be detailed further on in this chapter. This is likely to happen because this community has common concerns, a shared goal and a clear picture of reaching it. From this perspective, collective learning is a process of mutual influences and interdependent learning that transpires in a group context and is shaped

by group norms, expectations, interactions, knowledge bases or communication patterns (Sackney, 2011: 54, 55).

1.2.1. Collaborative Action between Schools and Universities

We can find an example of collective action if we look at the collaboration between universities and schools on science courses' design and organisation. Researchers from the University of Coimbra have told us how they work along with teachers to design the advanced science courses:

We sat down with the school teacher... and she helped us adapting [contents to] the level of secondary education. We are not restricted to what is taught in biology at the secondary level, but we have considered their school grade. We wanted to know what they were doing at school, based on key concepts in this area. (...). (CNC researcher, University of Coimbra).

What I want is to reach students. Concepts like pH, a public domain concept, that everyone knows, but my experience says that people don't know what it is. There I have the opportunity to take concepts that I think are key and clarify them. They do not do it at school due to time constraints. (CNC researcher, University of Coimbra).

We know that a community consists of competing voices and competing claims to knowledge, including silenced agents (Wenger-Trayner, 2015: 16). This competition creates knowledge hierarchies among practitioners and practices. Whether knowledge is recognised as valid depends on its position in the politics of the community. The learning community's difference is that there are more horizontal relationships despite members having different roles within the community. As addressed by Ferreira; Flores (2012: 238) “a learning community is not synonymous of consensus, as it incorporates interests, power and conflict relations, as much as dialogue, cooperation, and agreement aimed at very common”. It is also necessary to underline those learning communities are not “fortress communities” to use the concept of Boaventura de Sousa Santos (2000). Instead, they are part of an open learning system and, as such, they interact with the external environment. In short, they establish relationships and interactions that are inseparable from an emancipatory democratic conception of education, which is at the heart of the processes of building democratic schools (Apple; Ball; Gandin, 2009).

Without denying that there are always unbalanced power dynamics within communities, in some sense, the established relationships are “epistemologically flat”, to use Wenger’s expression (2015). In this example, although teachers and researchers play different roles, no one is more important than the other. Spaces of mutual learning are

created where, at times, all participants have something to teach and to learn. Indeed, it is consensual among the respondents that actions, classes, courses or seminars are profitable spaces of collective learning, calling into question hierarchies, distinctions and the relationships that establish them. These hierarchies can be as different as teacher VS student, learning VS teaching, valid knowledge VS non-valid knowledge. The definition of valid knowledge (about science teaching and learning) is contested (Apple; Ball; Gandin, 2009: 355; Sackney, 2011). In these spaces negotiation and re-creation of mutual involvement, experimentation, questioning, and permeability happen.

Advanced science courses are designed with scientific knowledge from researchers and teachers' pedagogical knowledge and professional experience. They are tailored according to the necessities and interests of students. Accountability, in this example, becomes a collective enterprise. Researchers, teachers and students relate in interaction, share interpretations and meaning and collective representations of knowledge. Besides, they have to negotiate ways of doing, and they create something that did not exist previously. A dialogic action is established, and it underlies the concept of learning community that is found under the principles of horizontality of dialogue, in a logic of valuing the various actors and their knowledge and experiences (Aubert, Garcia, & Racionero, 2009; Flecha, 2015; Freire, 1992).

As referred previously, the knowledge created goes way beyond the scientific subjects of the advanced science courses. It means learning to work along and create an interlinked organisational learning system (Capra, 1995; Mitchell & Sackney, 2008; Sackney, 2011). For Mitchell and Sackney, the human dimension of organisational learning can be reasserted if positioned within the term 'knowledge ecology' (Mitchell & Sackney, 2008). Unlike knowledge management, "knowledge ecology" does not claim to institutionalize new ideas, nor attempt to contain or control knowledge (Mitchell & Sackney, 2008). Instead, they see knowledge and knowledge construction as "a natural, organic, evolving process that develops over time as people receive and reflect on ideas concerning their work in the organisation" (Sackney, 2011: 39). The creation of knowledge ecology further implies that teachers engage with the external environment, outside their schools, and extend their practice and knowledge beyond their community of practice, thereby introducing new ideas that can improve teaching and learning

(Sackney, 2011: 40). We argue that this is the case between members of the collaborative learning community under study.

Throughout new practices and projects, each community member contributes to resources, particularly local knowledge and expertise. Thus, collaborative practices aim to create an organisational space and managerial prerequisites for leading co-creative activities that involve various learning processes (Gnaur; Larsen-Nielsen, 2017: 227). Hence, the literature on learning schools highlights the importance of considering knowledge as a dynamic process fed by social interactions amongst individuals and organisations. As Louis notes: “Knowledge is not ‘transferred’ like a piece of paper” (Louis, 2012: 481). Only through sharing, exchange, dialogue and collaboration can new and meaningful knowledge be developed. The word “exchange” is itself significant. Rather than just sharing experiences and strategies, members of this learning community are oriented towards collaborative problem solving and mutual learning through interaction, collaboration and exchange of ideas, new evidence and expertise. In sum, turning information into actionable knowledge is a social process (Kools and Stoll, 2016). Exchanging, in this context, is understood as a space for negotiation and resignification of practices and knowledge. This space is often seen as a frontier space (between different knowledge) wherein the boundaries are negotiated continuously, and actors and spaces change and recreate itself (D. N. Costa, 2017). Within this space, new meanings are dealt and validated. Actors actively and creatively develop knowledge based on recognising the lack of completeness of knowledge and experiences. In this frontier, the relation between the school and the external environment allows us to conceptualize these spaces to promote democratic involvement of various actors.

Additionally, an essential aspect of IEC is the collaborative work of both teachers and students. Adults in IEC (teachers, families - through parents’ association, and former-students) are organised into working groups, commissions, former students’ assembly formally organised under the IEC former students group. In 2016, IEC former students had organised themselves officially as a group. They established a “former IEC student association”, wherein any student, teacher, parent or researcher who have participated or want to participate in IEC activities has a representation space. This group's first decision was to create a unit called “IEC academy of learning” to promote tutoring to help students with school subjects, such as mathematics; chemistry; Portuguese or English language or biology. The group also funded the unit “IEC – Alumni-Research” that evolved

researchers from the Centre of Neurosciences of the University of Coimbra (CNC) and aims to provide students who participate in the advanced science courses with internships at CNC laboratories during school holidays.

Former students can propose activities to develop at IEC and step into the forefront in disseminating IEC activities at schools. As an example of their dynamism, IEC's former students' association organise meetings three times a year (Christmas; Easter; summer season); and organise internships at the University of Coimbra and the University of Aveiro. The association created different working groups to cover research, education and higher education matters.

1.2.2. Connecting to the external environment and larger learning system: partnerships between schools and universities

In partnerships, the orientation is frequently one of sharing and co-creation. Within the co-production understanding, the normative goal is that co-creation should occur in an equal partnership, where the parties are involved as coproduces of new educational solutions, having an active share in decision-making processes, planning, and implementation. In this perspective, co-production invites a re-thinking of the democratic education paradigm perspective that may break through invisible constraints into a more flowing, network-oriented distribution of power. (Gnaur; Larsen-Nielsen, 2017, p. 228).

As mentioned before in this chapter, literature has been showing evidence that working as a community and being connected to the external environment have become a cornerstone of educational restructuring (Hargreaves and Shirley, 2012; Lefever-Davis, Johnson, & Pearman, 2007; Saito, Murase, Tsukui, & Yeo, 2014). Among the most important and fruitful partners to any learning environment are other learning environments, forging synergies through networks and communities of practice (Earl, et al., 2012; OECD, 2013b; Stoll, 2010). Indeed, mechanisms for enhancing teachers' and students' engagement, and developing collaboration mechanisms have been focusing on engaging individuals to local problems in which a set of skills, knowledge, and values can emerge. For schools, this connection to the university is considered essential and a valuable brand, which is being essential to attract new students:

This is an opportunity for establishing relationships with higher education entities, with professors and researchers of the university. They [IEC] help us establish relationships with higher education institutions, by facilitating the visit of researchers to our school, or even the other way around, we also go there [the university campus]. It is the presence of higher education institutions at our school. This is important for us and is a valuable brand! For us, it is truly a plus. (School director, secondary school).

For universities, it is also essential to bond with schools, as a school director mentioned during an interview:

I feel that higher education is opening up due to the need to attract new students. Formerly, there was not so much this need, but today I feel there a need to attract students, as it happens in secondary schools. (School director, secondary school).

A researcher also admitted that schools' relationship is a good way of reaching students and, consequently, their families. In his opinion, this is important to tackle the widespread lack of knowledge from lay audiences on science. As referred by a researcher of the University of Coimbra, working at the Biocant Science and Technology Park, “It is not uncommon to hear that scientists do nothing and that they do not deserve the money they earn. The general public is not very aware of what is scientific research. He admitted that, in part, this lack of knowledge is because the *media* does not care about science and also because scientists have not always been able to switch the “chip” and have an “easy-to-understand” talk about science or scientific subjects. However, this is changing with several science research labs creating science communication departments and scientists evolving in activities such as those mediated by the Institute of Education and Citizenship. Indeed, communication is key to this, and as partnerships become more complex than before, it is necessary to develop workable structures to ensure it takes place (Black-Hawkins, 2004). We are not dealing with a case of collaboration with only one direction (university-schools). Instead, and for the first time for the people involved, there is effective collaboration and dialectical learning (Flecha, 2015). This experience allows learning to collaborate with universities and research centres in updating scientific knowledge from the schools' side. Quoting a teacher from a secondary school, this is an indeed “two-way street”. The partnership understudy is particular because it focuses on developing practice-based activities within and outside schools, with a great sense of self-analysis as the partnership evolves. As already noted, this is not the kind of alliance where the university is accepted as an “expert bringer”. Instead, this is the case in which researchers are allowed to develop reflective practices on science communication and are given pedagogical insights by school teachers and students. Indeed, the collaboration

between different actors (professional, institutional, community, associative and individual) and dialogue between different *repertoires of experience* and *forms of knowledge* allow for the design of innovative ways of science communication and collaborative schemes of work and learning (Alcorn, 2010). The partnership between schools and universities is being decisive in diagnosing specific local problems and determining collective solutions to overcome local educational challenges.

Whenever teachers feel they need further help or support on advancing their scientific knowledge on some aspect, they naturally say "let's talk to IEC". "But what used to happen before was that teacher would identify the need of further knowledge in an area that has been developed at higher education level, but there was a barrier, and the teacher thought: "- ah, it is the university, and they are not accessible to me ... so ...". what happens in these cases? They close themselves to new experiences and knowledge; teachers have been closed to universities' experiences and did not progress in their knowledge. With this intermediation is easier (...) this is opening up the door for establishing other relationships. (School's principal, Águeda).

Among the identified educational challenges that schools want to overcome, we can find: a) the lack of scientifically updated teachers; b) the lack of dialogue between teachers of different study cycles (first, second and third cycles, and secondary); c) the existence of a significant gap between teachers and researchers; d) the fact that schools and universities belong to separate worlds; the lack of systematic and effective schools-university partnership – two different worlds with very few contact points.

The collaboration between schools and the IEC led to the creation of courses taught and organised by researchers and university teachers and further discussed and adapted with schools, both in schools and at the IEC facilities. Moreover, this collaboration led to the organisation of conferences facilitated by researchers in schools and at the IEC venue; the organisation of seminars given by scientists to the school setting; the organisation of school's visits to universities and research centres; and access facilitation to several university facilities. Thus, this partnership leverages closer proximity between schools and the scientific community, whether through universities, national funding agencies or national programs to promote scientific education, such as the national *Ciência Viva* agency. Teachers and school directors very much value the latter:

Undoubtedly, collaboration with Ciência Viva is stronger! Even more than with the University of Coimbra. The ties strengthen without a doubt between the schools and the scientific community. At this time, it is not just them that come to our facilities; now we also go to theirs. Mainly, children and adolescents have the perception that universities only have classrooms. They do not even know that research is done in the university, and it is good to open the university to students (Secondary school teacher).

On the part of students, teachers, and researchers, the systematic collaboration between schools and universities was probably one of this learning experience's most valued features. Respondents (teachers, students and school directors) have assumed that the link with the university is more vital after collaboration with IEC:

We established closer relationships between schools and the scientific community; there is no doubt about that! At the moment, it's not just them who come to us, but we're also coming to them too. (...) We go to several university labs because kids look at the universities and think that there are only classrooms [at the university campus]. They do not know what kind of research is being done at the university, and it is good to open the university to students. (Teacher, Souselas).

Furthermore, performing as an interface between schools and science through the consolidation of “collaborative partnership” (Hildreth & Kimble, 2005; Lave, 1991; Edwards, 2011) brings forward a perspective on the university’s third mission. This mission problematises the relationship between university/research centres and society (Estanque & Nunes, 2002; Pinto, 2008; Santos & Nunes, 2004; Rubião, 2013). This approach, instead of dividing the world into two (knowledge producers and receivers) endorses the idea of knowledge production as a nonlinear process with no stable distinction between producers and consumers of knowledge (Aikenhead, 2003; de Sousa Santos & Arriscado Nunes, 2004; Harding, n.d.; Jasanoff, 2004). In addition to this idea, Ciência Viva director stated in an interview that IEC widens the scientific community's notion by working with a wide range of students from primary school to secondary students, parents, and teachers. All of them form a scientific community, in a broader sense, that has been contributing to science to be a more democratic practice.

Table 15 - The IEC as a Learner Facilitator

Facilitating the dialogue between school and universities
Facilitating the dialogue between schools and national funding organisations
Co-designing science courses with universities and research centres
Co-promoting science activities in the municipality of Oliveira do Bairro
Co-designing educational policies with the municipality
Training school teachers with researchers from universities
Strengthening bonds between students and teachers
Improving the openness of schools with other local institutions (e.g. Museums)

The work of the IEC as a facilitator (Table 15), or as called by Wenger (2015) as a *convener*⁶⁴, is to help refine and rehearse the telling and retelling of the aspirational narrative – or version of it – so that different members of the learning community can recognise themselves and their aspirations in it (Wenger-Trayner, Etienne, 2015). This aspect is demonstrated very clearly by the testimony of a teacher:

Students and teachers now go to the university campus. One might find this, a minor aspect but is quite relevant. Sharing and knowing the university campus, understanding its practices, spaces and times make it possible for students to approach the future. (...) They [students] walked around Ciência Viva, they went to the exploratory, to the science museum, the chemistry department, the anthropology department, they walked around everywhere. The IEC organised the event very well, with activities planned everywhere. They loved the chemistry experience, they loved the anthropology department and came from there saying “I want to be an anthropologist” or “I want to go to chemistry. The opposite also happens, I mean, students who realise “I do not want to do this, after all”, and I think this is also positive. This component of dialogue with university teachers and researchers has proven vital, and students benefit from it, and we could not do this by ourselves. (Teacher, Souselas).

In what is concerned with our case study, all the groups interviewed underlined the extending capacity attained by schools and universities due to their collaborative work. School directors also referred to this collaboration's extensions to parents association and local organisations, such as training institutions and enterprises. Monitors, researchers and IEC staff also underline the IEC's role in lessening the gap between research centres and universities and schools, by bringing schools and universities together. As the IEC helps other institutions be part of this network, namely local museums, interviewees also mentioned its role in strengthening other institutions' educational mission, such as museums, research centres, and the municipality.

One of the main difficulties from the IEC side is to reach the community wherein they are involved. The institute miscues with the Mamarosa parish community almost in one way: through schools and their children. One activity that has very positive effects in lessening the gap between older people from Mamarosa and the Institute was courses for adults, i.e., EFA courses⁶⁵ for adults to get a school diploma. According to the IEC director:

EFA courses have had excellent results in people's lives and their families. I didn't believe in EFA courses, but I have changed my mind because I realised that people gained more self-

⁶⁴ The authors use the term *system convener* to mention people who forge new learning partnerships in complex landscapes. They emphasise their concern about creating lasting change across social and institutional systems than about enabling collaboration. The emphasis is on the systemic reconfiguring by which these types of conveners open new avenues for learning. According to the authors, some organisations with social mission now call themselves “convening organisations” (Wenger-Trayner, E.; Wenger-Trayner, B., 2015: 99).

⁶⁵ Cursos de formação e educação profissional (EFA).

confidence, started talking about other things, learned to work with the computer and afterwards, I believe they went home and were more self-confident and related differently with their children and families. (IEC director, interview).

It is difficult to find a perfect balance between adapting the institute's activities to the local population and having its agenda to remove the local population from its "comfort zone". Nevertheless, every time the IEC adapted their activities to the local community, or any time that the IEC deliberately organised activities outside their building such as the science festival of Oliveira do Bairro, it has had a positive impact on community members, with many people participating for the first time in this kind of activities.

We should improve our capacity of elucidating parents and guardians about our goals and activities because we deal with a dependent public, right (?) They are children. It is a strategic mistake not to do so. What have we done to feel this gap? We started going to the "Viva as Associações" event, which happens once a year, to reach parents and as an ultimate result, more children enrolled in our summer courses. (IEC staff member).

Nevertheless, different perspectives between staff and directory board emerged from connecting the institution with the community. In one staff member perspective, they have not reached the point to consider being responsible for creating a significant learning community among all partners because the institute was not fully adopted by the community as to be called a learning community yet. However, optimistic signs are being sent by schools, they stressed. In the words of a member of the staff: "However, concrete signs [from schools] are being sent that makes us believe we can make it". (IEC Staff).

A possible area for improvement within this dimension would be parents and guardians' engagement in the educational process and the school's organisation. This aspect was found to be a particular challenge for schools and for the IEC itself. However, there are examples in this thesis that show that schools can increase parental engagement. Another possible improvement area would be the IEC's engagement with the local community in which they are settling down. As it is essential to mention, the IEC strategy to reach the local community is through schools, students, parents and families but it is the case that the link to the community is not fully realised. It would be necessary for the IEC to develop other strategies to develop collaborative mechanisms with the community and bring other local institutions closer.

1.2.3. Leverage Effect of Education Projects

One of the effects on learning of IEC's courses is its leverage effect. This leverage effect is one of the most valued outcomes of the new organisational order on schools: the multiplication of courses and initiatives with a similar structure and logic to those organised with IEC's support. This fact is very much appreciated by schools and funding entities, such as the Calouste Gulbenkian Foundation (FGC), as I stressed in my fieldwork diary.

FCG highly valued that schools are managing to multiply courses and make these practices sustainable within the school. It was said that this point is crucial for any sponsor: i.e., to realise that the investment allows the sustainability of the financed practices. (fieldwork diary, 14-03-2018).

For this endeavour, it is crucial to implement national programs to promote scientific education through, for example, the national agency *Ciência Viva* and the Gulbenkian Foundation. These national programs and initiatives led to the implementation of, for instance, the EMA national initiative (Learning Improvement Incentive). As one teacher from the Oliveira do Bairro secondary school pointed out:

The EMA project ended but collaboration with IEC remained and was strengthened. At the end of the school year, we meet with IEC to take stock and outline the following year's plan. We are negotiating and seeing how this partnership can be improved.

Other projects were born at schools independently from IEC, using their own human and financial resources. These projects follow the same pedagogical model, the same scientific guidelines and the same organisation, but expanded the audiences and the topics covered, using only the school's teaching staff and students. The main idea was to capitalise on the knowledge acquired. Thus, schools in this study implemented projects such as Project “*Saber +*”, “*Secundário Superior*” or even courses that emerged at schools on a wide range of topics, namely Robotics; Physics; Classical Culture and International Relations; Astronomy; Philosophy, Social sciences, only to name a few. These courses are given by school teachers, using “the family silver”, as a sustainable practice. These new projects and courses are part of the pedagogical project of the school. These courses are carried out at the same time as the IEC courses. They work in a complementarity logic and work for all students and teachers who want to get in-depth knowledge on one specific topic.

The EMA was an initiative in which several schools applied, with technical support of the IEC, and for which they received from Calouste Gulbenkian Foundation about thirty thousand euros for equipping laboratories, payment of monitors and researchers for giving lectures in schools, and for developing courses in elementary, middle and high schools. One of the most exciting results of this participation is perpetuating the activities launched under the EMA project after funding has come to an end. Indeed, the role of IEC was crucial to guide school applying to funds for equipping science laboratories:

IEC helped us getting funding to carry out these projects and intermediates the connection amongst schools and Ciência Viva national agency and Gulbenkian Foundation (“EMA: promoting student’s learning”) project. As a result, the school launched science clubs and got (national and international) awards [recognition] from these projects. (schools’ principal, Águeda).

A clear illustration of this leverage effect is the project *EasyPark*⁶⁶, which students and the physics’ teacher of the Oliveira do Bairro secondary school developed. This project aims to facilitate car parking for disabled people, in their specific places, using a system of sensors that lower the pin that blocks the access to the parking spot when the car approaches. Above all, the *EasyPark* project aims at reducing social inequality; it is an innovative initiative that improves the quality of life for people with physical disabilities and increases their independence. As stated by the project’s team⁶⁷:

Our mission is to increase the independence of people with disabilities and educate people to respect more. We plan to install an automatically activated bollard in every priority parking location, which is a sturdy vertical post, to prevent illegal parking; a license plate recognition system triggers the bollard. This device keeps priority parking places free for those who need it and teach physically healthy people to do the right thing.

This group of teachers and students identified a local problem in their community and, together, teachers, students and researchers from the University of Aveiro found a shared solution based on local resources (human and financial). Students have been encouraged to be more creative and independent thinkers and instigated to develop solutions for school problems in collaboration with teachers and researchers. The group was decisive in diagnosing local issues and finding shared solutions. Students developed this project, and teachers of the Oliveira do Bairro secondary school, based upon the IEC activities at school and exemplify the learning community's effect on individuals and institutions. Essential for public acknowledgement was the national and international

⁶⁶Project “*EasyPark*” da ESOB - <https://eucys2017.eu/projects/easypark/>

⁶⁷ Students testimony taken from the *Easypark* webpage.

recognition of the innovative character of this project. This project has won national and international prizes⁶⁸ and is considered a school flag.

The *Easy Park* project was developed by the 12th-grade students and coordinated by an *Oliveira do Bairro* Secondary School's teacher. They have participated in the European Science Final - EUCYS, an event that, in 2017, took place in the Estonian capital, Tallinn. That was the 29th edition of the EUCYS (European Union Contest for Young Scientists) and had the participation of young scientists worldwide. The "EasyPark" project got the 1st place in the national event - National Science Show, held in Porto in June. Furthermore, the *Easy Park* project won the 25th Young Scientists competition (2017) - *Fundação da Juventude*. The EasyPark Project was one out of twelve projects selected nationwide to be present at the Final Event of the event *Make It Possible* by AIESEC ("Association Internationale des Étudiants en Sciences Économiques et Commerciales"), which took place on March 18, 2017, in Nova School of Business and Economics, in Lisbon. The project was also selected to participate in "Ciencia en Acción", a Spanish science fair for Ibero-American countries, in Ermua, Spain (from 6th to 8th October). (Jornal da Bairrada, edition of 22 September 2017).

Indeed, the project turned these students into "evidence-based activists" and committed citizens to local challenges, and possibly more aware of the challenges people with disabilities face in society. This group engaged with people with physical disabilities and articulated a wide range of "experimental" knowledge to explore this particular situation.

From the perspective of the teacher who coordinated this project, IEC had a crucial role in its development when created the opportunity to have the *Oliveira do Bairro* school and Aveiro University working side by side:

I challenged my 12th-year students to do a project in physics. I asked the collaboration of the University of Aveiro. For example, last year, I took a group to participate in an open day at the University of Aveiro. During one lecture, a teacher has spoken on a technology that has been developed, where efficiency of the photovoltaic panels was being improved (...). My students felt very curious about the subject. I have decided to challenge the teacher, and we talked through this possibility, and we both agree to work along and collaborate. Thus, I made this project part of the formal students' assessment for my classes. The researcher from the University of Aveiro came to my class at school to work as a group. We have participated in national science shows in Lisbon, wherein we have won an honourable mention because of this project. In Spain, we have also won an honourable mention, but the highest point of our collective effort was achieved when we won an award in a fair in the United States.

Nowadays, I have students who are already tutors of the youngest school mates. We have built a kind of tutoring with master degree students tutoring my students, who are themselves tutoring the 9th year grade students. We created a chain of help for improving learning. (Teacher responsible for the *Easy Park* school project, Oliveira do Bairro).

Moreover, rather than a teacher/student dyad, there are a triadic setting of relationships within which students and teachers enrol in this project, receive a certificate and become essential individuals in critical distributive tasks in the collaborative work of giving training to their colleagues. It is, indeed, more than changing behaviour. On the students' side, it is a transformation of identity, i.e., a way of understanding him/herself from learner to tutor.

This project involved a more significant commitment of time, intensified effort, more and broader responsibilities within the community, and more complicated and risky tasks. Besides, according to the teacher responsible for the *Easy Park* project, it also implied building an identity as part of the "chain of help". "Now there is an identity in what we do that is different from other schools", he continues. This idea of identity/membership is strongly tied to a notion of motivation. If the person is perceived both, as a community member, and as having an active agency, then, the concept of the person closely links meaning and action (Lave and Wenger, 2003: 116).

More projects based on IEC's projects and courses emerged in other schools. For instance, new school projects such as '*parents with science*' or '*mornings with science*' in Águeda schools help the school get closer to other schools and bring parents more engaged with school, with an increasing number of students, teachers and parents involved in these activities. Another example of this leverage effect of the activities developed by IEC is the project *Bright Minds* held in Miranda do Corvo and carried out by the Fundação ADFP – *Assistência, Desenvolvimento e Formação Profissional*. A considerable part of this project consists of providing 4th-grade students of the Miranda do Corvo school's cluster with experimental sciences courses. These courses are provided by monitors trained by IEC staff.

Furthermore, the scientific training and scientific and pedagogic materials used for the project, such as manuals and books, are developed and delivered by IEC. The *Bright Minds* project aims at providing children with a scientific culture that "increases

the taste for knowledge”⁶⁹. Among other national public acknowledgement, the program won the Manuel António da Mota Prize (6th edition), awarded in 2015, when the subject was social innovation. Its relevance at the national sphere led the national radio TSF to make a reportage on the project⁷⁰.

1.2.4. Learning Schools: Embedding systems for Exchanging Knowledge and Learning

This dimension encompasses setting up structures for regular dialogue and knowledge exchange, examining progress and gaps between current and expected performance. It also implies for staff to have the capacity to analyse and use multiple sources of data for feedback, to inform teaching and allocate resources. What is more, the school development plan is evidence-informed, based on self-assessment and updated regularly.

In our case, students reported that enhancing great proximity with teachers impacts the bounds created between them. They feel closer to teachers who also participate in advanced science courses. Also, they reported that this is having a positive impact on their learning process. Teachers add that the interdisciplinarity of the scientific matters taught at these courses; the close contact with students, and the fact that these classes have no more than 12/13 students helps exchange knowledge. School directors add that this collective effort is bearing fruits already. New courses were launched using “the family silver”, as addressed previously in this chapter. Furthermore, school principals also referred that a new wave of collaboration, a “two-way avenue” collaboration, to quote school directors, was put into place between schools and universities, highlighting the common dialogue platforms and knowledge exchange between students, teachers and researchers.

Indeed, partnerships with higher education institutions benefit both partners, as schools draw on research partners’ expertise, ideas, and practices implemented in individual schools influence the thinking in universities and research centres.

⁶⁹ Information released on the website <https://www.adfp.pt/areas-de-intervencao/miranda-do-corvo/mentes-brilhantes>, (consulted on the 01/06/2017).

⁷⁰ Full audio report can be listen through the link <https://www.tsf.pt/sociedade/mentes-brilhantes-vence-premio-manuel-antonio-da-mota-2015-4925882.html> (consulted on the 01/06/2017)

Monitors and researchers highlighted that they learn with classes about breakthrough scientific matters, given by specialists with the “hands-on that topic”. Quoting a researcher: “It wouldn’t be possible to be as updated as these kids are on stem cells, for instance”. Students and teachers get familiar with the scientific terms and appropriate scientific knowledge to question and intervene in the construction of more critical scientific thinking. In addition to contact with students, parents, and teachers' involvement, researchers test scientific methodology limitations. Indeed, it seems to be a work that is only possible to be accomplished together and results from the collaboration between scientists, teachers and students. Consequently, science monitors and school teachers reported that students improve their vocabulary and classroom behaviour.

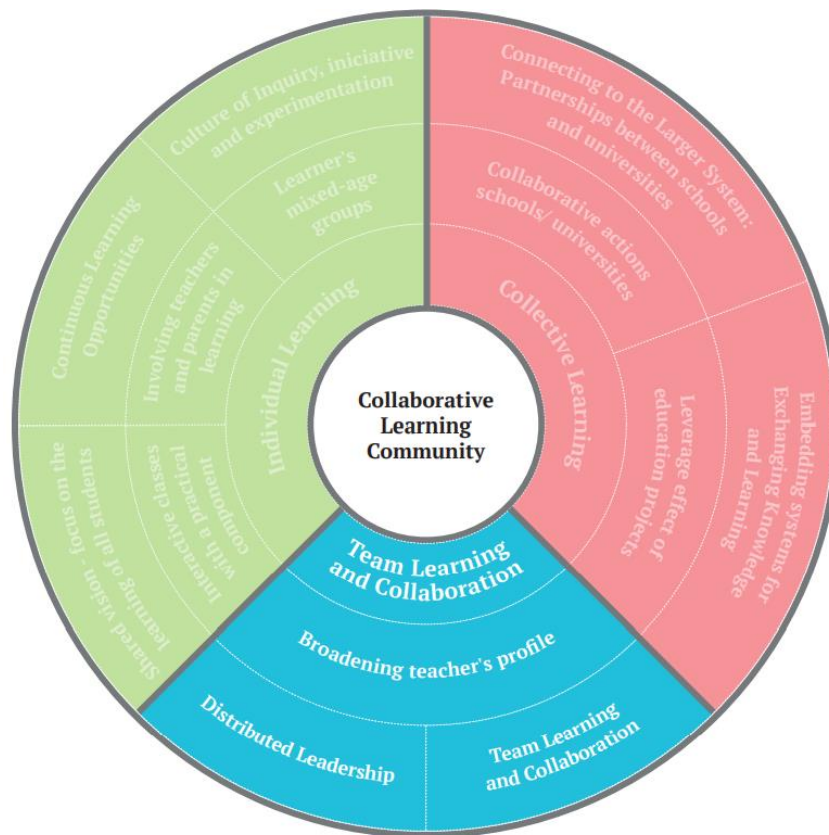
Furthermore, students are more aware of news and often bring science news to the school teachers]”. By sharing information, creating new knowledge based on the experiences brought by students and teachers to the classroom, researchers also learn to communicate science. It also allowed researchers to discover the multifunctionality and multidimensionality of scientific subjects and the sustainability of scientific concepts within non-scientific communities (students, teachers and parents through the advanced science courses). They have admitted to learning how to adequately disseminate their scientific language to the general public and school audience. This fact implies, for instance, bringing the local experiences and the reality that is familiar to the audience to inform science.

If literature shows the need for a growing scientific literacy on civil society, the same must happen in academia. Academia is where a growing “social literacy” is necessary for producing science for and with the society that can be successful (D. N. Costa, 2017b: 321). It is in the overlapping space between schools and universities we must concentrate efforts. The creative reinvention of this space allows community members to construct themselves based upon the democratic principles of collaboration towards the democratic principle of co-creation of knowledge and learning practices. At this intersection, innovation and change seem to occur within the learning community, both for scientists, students, and teachers. Indeed, the engagement of different actors (professional, institutional, community, associative and individual) and the dialogue among different repertoires of experience and forms of knowledge allow for the design of innovative ways of science promotion and communication (Star & Griesemer, 1989; Wenger; McDormott; Snyder, 2002).

1.3.Promoting Team Learning and Collaboration

In the next subsection, we analyse the elements that constitute dimension *team learning and collaboration*. We have compiled these elements (Broadening teacher’s profile; team learning and collaboration and distributed leadership) from the learning community members' interviews. Figure 9 shows in blue all the dimensions integrated into this axis of analysis.

Figure 9 - Team Learning and Collaboration



1.3.1. Promoting Team Learning and Collaboration

Strong professional learning communities are collaborative cultures which deal with change more effectively (Fullan, 2003; Hargreaves, 2007). In these communities, people care for each other as individuals and commit to the organisation's vision and pursuing analysis and improvement tasks (Giles & Hargreaves, 2006; Hargreaves, 2003). However, we know from literature collaboration that schools' teamwork is rare for at least

two reasons. First, schools are often structured to separate educators and students from one another; second, most schools embrace a culture of isolation, with its claims to privacy and individualism. For these (and other) reasons, meaningful collaboration among teachers often fails to emerge (Sackney, 2011: 72). More usual is what Sackney (2011) and Bakkenes et al. (1999) call 'serendipitous collaboration', which consists of collaborating on inconsequential matters (such as deciding when and what the Christmas concert will be) or merely discussing the latest happenings.

Concerning our case study, staff collaborate and learn how to work as a team. Simultaneously, collaborative working and collective learning are focused, informed by evidence, enhanced students, and staff practice's learning experiences and outcomes. Staff feel comfortable turning into each other for consultation and advice. This fact is particularly visible among IEC staff as underlined in the fieldwork diary:

(...) A trustworthy and cooperative link was created between the members of the team [of IEC employees]. It is a very cohesive team, which share each other's pains. The team unites and gathers and always supports each other. (...) In the afternoon, the group of monitors met for lunch. They get along well, organise the next day's work, answer questions about the courses they teach. They are colleagues, there is much mutual help, and they get along. (Fieldwork Notes, 15.06.2016).

Here, monitors and the IEC staff report that teamwork and collaboration are part of the IEC's daily professional routines. Engaging in professional dialogue with colleagues, learning with and from staff in schools – including between primary and secondary schools – and external partners, and drawing from the support provided by other partners (researchers from universities) are some of the means that staff have their disposal.

As previously mentioned, monitors' actions, especially within schools, led to collaborative work between students, teachers, school principals and researchers with resonant effects beyond the planning and development of courses. The teamwork culture proved to be the basis for developing new school's courses and projects born from IEC courses (Robots and Physics) and became independent from IEC. These new courses are organised by school teachers and helped to obtain funding for new projects. These school-led courses and projects included students' active participation, junior monitors, or young researchers.

Teamwork is present also inside the IEC, where it is frequent to find several monitors working together in the same open space, getting ready for the next class and sharing experiences, anxieties and teaching methods. They do not only teach together, but they learn with each other.

The importance of team teaching was specially mentioned in the advanced science courses for primary school's students. Monitors noted that as others reflected on their learning, they learn collectively. Three main reasons emerge in the case study behind the strategies for team teaching. First, there are the benefits of collaborative planning, working together, and shared professional learning strategies, i.e., teamwork as an organisational norm. Second, collaboration opens up more options to vary the pedagogies in play, though this tends to go hand in hand with collaborative planning and professional learning. The third aspect is related to classroom management so that certain groups of learners might get particular attention that otherwise is more difficult when a single teacher is in exclusive charge. In this regard, monitors have emphasised that collective reflection and teamwork are critical for learning from each other's teaching experience by getting new insights about their pedagogic and classroom management strategies. One of the events several times mentioned as being crucial for collective reflection, sharing and mutual learning is the monitors' meeting organised by the IEC every three-months:

[monitors meetings] were an added value because they gave us hints on how we could do it and experiences what could go wrong. We have these meetings at the end of each quarter to discuss the results. It turns out to be an added value because we realised what has failed over the quarter and what can be done to improve our courses. (Monitors, Miranda do Corvo).

Another monitor goes further:

I realised that this difficulty is not mine, it is something that is shared among all science monitors [...], and we were able to overcome these difficulties together. During the meetings, I realised how my group of students and I were privileged over other groups. For instance, my school's laboratory is bigger than the IEC's lab, and it was built by scratch for this project. We have a lot of laboratory material for everyone at the class, and we have everything, all students can experiment and observe the experiments through a microscope. [during the meetings] I realised that not all the groups have the same conditions we have. (Monitor, Santa Maria da Feira).

Furthermore, this was an opportunity to share experiences as monitors and bring insights about what has been working better in pedagogical practices. Their openness about what did not go well at the classroom led to a discussion about bringing together their different practices, as scientists and as science monitors.

Each time there is a difficulty, and this has happened several times, we pick up the phone and call [IEC]. If necessary, we call other colleagues from Miranda do Corvo or Famalicão, because exchanging experiences is essential. Every year, things are different because every year, kids are different too. This diversity is going to progress more and more because it's not just us and Oliveira do Bairro, and the group is growing (...) With this exchange, everyone realises that they have many things in common, but also people realise that many things happen in different ways depending on the situations and places. This sharing must continue! (Monitor, Figueira da Foz).

Concerning these monitors' meetings, one of the IEC staff's underlined issues was the horizontality of the dialogue established during these meetings, in a non-disqualifying logic of individuals, practices and knowledge. Hence, these meetings with monitors are defined as spaces for mutual learning, where all participants have something to teach and learn in the interaction with each other (Lave, 1991; Lave J. and Wenger, 2003). Monitors immensely demand these spaces, and they all assumed the need for more opportunities of this kind. However, they also reported spending considerable time and effort analysing and reporting upwards on a wide variety of mostly quantitative data, with far less attention paid to qualitative sources, like classroom observations or peer review, for learning. IEC's assessment, evaluation and accountability arrangements, which have focused attention on quantitative performance measures, are believed to have contributed to this practice. Part of the challenge lies in creating more dialogue spaces and exchanging pedagogical experiences and learning between monitors. Although during the meetings to evaluate science courses monitors get this space to share experiences and debate, they claim for more opportunities to share experiences, difficulties, and successes about teaching science to 4th-grade students. As one monitor referred during the interview: "we should value much more dialogue". This fact was revealed during one meeting, and this was something that the IEC's staff wanted to change in a short period.

Apart from team teaching, science monitors also work in close dialogue with school teachers. They recognise that this collaboration is particularly important to communicate with children and build a trust relationship.

[The relationship with school teachers is essential] *In the communication with the children. I have to thank the fourth-grade group teacher very much, who helped me deal with them. She gave me tips on how to talk to students and handle and manage students in the classroom. (...) Rosa, for example, a girl who has more learning special needs than their colleagues (...) I had to learn from her teacher and Rosa herself, how to deal with her. I have found a strategy for Rosa to trust me. I asked questions to her that I was sure she knew. From then on, she opened up more and started asking questions and raising her hand during class. I managed to win her trust, and that was one of the biggest surprises of this year. At the end of the year, I was much more confident, and so was her [monitor, Santa Maria da Feira].*

In addition to the horizontality of dialogue, monitors have highlighted the importance of working collaboratively with school teachers to develop a concerted learning strategy:

Whenever there is a difficulty, we talk it through with school teachers; altogether, we develop strategies to solve the problems that pop up. For example, school teachers told us they used to use the colour behaviour table. School teachers said to us that these tables encourage students to behave well because it is very visual, it is a green, yellow and red colour system and they paint

the behaviour ball in their notebook. It is an assessment made by the student and us. It was a strategy we did not know, but it turned out to be very useful in our case. We solved a behaviour issue that way of working along with school teachers. (Monitors, Figueira da Foz).

Through dialogical and democratic relations between universities and schools, teachers and students construct a formative space constituted by new epistemological rationality. Schools are envisioning as places of reflective practices, and universities are assumed as spaces that are genuinely open to society, experimentation and learning. The great challenge and the mission of the 21st-century university is, as Boaventura de Sousa Santos addresses, the constitution of a “pluriversity of knowledge”, i.e., a contextual knowledge insofar as the organisational principle of its construction is its extramural application. The pluriversity knowledge, in the author words, is: “a transdisciplinary knowledge that, by its very contextualization, demands a dialogue or confrontation with other kinds of knowledge, which makes it more heterogeneous internally” (Santos, 2008: 29, 30). “Pluriversity knowledge” has been developed in fruitful partnerships between education and companies. However, more recently, especially in central and semi-peripheral countries, it has seen its non-market application, with collaborations between researchers and trade unions, NGOs, social movements, more vulnerable social groups, and more engaged and critical citizen groups. It is a vast group of users that develops a new relationship with science, with technology. Therefore, it also requires greater participation in its production and evaluating its impacts (Santos, 2008: 30, 31).

The construction of an expanded field of mutual learning is experienced wherein both professional learning of teachers and students' learning and the learning of researchers who collaborate with them are formulated through collaborative work and a dialogue between different knowledge. These practices seem to expose the deterritorialization of professional learning, in the sense that the university is not the epicentre of the training process, and it is establishing a more horizontal relationship with it. Once again, as Santos (2010) would say, we are moving towards decolonising knowledge, especially de decolonization of training and teaching-learning practices among students, teachers, and researchers, establishing democratic connections between schools universities, and between theories and practices (Lima, 2019).

Besides, this collaborative work reflects schools' dynamic. Indeed, in several schools, the IEC's presence was a launchpad for developing other activities and the emergence of other courses given by school teachers on subjects not covered by the IEC

courses. This is the case of the previously mentioned *Easy Park* project and the robotics courses, as we explore further on.

A new dynamic was established within the school (this is transversal to all schools included in this study). Schools and universities started an unceasing way of collaborating all over the academic year, and these practices led to national and international acknowledgement. By winning the Gulbenkian Foundation and *Ciência Viva* national programs, schools were allowed to equip laboratories properly –new laboratories (built from scratch or renovated infrastructures). This has created a sense of pride among the school community in “doing differently” and being awarded. “An energy and proud could be felt at school by talking to teachers and directors” - one can read on my fieldwork notes when visiting schools. New ideas came from teachers and students since they have expanded their networks into unfamiliar educational territories. School community felt the will and the courage to risk developing new projects and new courses but, above all, new ways of working in collaboration with other schools and research centres.

These activities implied a significant commitment from teachers and students, mainly because this collaboration happens continuously all over the academic year and happens even during summer break – summer internships. It became part of the school’s academic routines. It also became part of the research centres routines and science communication’s procedures and plans.

On the side of universities and researchers, one of the most mentioned features of this collaboration is that this learning experience has taught them to communicate science better and think critically on the role of science in society.

We have to get out of our ivory towers and labs, and we need to be able to communicate what we do and what we study because taxpayers fund research. What I learn from this intervention is that ... it forces me to sit ... meditate and ... realise how to communicate these concepts better. It may seem strange, but we are not used to do this in our profession. I have to be able to explain what I am doing straightforward. It's an exciting exercise. (Researcher, UC).

Kids are very interested. They are very curious about the brain, and It is very productive to talk to them. Sometimes we realise the extent of your ignorance. Because they ask questions that matter, they ask questions relevant and not what we have been able to answer over the years. (Researcher, UC).

I have to adapt the language, and that was the big challenge. The hardest thing for me was adjusting the language. (Researcher, UA).

On the researchers’ side, this is a way to find alternative solutions to explain their work. Simultaneously, it functions as a laboratory, wherein researchers can test what

works in terms of communicating science, in pedagogical terms, both at schools and the university. As one researcher told us during the interview:

While I was preparing the activities, this idea came to my mind, and it worked very well, and I have used it here [at university]. For example, I use this little ball to explain the protein's activity, structure, and molecules. I also use it to explain how a change in protein impacts other sites on the protein. I came to this example, because I found out that it works, during the courses I gave at the IEC. And now I use it here [University of Coimbra]. (Researcher, UC).

The same thing was referred, as we already mentioned, by teachers: attending these courses were also essential to find out new and creative ways of teaching.

[During the course] It came to my mind many new ideas, extraordinary things that I could do with my students in the class, or ideas for asking questions on the test or even ways of explaining some topics that could be useful. Sometimes we want them to understand something better, yet we cannot come up with new ways of explaining something, and [participating at the IEC courses] has helped me a lot on this (secondary school teacher, Águeda).

These new learning practices allowed students and teachers to create new projects based on a shared vision and establish unique individual and collective learning goals. Once this practice is created and shared broadly, the expectation is that it influences practices –change the way things are done at school and in the classroom. Ultimately, these changes are expected to affect students to enhance their learning and long-term success directly.

Several teachers mentioned the importance of getting a close relationship with universities and research centres and what it represents in students' path and how it brings together two worlds that do not cross paths very often. On the one hand, it allows students to appropriate themselves of spaces of the university, i.e., reframing the symbolic space of the university within themselves. In this sense, what seemed previously unattainable (proceeding studies and assessing university) become a new aspiration for them, and a tangible goal to achieve. It is a new narrative about the learning system, its potential, and people's identity in it. Such an inspirational narrative invites a configuration of partners to undertake something that no one thought possible: by articulating their vision into an inspirational narrative, IEC is strengthening people's imagination about the learning system and their role in it. The resignification of this symbolic place allows students to reorganise a future that is often not yet mentally organised. Bringing science and schools closer to each other, in the case under analysis, has served the dual role of (re)signifying the *locus* of science and learning (school and university) and reorganizing and guiding individual mental spaces in terms of future academic possible paths.

1.3.2. Learning Schools: Broadening teachers' profile and Distributed Leadership for Learning

We address the dimension team learning and collaboration by elaborating on two dimensions of schools' integrative model as learning organisations, namely broadening teachers' profile and distributed leadership for learning.

Innovative practices can be extended by bringing other professionals to work with teachers and sharing professional experiences and knowledge. Bringing in different experts or peers to work with or act as educators are routine in this case. Students are commonly called on to be educators to their peers. Researchers teach on their expertise areas: 'stem cells'; 'neurobiology and neurodegenerative diseases' or 'toxicology', 'health and alimentation', just to name a few. This collaborative learning experience benefits "teachers" in enhancing understanding of the subject area, confidence, and study skills. According to students, research on a specific subject and the close interaction with researchers and school teachers were the most significant features of these courses for envisioning possible academic and professional future paths.

What did I like the most about the courses? Without a doubt, the interaction with professionals, the bridge between the IEC and the universities, the diversity of knowledge acquired and the contact with the research's reality currently developed. The fact that monitors come from university helps us demystify a lot what a university professor does. (Catarina, student).

As the next quotes show, participation in these courses helps some students find out their academic path. Hence, students of all ages have the opportunity to work directly with scientists who are working on cutting edge subjects. According to *Ciência Viva*' director: "These scientists are role models to these children". Students and teachers admitted that this fact had had a crucial impact on choosing the university course. As mentioned by teachers:

At the end of the course, students say, 'I already know what I want to do', and it's connected with what they have done during the classes. The opposite also happens, I mean, students who realise "I do not want to do this, after all", and I think this is also a positive thing. This component of dialogue with university teachers is crucial, and it is an advantage for students; this intermediation would not be possible to be done on our own (...) Interestingly, among students who finished high school this year, seven of them happened to enrol in the biology course, and this is something we have never seen before [laughs]! I do not know why, but many of them have pursued this area of knowledge. I never imagined that the impact [of IEC courses] was so extraordinary on these kids' minds that it would change their path. One of the girls was feeling very lost during high school, she enrolled three times in the same course of microbiology, and she just wanted to go to biology. (Teacher, Secondary School).

Another former student of these courses mentioned the following:

My teachers in high school were very connected to the research. I was lucky. They were very engaged to the experimental part, although they could not put the practical part into practice. Later

on, I realise how lucky I was comparing with other students that had classes with teachers who were not very connected or interested in research (...) with the IEC courses came the practical part. I think that students who had these courses had better results in the exams. (André, former student)

These statements support the importance of bringing university closer to the schools' daily life. Students appreciate and value that teachers are also researchers and professionals with scientific backgrounds that enrich the courses' contents and provide new and thrilling information for students to learn.

There is also the collaboration between schools and museum centres. This collaboration allows students to have science classes at the museum. In practical terms, students and teachers left school to attend the experimental science course⁷¹. This practice breaks with students' routines in school. The fact that students go outside school seems to be a desirable but rare educational practice, as reported by one science monitor from the Sea Museum Centre of Buarcos, Figueira da Foz:

If we take a look at the secondary schools, students nearly go for fieldwork (...), I don't see any current science class going to Cabo Mondego or going to the beach (...) It is a very bureaucratic process; students' transportation is very complicated; you have to have parental permission (...) Whenever there is difficulty, we talk to the teachers; we find strategies to solve the problems. (Figueira da Foz, Monitor).

Besides, this learning school's organisation dimension implies that school leaders focus on and model learning leadership. School leaders ensure that the organisation's actions are consistent with its vision, goals and values. The school teachers interviewed have reported being encouraged by school leaders to promote and collaborate with other schools, parents, the community and higher education institutions. School leaders ensure an integrated approach to respond to the learning and other needs of students. In our case study, their schools' leadership strategy was approached by school directors and by teachers. Besides, interviewees underlined the effort that most directory boards were doing to create a distributed kind of leadership following a vision shared with teachers and staff. As one school cluster director stated:

Leadership is something that is done through eye contact, and it implies closeness. It implies being systematical with people, speaking, and guiding, although there is a team afterwards. (...) it also has to be transformational in the sense that it has to put people to row all to the same side. Sometimes, the difficulty is creating the conditions (...) it is the creation of a collaborative culture, isn't it? Each school has its own; it is necessary to sit people down and feel the organisation as their own. It is a lengthy process. (School cluster director).

⁷¹ We are referring to the School cluster of Figueira da Foz and to the Sea's Museum Centre in Buarcos, Figueira da Foz.

Although leadership is an essential dimension of learning schools' integrative model, leadership was not approached substantially by our interviewees. Indeed, except for the school directors who have mentioned their leadership practices as innovative and horizontal, we have no reactions to this topic among the other interviewees. More dialogue and reflective thinking on this topic would be positive to reach a collective understanding of what would be done differently in terms of distributive leadership and the impact that this change would have in terms of organisational learning. As leadership refers to the organisational culture, it would be interesting to identify whether practice and rhetoric matches. However, another kind of methodology would be necessary to infer about this topic.

2. An integrated reading of the overall results

Throughout this chapter, we have argued that the collaborative learning community has contributed to creating an open learning system. The existence of this CLC has resounding effects around three central axes: creating a shared vision with a view for improving students' learning and enhancing the overall learning experience of individual members of the community; in the implementation of collective learning mechanisms; and for the creation of collaborative partnerships between schools and universities, with resounding effects on the relationship between the CLC and the external environment.

This practice's collective and collaborative condition is materialized in an IEC investment by research centres and universities around creating courses and other activities articulated with schools. Through these activities, the capacity for communication between institutions is expanded, developing practices that lead the learning community to in-depth communication and exchanging knowledge. The “leverage effect” that these initiatives had on schools is an example of this. As Nóvoa (2017) points out, through the creation of joint spaces for research and learning between schools and universities, the possibility of rethinking common challenges and investigating the epistemologies of teacher education in a collaborative perspective is

created. This new way of thinking is, in fact, another rationality of research in education and educational practice.

For the part of research centres and universities, the collaboration between different actors and the dialogue between different repertoires of experience and forms of knowledge allows creating innovative forms of scientific communication and collaborative schemes of work and mutual learning with school teachers. It also provided universities and research centres with a new way of expanding audiences for science; creating new strategies to communicate scientific work, and providing tools to co-produce pedagogical/scientific materials.

On the school side, collaborating with universities and research centres has improved scientific knowledge of the teaching staff and brought self-confidence in their professional activity, teachers reported. In schools, new ideas and new projects emerged based on collaboration with IEC, through courses, conferences, seminars, and internships. As previously mentioned, the IEC's action and the schools' universities have had a "leverage effect". This leverage effect has driven the development of initiatives similar to those implemented by schools in collaboration with the IEC. As new courses and initiatives are implemented, and new projects emerge, teachers undergo an interactive process of action and reflection, and the ability to promote student learning increases, as teachers find alternative practices that are successfully improving student performance. The partnership with IEC was the first step for teachers and school principals, in creating new ways of doing, acting, and being in the classroom and at school. This approach includes rethinking their role as students, teachers, and members of the learning community. A more significant commitment from teachers and researchers to reflective practices was created to improve students' learning. Real collaborations were created between teachers and students in projects designed collectively. To quote one of the teachers interviewed in the investigation's scope, this partnership is truly a "double-way road". This collaboration's double meaning is centred on a dialogical action established, under the principles of horizontal dialogue, in a logic of valuing the various actors, their knowledge, and experiences. Mutual learning spaces are created where, at times, all participants have something to teach and to learn (researchers - teachers - students). These practices imply that students and teachers (re) imagine themselves as part of this learning community. It also suggests learning to connect with other members in new ways and realigning ways of working towards a shared vision.

Conclusions

The framework proposed in this work originates from a bottom-up vision of education as a Human Right, one that goes beyond a legal perspective, and instead places emphasis on the learning process as a whole and broadens the set of educational agents, contexts and forms. The purpose is that the right to education becomes not only a real significant statement but, above all, a meaningful practice.

Research's main goal was to understand how collaborative learning communities and learning schools broaden the notion of education as a Human Right in practice and driving educational change. We have suggested that learning communities contribute to the quality of the learning process and the knowledge produced within these groups should be considered a valued contribution to the learning experience. Hence, expanding groups of agents who contribute to the diversification of the learning process and changing schools from teaching institutions to learning organisations proved to be a valuable contribution to think education as an emancipatory process.

Two main interrogations guided us throughout the research. The first interrogation that guided this research was to understand the Institute for Education and Citizenship (IEC) role in implementing collaborative learning communities. Also, we wanted to understand in what ways (if any) does the implementation of these new practices have been contributing to schools' change?

We argued that the joint action of schools, research centres and universities, the municipality, and the Institute of Education and Citizenship formed a collaborative learning community worthy of being considered an essential educational enterprise. Findings also underlined that due to the IEC role of facilitation, capacity building mechanisms had been improved for the network members, and a knowledge-exchanging dynamic has been created. Research has shown that the IEC central role is facilitating relationships among institutions and people that were unrelated before. Its presence allowed the creation of a new way of acting, one of collaboration, based on horizontal dialogue; shared values and trust that creates an *influence system* among schools and universities (research centres); schools and national funding organisations; schools and local political agents (the municipality); schools and museums. Indeed, research has shown that through the IEC action, spaces of mutual learning are created where, at times,

all participants have something to teach and to learn, calling into question hierarchies, distinctions and the relationships that establish them. These hierarchies can be as different as teacher VS student, learning VS teaching, valid knowledge VS non-valid knowledge.

Additionally, this case study analysis helped us rethinking the emergence of new participatory subjects: students/teachers and other intermediaries as non-formal institutions (IEC) and formal institutions (such as universities) in the network. Overall, the learning community referred to here has implications for students and their teachers' lives, for the lives of the researchers and the IEC members, as well as for the other members of the learning community. Yet, it has also influenced the schools where they operate - configuring schools as learning organisations was the overall outcome for schools. The approximation of the studied schools to this model and the constitution of learning communities results in an organisational configuration that replaces vertical and asymmetric power relations with more collaborative and fairer ways of exchanging knowledge and structuring the educational process change.

Secondly, we wanted to disclose whether a collaborative learning community and learning schools' models challenges knowledge-exchanging mechanisms and agency under the construction of a democratic understanding of the school. And If so, in which ways?

We argued that the collaborative learning community is a bottom-up response developed collaboratively by local agents to the challenges identified locally in the educational field. This bottom-up strategy is one under which mutual engagement and reflection processes happen at different learning system levels. Research also suggested that a knowledge-exchanging dynamic has been created and have ensured successful outcomes in its members' learning experience. Simultaneously, mechanisms for developing collaborative strategies amongst the members of the learning community were established. Both empower local government and give the support needed to schools for taking risks to redesign their relationships with other schools, with universities and, in some cases, with broader community-based services. Research also highlighted the importance of connecting the learning community's elements, particularly through partnerships among schools and research centres. Indeed, findings have demonstrated that partnerships between IEC and the schools and research centres provide an appropriate context for rethinking and reinventing public schools and higher education institution, so they become dynamic places for developing and sustaining students' learning practices;

providers of opportunities for the continued development of practising professionals and conductors of research and inquiry more open to society.

In order to answer the main research questions, this thesis engaged with three central bodies of literature: human rights, learning communities and learning schools. Within the human rights framework (Chapter 1), this study entailed a critical understanding of the right to education which underlined that education had been designed and pursued in international law and conventions, in practical terms presents conservative features. These conservative features would hardly produce emancipatory knowledge and are not oriented towards a learner's empowerment for social transformation. We accept the importance of legal strategy in mobilising social groups or reducing their relevance to social groups' political awareness. Legal enforcement is an essential part of the political strategy. However, this discourse, at the same time that is producing legal citizens, reflects a homogenising discourse and a simplistic view of subaltern social groups. Based on this understanding, we suggested that education as a Human Right could only be a significant achievement with meaning if we undertake an understanding of participation and an active commitment of all the interested parties on the educational project as a constitutive part of it; and an understanding of learners as active agents in the educational process. Indeed, one of the significant challenges of this research was to look at education as a right beyond its legal framework. We argued that a bottom-up approach to Human Rights as the one proposed by collaborative learning communities could problematise dominant hegemonies of groups and is the one that takes into account understandings and worldviews of actors who are often excluded.

We have suggested that beyond the collaborative learning community's rights-based approach, there is an understanding that citizens should be included as active, participating agents in their institutions (such as schools or local associations). The case study presented meet this challenge by giving voice to people who are not very often convoked to play an active role in these debates. School students and teachers play an active role in designing new practices and new projects at the school setting; schools and research centres entail a horizontal dialogue in designing new courses and science-oriented activities. The IEC and the local government also entail an engaging and participative process of designing local education strategies. Such an approach mirrors a bottom-up model for institutional reform that compels us to reflect upon social

institutions' design and compels us to reflect on individuals' capabilities to contribute to these institutions.

The second and third body of literature investigated within this thesis was learning communities and learning schools' frameworks (chapters 2 and 3). We addressed learning communities and learning schools as analytical approaches that bring educational experiences, the experience of resistance to hegemonic practices. We proposed to look at it as emancipatory possibilities in the educational field, given their capacity to transform the regulatory/emancipation relationship in education. We underlined the potential of collaboration and engagement over people's capacity-building and as a powerful tool of reflection and for transformation. It entailed in this case, looking at education from different perspectives and angles as it is lived by schools, from the perspective of each partner involved in the learning community, namely: students, school teachers, school directors, researchers, the IEC staff, municipality and local institutions (local museums; local associations; social organisations). We suggested that collaborative mechanisms and knowledge exchange are a crucial part of an *influence system* wherein new knowledge, subjectivities, and new practices are built. This *influence system* affects the classroom and the school, as they serve as a platform for launching these actors and the practices outside school settings. In this sense, mutual learning is established under the horizontality of dialogue by valuing the various actors and their knowledge and experiences, which underlie the learning community's concept. In this context, learning is assumed (and expected) to be empowering and transformative. It is though, empowering people to make changes in their own lives and their families, communities, and institutions. Indeed, we have argued that these changes resulted from developing capacity-building mechanisms entailed by the collaborative learning community. This research has shown that capacity exists at the three interconnected levels. In this study, teachers invested in their growth and development at the personal level by allocating time and resources to invest in their professional development and learning. They also learn individually and with one another in mixed-age groups and teachers and monitors with a broad scientific profile. Teachers, school directors, researchers and students have shown they are life-long learners. At the interpersonal level, teachers had established collaborative relationships with their colleagues and students and researchers from the university. Organisationally, these schools built capacity through structuring processes and other stakeholder groups, such as universities and research centres, and, in one case,

regional museum centre. The development of capacity building in these three interconnected levels has empowered and given the support needed by schools for taking risks to redesign their relationships with other schools and, in some cases, with broader community-based services. We have sustained that learning schools cannot operate in isolation as ‘open systems’ sensitive to their external environment. These connections with its community, partners, and networks enrich its capacity to create a democratic and collaborative learning space. It is worth mentioning that at the *governmental level*, Portugal Ministry of Education takes collaborative learning communities as a specific measure for improving education success effectiveness, giving support and developing a sense of alignment with measures implemented at the school level and to widening its implementation in schools nationwide.

The critical policy overview made in chapter 6 demonstrated that the policy climate, locally, regionally and nationally, matters. School’s autonomy, student’s profile at the end of compulsory education and the curricula flexibility’s policy provided conditions for collaborative practices to happen locally and sustain this learning community. This conclusion was based on policies at the central level and its implementation actions in the school’s year 2017/2018. The analysis suggested that this collaborative learning community's success relies on creating conditions at three interconnected levels: central, regional, and school levels. This learning community can be said to depend on structural and political conditions: the existence of a political platform of and for a municipal government committed to the creation and functioning of a co-responsible educational response; the validity of organisations that have developed their ability and capacity to intervene in collaboration with other institutions. So far, cases like this showcase that the balanced fulfilment of both conditions is essential and has been in place.

Nevertheless, results have shown that, even under favourable conditions, there are obstacles to sustaining collaborative learning communities. The most mentioned obstacle was on the macro-level of the educational system. Indeed, the centralised accountability system is perceived by the learning community members as undermining the development of collaboration, solidarity and participation, for instance, the rhetoric on autonomy clashes with a context of bureaucratic and centralised practices. Lima (2019) pointed out that control is centralised either through the action of deconcentrated structures or, more recently, through the intensive use of an electronic administration,

refining its instruments of individualised surveillance and remote control over actors and their practices. Indeed, this study's significant analytical dimension shows that the transformation of schools into learning organisations depends on the collective effort of improving learning opportunities for all the community members, yet centralised accountability systems undermine the development of these notions. As we could testify from the interviews, schools' culture is closely related to the pressure of the neoliberal movement on institutions towards its “educational effectiveness” (exam results and completion rates). The influence of the neoliberal, global, and European’s movement pressure for excellence and effectiveness is reflected in school’s organisational context and is expressed in several axes: the quality and diversity demands of the training offer and the services provided, and their impact on people/society; the orientation of learning processes towards final results; the planning of an ever-widening range of activities and the attempt to implement innovative teaching practices. Indeed, the conflict between learning to know and learning to display knowledge for evaluation is very present. We called this the *school dilemma*, which impacts schools where collaborative work is understood as a tool to increase students' learning experiences, team learning and collaboration as tools for improving learning. It is in this tension that several schools choose their path. This is why we have addressed learning communities and learning schools as analytical approaches that bring educational experiences, the experience of resistance to hegemonic practices, given their capacity to transform the regulatory/emancipation relationship in education. Simultaneously, we envision learning communities and learning schools as political constructs because they do not happen spontaneously. Instead, a decision has been made to move in a particular direction, and its members have intentionally adopted a different view of reality on which to build upon the school.

As was discussed in chapter 7, an open learning system's ecological approach suggested the interconnection between the system's parts. From the analysis of the case study, we underlined three significant trends in the effects it has produced: students’ and teachers individual learning experience; in the implementation of collective learning mechanisms; and collaborative partnerships between schools and universities.

For the dimension of students and teachers' individual learning experience, we would like to highlight three significant dimensions as having a substantial impact: interactive classes with a practical component; learner’s mixed-age groups; and involving

teachers and parents as learners. We want to underline how science teaching in this learning community involves students and teachers is critical to the individual learning process. This is particularly clear when we analyse advanced science courses. Researchers, the IEC staff and teachers, designed these courses, joining scientific and pedagogical knowledge, tailored according to the necessities of schools and students' interests. Accountability, in this case, is a collective enterprise. Negotiation is a crucial word for designing, implementing and creating something new. The “easy park” project was detailed in this study as an example of this: a new space, created by collaboration and negotiation where collaborative problem solving and mutual learning happened through collaboration (the University of Aveiro and the secondary school of Oliveira do Bairro) and knowledge-exchanging (between researchers, school teachers and its students). This project involved a more significant commitment of time, intensified effort, and broader responsibilities within the community. It also implied building an identity as part of a “chain of help”. This idea of identity/membership is strongly tied to a notion of motivation, team learning and collaboration. As the person is perceived as a community member and has an active agency, the concept closely links meaning and action. Exchanging, in this context, is understood as a space for negotiation and resignification of practices and knowledge. This space is often seen as a space of frontier (between different knowledge). The ultimate goal is not to create scientists, but to inform citizens, develop critical thinking, raise questions, create discussion habits, create audiences for science, and integrate these agents in a broader scientific community in the citizen science frame. Involving the IEC, like all the other partners, but this process also allowed us to discuss these practices as empowering institutions and people.

Equally important is that the collective dimension of the teaching practice is achieved by collaboration with students and researchers. All the interviewed teachers pointed out that the creation of joint science courses and training spaces between schools and universities created the possibility of rethinking common challenges and investigating teacher education's epistemologies from a collaborative perspective.

Concerning the effects of collective learning mechanisms, three significant outcomes have been suggested, which resulted from the IEC mediation efforts for the creation of the learning community: the collaborative actions between schools and research centres; the horizontal and continuous dialogue established; and its ‘leverage effect’ on the engagement of different educational agents, of different ‘repertoires of

knowledge' and experiences. It is, though, not only a matter of taking the university to schools or bringing schools to the university but of building a new place, together, one that values everyone's knowledge and experiences. This practice's collective and collaborative condition is materialised in an IEC investment by research centres and universities around the creation of courses and other activities articulated with schools. In practical terms, this led to teachers deciding to change their way of teaching their respective courses and creating new courses at schools or widening these courses' pedagogical repertoires, including robotics, physics or ancient Greek culture in a new set of courses. Our analysis revealed that partnership with IEC was the first step for teachers, school principals and students to create 'new ways of acting' and, as a consequence, to recreate new school's identity based on new habits of interaction in this learning community. For this to happen, IEC's work has been essential in bringing people new ways of acting and experiencing themselves in the learning community. It is way much than inviting people to join the group and institutions to become partners. It is, instead, an invitation to become part of a reconfigured open and interconnected learning system.

Concerning the effects on creating team learning and collaboration, findings have suggested an investment made by the IEC, research centres, and universities to create courses and other activities articulated with schools. Indeed, this study's central analytical dimensions show that the effects have contributed to reshaping the relationship between the collaborative learning community and the external environment. Our analysis suggested that through these activities, the capacity for communication between institutions is expanded, developing practices that lead the learning community to in-depth communication and exchanging knowledge. The "leverage effect" that these initiatives had on schools is an example of this. By creating joint spaces for research and learning between schools and universities, the possibility of rethinking common challenges in a collaborative perspective is created. It is in the overlapping space between schools and universities that we must concentrate efforts. The facilitation role of the IEC has been crucial on the formation of an overlapping space. At this intersection, innovation and change seem to occur within the learning community, both for scientists, students, and teachers. Through dialogical and democratic relations between universities and schools, teachers and students construct a formative space constituted by new epistemological rationality. Schools are envisioning as places of reflective practices, and

universities are assumed as spaces that are genuinely open to society, experimentation and learning.

Furthermore, this research suggests that the success of this CLC depends on a complex interlinking between actors, knowledge and institutions that overcomes the usual distinction between learning vs teaching; learner vs teacher; learning spaces and learning times. All the interviewees valued belonging to the learning community, and they want to continue exploring other possible futures within the network. The learning community allowed teachers and students to engage in practices that enable their perspectives became visible and relevant for the community to sustain and progress in their practices and join reflection. It also gave schools an equal and interventive role, which rarely happens while collaborating with research centres. The collective work between schools and universities gives both a sense of equality and mutual trust and knowledge exchange. Drawing on this, knowledge exchange and mutual learning contributed to the continuous process of rewriting what this learning community is.

Central to our research is the relevance of the intermediation of the institute of educations and citizenship. IEC represented a keystone in this process. However, without an engaged learning community composed by scientists/monitors, teachers, students, parents, school principals, IEC and other learning partners, such as museums and the municipality, these outcomes would not be possible.

Directions for future research

Empirical work and theoretical research have opened up the ground for future studies, hopefully providing answers to theoretical and methodological issues.

First, concerning theory, collaborative learning communities and learning schools are dynamic and are always under construction. Future studies could consider updated versions of the integrative model, which includes an eighth dimension: *partners contributing to school vision* developed in a recent study of Kools et. al. (2020). Besides, future studies could also add nuances to our conclusions by considering how the relationship between the learning organisation and learning communities may be influenced by various contextual distinctions, e.g. organisation type, organisation size and cultural setting, and the kind of established partnerships. For instance, we focus our analysis mainly on the dynamic created within the learning community with secondary

schools and school clusters, as well as, on the activities they develop together with the IEC and with universities and research centres. The centrality of one's activity dictated the depth of the analysis or its exploratory character. It would also be useful to study further the dynamics associated with the IEC's relationship with the local community in a broader sense (including social and cultural local institutions) and analysing in which ways it influences the IEC's activity and how it also has (or may have) a relevant role in the learning community. Equally relevant would be including more parents and families to understand how this community's impacts expand (and in what domains they extend) into the community's members' family spheres. How could we consider parent's agency as a valid contribution to the learning community that could expand knowledge on this field?

Secondly, concerning the methodological approach, the community's heterogeneous nature challenges elaborating a unique analytical matrix. It also called for the development of differentiated and multidimensional approaches that accommodate its complexity. The methodological approach on which this investigation was based, allowed to analyse the contexts, discourses and educational practices from a diversity of angles. Indeed, the set of institutions and individuals that constitute this learning community multiplies the analysis angles and makes it a unique experience. However, as with any dimension related to organisational culture change, understanding all these changes and the reconstruction of symbolic universes takes time. Indeed, it would have been necessary more time to understand the effects of these new schools' practices and dynamics on the school's learning culture that is not measurable during the short period of this research. Alongside with time, it would also be beneficial to entail an ethnographic study that could compare the discourses produced about organisational culture and practices and the practices and everyday living at the learning community. Future research benefit from both time and a different methodological approach and data triangulation. Indeed, regarding the analysis of the dimensions of the integrative model of learning schools, some were analysed in greater depth, and others assumed a more exploratory character in a perspective of future research. Indeed, the dimensions *Developing a shared vision with a focus on the learning of all students; Establishing a culture of inquiry, initiative and experimentation; Embedding systems for collecting and exchanging knowledge and learning; Distributed Leadership for Learning* refer to issues related to the organisational culture of schools, but also those alluding to school management characteristics (e.g.,

governance models and types of leadership, management practices). These dimensions deserve further analysis to perceive organisational culture, the coincidences, dissonances and tensions between concrete practices and the discourses produced about those same practices.

Interestingly lately, the IEC has entailed negotiation with schools, and both are planning to expand advanced courses to other areas of knowledge. Besides, they are also creating more anchor activities at the community and improving the community activities developed so far. “Science in action” and “Conversations with scientists” are projects of this kind. The IEC is also involved with the school cluster of Anadia in the QUALIFICA program. This is another example of the path of closing the gap between the institution and the local community. Recent activity is related to developing scientific training courses for primary teachers, showing the willingness to bring closer primary schools and teachers. Additionally, we consider that strengthening regional and national partnerships and embracing collaborative actions with other national, and international learning communities might be essential contributions to expand communication between institutions, developing practices that lead the learning community to in-depth communication, learning and exchanging knowledge.

Besides, it seems crucial to encourage scientists, educators, school directors to write about their practical experience of learning community and learning schools in Portugal. As I can testify in the field, most experiences are still delivered to the funding institutions but are not compiled as a good practice manual or guidelines for others to get inspired. It would be an essential exercise of articulating different thinking and perspectives on learning and education as a practice of freedom, critical thinking, and social transformation. There is work to be done, in this field yet. To mitigate this, we are planning to organise several workshops with the members of the CLC and other interested people from different institutions as well as producing a summary report to overcome the language barrier created by writing a thesis in English, a language that is not accessible for the majority of the learning community’s members, and, therefore, to share and discuss my findings.

In a final note, democratic learning communities inscribed in a reflexive, critical and emancipatory logic are built in the present, in schools' daily routines, based on social and professional interactions and based on relationships. This collaborative learning community assumes its role as a tool for realising critical and responsible citizens, who

are protagonists of their individual lives and active participants in collective life. Some initiatives and actions of this learning community might fail. Some members might leave, and others will join this adventure. Organisations that systematically and effectively learn from failure are rare, and this applies to schools too. We believe this is an example of a collective which has been able to learn also from error. However, if we want to widespread these models and these examples, we should devote some thought that when people are afraid of failing or even experiment on a small scale when mistakes and experiments that fail are viewed as unfavourable, or accountability systems punish them. Under these circumstances, one might ask whether (and how long) learning communities and learning organisations can sustain in this kind of climate. To understand this better, we need more comparative studies of learning communities and educational systems making the same effort, nationally and internationally. An international observatory would be a collaborative platform that would help create the research conditions for capturing, comparing, and discussing learning communities' activity and learning schools in the educational realm in different contexts worldwide.

Any research project includes decisions based on planning, contingencies and accidents, even if this is rarely acknowledged. These elements have played a role in this study as well as, influencing the course of the research, the analysis and findings. The interpretations advanced in this thesis are, therefore, of my responsibility. As such, the findings remain open to debate, contestation and re/signification. In this process, I hope that those people from this collaborative learning community continue to be an essential part of such dialogue, without which scholarship runs the risk of being void and meaningless.

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Appendix I

PEDIDO DE AUTORIZAÇÃO AOS ENCARREGADO/AS DE EDUCAÇÃO

Caro Encarregado de Educação,

Eu Denise Reis Esteves, doutoranda do programa de doutoramento em Direitos Humanos do Instituto de Investigação Interdisciplinar da Universidade de Coimbra, a desenvolver um estudo que se intitula: “Comunidades de Aprendizagem Colaborativa, Redes de Conhecimento e Instituições: Inovação e Participação para uma Mudança Educativa” venho por este meio solicitar a autorização da participação do seu educando no presente estudo através de uma entrevista sobre as suas práticas escolares e extracurriculares no Instituto para a Educação e Cidadania.

A entrevista será realizada no Instituto para a Educação e Cidadania e está assegurada a confidencialidade dos dados e o anonimato dos entrevistados. Ao entrevistado será disponibilizada a transcrição da entrevista na íntegra, sempre que solicitada. Está também assegurada a possibilidade do entrevistado em qualquer momento desistir da sua participação.

A sua colaboração e a do seu educando são essenciais para o sucesso deste estudo.

Denise Reis Esteves

Eu, _____ encarregado de educação de _____ autorizo/não autorizo (riscar o que não interessa) o meu educando a participar no estudo desenvolvido no âmbito da tese de doutoramento “Comunidades de Aprendizagem Colaborativa, Redes de Conhecimento e Instituições: Inovação e Participação para uma Mudança Educativa” do III UC.

Assinatura do Encarregado de Educação

Data ___/___/___

Convite para participação no estudo de doutoramento “Comunidades de Aprendizagem Colaborativa, Redes de Conhecimento e Instituições”, III-UC.

A presente entrevista insere – se num estudo sobre Comunidades de Aprendizagem Colaborativa e Redes de Conhecimento nas instituições de ensino portuguesas, com vista à obtenção do Grau de Doutor em Direitos Humanos, na especialidade de Direito à Educação, pelo Instituto de Investigação Interdisciplinar da Universidade de Coimbra.

O estudo intitula-se “Comunidades de Aprendizagem Colaborativa, Redes de Conhecimento e Instituições: Inovação e Participação para uma Mudança Educativa” e pretende estudar quais as práticas, estratégias e instituições que contribuem para uma melhoria da qualidade educacional e da equidade na educação em diferentes níveis educacionais.

Esta fase do projeto de investigação científica visa a recolha de informação de carácter exclusivamente científico com incidência nas suas experiências no domínio da educação.

O tratamento desta informação obedecerá aos mais rigorosos procedimentos científicos e de confidencialidade. Atendendo à relevância da sua opinião, e de forma a viabilizar o melhor o registo da mesma, gostaria que autorizasse a gravação áudio da nossa conversa.

O seu testemunho constituirá um inestimável contributo para o estudo e avanço científico sobre o tema.

Muito obrigada pela sua colaboração!

Tenho conhecimento de que o estudo tem em vista realizar entrevistas com alunos, professores, diretores de escolas e agrupamentos de escolas e demais elementos da comunidade escolar visando, por parte da referida aluna, a realização de um trabalho para obtenção do grau de doutora.

A minha participação consistirá em conceder uma entrevista que será gravada e transcrita. Entendo que esse estudo possui finalidade de pesquisa e divulgação académica e que será preservado o anonimato dos participantes. Além disso, sei que posso desistir de participar na pesquisa quando e se assim o entender e que não receberei nenhum pagamento pela minha participação.

Assinatura do Participante Assinatura do entrevistador

Data:

Data:

Local da entrevista:

Local da entrevista:

Cód.entrevista:

Appendix II

Livro de códigos

MAXQDA_PhD08-11-16

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Sistema de Códigos

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1 ensino não formal

entrevistado faz referência à importância da educação não formal.

2 programas ministério Educação

Referência a programas do atual Ministério da Educação.

3 programa Ciência Viva

entrevistado(a) fala de alguma ação do programa do ciência Viva em que tenha participado ou queira participar

3.1 programa Ciência Viva\escolas Ciência Viva

Entrevistado faz referência à rede de "Escolas Ciência Viva" do qual o IEC faz formalmente parte desde 2015.

4 cursos avançados caracterização

entrevistado faz uma caracterização do funcionamento ou organização dos cursos avançados de ciências (escolas do 2º ciclo ou escolas do ensino secundário) ou dos cursos de ciências experimentais (escolas do ensino básico) na sua escola ou nas instalações do IEC.

4.1 cursos avançados caracterização\cursos avançados_história

surgimento dos cursos avançados em Portugal e o contexto social da época; impacto dos cursos nas universidades e públicos a quem se destinavam.

4.2 cursos avançados caracterização\cursos avançados_formacao prof e monitores

Entrevistados referem-se ao contributo dos cursos avançados para a reciclagem de conhecimentos académicos.

4.3 cursos avançados caracterização\cursos avançados_expansão

entrevistados referem-se à vontade/desejo de que os cursos do IEC fossem expandidos a outras áreas do conhecimento/ outros níveis de ensino/outras escolas/agrupamentos de escolas

4.4 cursos avançados caracterização\feedback cursos

entrevistados dão a sua opinião sobre o curso que frequentaram. Professores e diretores de escolas referem a sua opinião bem como o feedback dos alunos e dos pais.

4.5 cursos avançados caracterização\cursos avançados_soluçoes alternativas

Referem-se aos cursos avançados como uma solução alternativa ao ensino da escola, standardizado.

4.6 cursos avançados caracterização\motivação para frequentar cursos avançados ou ciências exp.

entrevistados explicam quais as maiores motivações para frequentar os cursos do IEC nas escolas e nas instalações do instituto, bem como outras atividades desenvolvidas pelo instituto.

4.7 cursos avançados caracterização\participantes cursos

Entrevistados explicam quem são maioritariamente os participantes dos cursos avançados ou dos cursos de ciências experimentais.

4.8 cursos avançados caracterização\avaliação cursos ciencias experimentais

Entrevistados (professores e monitores) fazem uma avaliação dos cursos de ciências experimentais e falam dos impactos destes cursos nas aprendizagens individuais dos alunos.

4.9 cursos avançados caracterização\impacto do curso na aprendizagem individual

Entrevistados falam do impacto do curso na sua vida académica, hábitos de estudo, comportamento em sala de aula, etc.

4.10 cursos avançados caracterização\aplicação conhecimentos e aprendizagens na vida

Aplicação dos conhecimentos adquiridos no curso, noutras esferas da vida, noutros contextos académicos ou profissionais.

4.11 cursos avançados caracterização\propostas de melhoria cursos/IEC

propostas de melhoria dos cursos do IEC apresentadas pelos alunos, professores, monitores.

5 caracterização IEC

É feita uma caracterização da instituição (IEC)

5.1 caracterização IEC\IEC VS Escolas

principais diferenças identificadas entre os cursos, aulas do IEC e as aulas da escola.

5.2 caracterização IEC\Objetivos IEC

Referência às metas e aos objetivos do IEC bem como às estratégias para os atingir.

5.3 caracterização IEC\IEC_Dinâmica de trabalho

Dinâmica interna de trabalho do IEC

5.4 caracterização IEC\sugestão melhoria IEC

Sugestões apresentadas para melhoria das atividades do IEC

5.5 caracterização IEC\IEC_Atividades

ATRIBUIÇÃO DO PRÉMIO CIÊNCIA VIVA

5.6 caracterização IEC\Resolução conflitos_IEC

Referência à forma como se resolvem os conflitos internos na instituição

5.7 caracterização IEC\formação monitores cursos IEC

Identificação de necessidades de formação em áreas concretas.

5.8 caracterização IEC\conexão com o ambiente exterior

relação da instituição com outros organismos exteriores

5.9 caracterização IEC\Arsélio Pato

Referência ao diretor e fundador do IEC

5.10 caracterização IEC\liderança

Referência ao estilo de liderança no IEC

6 cursos IEC/prát. colaborativas

Referência às práticas colaborativas da instituição, entre as quais a colaboração com o IEC.

6.1 cursos IEC/prát. colaborativas\Ex práticas colaborativas observacao aulas por colegas

Exemplos práticos de práticas colaborativas na instituição do entrevistado: observação de aulas por colegas

6.2 cursos IEC/prát. colaborativas\colaboração IEC

Entrevistado explica como surge e como se desenvolve a colaboração da instituição com o IEC.

6.3 cursos IEC/prát. colaborativas\prêmios e menções honrosas sobre projeto

Entrevistados referem-se a prêmios e menções da escola ou do projeto que decorreram da colaboração com o IEC (Ex: Projeto mentes brilhantes; prêmios ganhos por alunos em clubes de robótica, etc) Estes projetos tiveram como embrião, os cursos avançados do IEC.

6.4 cursos IEC/prát. colaborativas\escolas não colaborantes e motivos não colaboração

Motivos pelos quais algumas escolas não colaboram

7 formação profissional de docentes e não docentes

Necessidades específicas de formação de professores, constrangimentos à facilitação de formação. Entrevistados referem-se também ao modo como o iEc vem colmatar essa falha das escolas/sistema.

8 outras parcerias

Outras parcerias estabelecidas entre a instituição e outros organismos

8.1 outras parcerias\CES

Referência à colaboração com o CES através do programa "CES VAI à ESCOLA"

9 investimento educacao_filhos

Éreferido o investimento (financeiro, gestão de tempo, participação em reuniões, delocações) feito pelos encarregados de educação relativamente à educação dos filhos.

10 escola privada VS Publica

São mencionadas as diferenças entre escolas públicas e privadas

11 diferenças entre ensino superior e ensino secundário

Diferenças sentidas pelos ex-alunos dos cursos avançados entre o ensino superior e o ensino secundário

12 expectativas de futuro

Expectativas referidas quanto ao futuro académico (alunos C1; ex-alunos C2), futuro profissional (Monitores cursos B2), futuro dos cursos e da colaboração com o IEC (Diretores A1; professores B1).

13 a minha escola_caracterização

Caracterização da escola em termos de nº alunos, contexto social, económico. Directrizes das direcções da escola nos últimos anos relativamente às políticas de promoção do sucesso escolar e autonomia das escolas.

13.1 a minha escola_caracterização\precariedade professores

Exemplos de situações de precariedade laboral e condições de trabalho dos professores.

13.2 a minha escola_caracterização\cursos profissionais

Professores falam dos alunos dos cursos profissionais na sua escola.

13.3 a minha escola_caracterização\CV_alunos_curso profissional

referência a turmas do ensino profissional

13.4 a minha escola_caracterização\práticas colaborativas escolas

Exemplos de práticas de colaboração entre a escola e outras entidades, como o IEC.

13.5 a minha escola_caracterização\sugestão melhoria escola

Sugestões apresentadas pelos entrevistados sobre práticas, atividades e medidas que poderiam melhorar as aprendizagens na escola e o seu funcionamento.

13.6 a minha escola_caracterização\resolução conflito_Escola

Alunso explicam a quem recorrem e como resolvem conflitos ou problemas na escola.

13.7 a minha escola_caracterização\Gestão_Turma

referência às dificuldades sentidas na gestão da turma dentro da sala de aula

13.8 a minha escola_caracterização\proximidade com professores_Escola

Alunos falam da importância da proximidade com os professores.

14 relação com município

Relação da instituição com o município e com a comunidade.

15 percursos académicos alunos

escolha de cursos e entrada na universidade

15.1 percursos académicos alunos\exemplos de práticas sucesso_alunos

Alunos referem o que consideram ser fundamental para ter sucesso académico.

15.2 percursos académicos alunos\estratégias de estudo

estratégias de estudo utilizadas pelos alunos

15.3 percursos académicos alunos\medo de falhar_Entrada na Universidade

Alunso falam do medo de falhar e de não ser bem-sucedidos na universidade, bem como a pressão para tirarem boas notas para entrar no curso que querem.

15.4 percursos académicos alunos\Pressão Notas

alunos falam na pressão para tirar boas notas

15.5 percursos académicos alunos\exames universidade

Alunos falam dos exames nacionais para entrada na universidade.

15.6 percursos académicos alunos\história familiar_ Alunos

Alunos falam do contexto familiar

15.7 percursos académicos alunos\hobbies

Alunos falam das suas atividades extracurriculares

15.8 percursos académicos alunos\Bom aluno_quadro de excelência

Alunos falam da entrada para o quadro de excelência da escola, devido aos resultados escolares.

16 inovação na educação

exemplos de práticas concretas consideradas inovadoras na escola

17 Partilha de informação, conhecimentos e aprendizagens

Situações de partilha de conhecimentos, colaboração profissional ou académica e de aprendizagem em grupo.

18 aprendizagem grupo, colaboração envolvimento pais

Situações de colaboração entre colegas e profissionais. estratégias de envolvimento dos pais com a escola. Dificuldades sentidas e desafios para o futuro no que diz respeito ao envolvimento dos pais.

19 avaliação escolas

Entrevistados falam dos processos de avaliação da sua escola, dificuldades e vantagens

20 História da Instituição

Entrevistado relata a história da instituição

20.1 História da Instituição\percurso individual dentro da instituição

Entrevistado refere-se ao seu percurso na profissão e na instituição onde trabalha atualmente, com as funções que desempenha atualmente.

21 desafios atuais da escola

Entrevistado fala dos desafios que a escola enfrenta atualmente

21.1 desafios atuais da escola\Novas tecnologias

entrevistado fala da utilização de novas tecnologias na sua escola.

21.2 desafios atuais da escola\cultura de agrupamento/escola/identidade

Entrevistado fala dos megra agrupamentos e da cultura ed agrupamento e de um sentimento de pertença que se deve viver nas escolas.

21.3 desafios atuais da escola\obstáculos

Entrevistado fala dos obstáculos à inovação e à melhoria com os quais as escolas convivem.

22 autonomia das escolas

entrevistados falam dos contratos da autonomia das escolas

23 escola ideal

entrevistados respondem à pergunta: "Qual é, para si, a escola ideal?"

24 financiamentos

Entrevistados referem as diferentes formas de financiamento da sua instituição.
Refere-se também o quanto a relação com o IEC ajudou à candidatura de financiamentos específicos para construir e apetrechar laboratórios nas escolas, etc.

Appendix III

Photos 1 to 9 - *IEC's façade and IEC's leisure and learning spaces.* (photo credits - IEC).

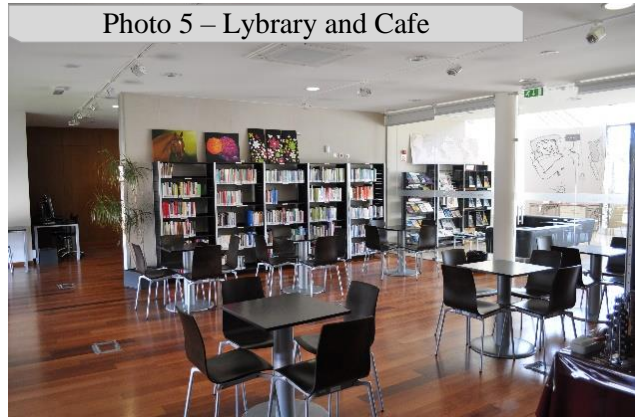


Photo 6 – Laboratory 1



Photo 7 – Laboratory 2



Photo 8 – Informatics Room



Photo 9 – Classroom 1



Photos 10 to 14 - Photographic Composition of the Experimental Science and Human Evolution Courses for Students from the First Cycle. (photo credits - IEC).



Photos 15 to 19 - Photographic Composition of the Experimental Science Courses for Students from Secondary Schools. (photo credits - IEC).



Photos 20 to 23 - Photographic Composition of the Experimental Science Courses for Students from the Second Cycle (photo credits - IEC).



Photo 24 to 29 – Photographic Composition of the 2nd edition of the Science Festival in Oliveira do Bairro (2017). (Photo credits – Denise Esteves).



Photo 24



Photo 25



Photo 26



Photo 28



Photo 27



Photo 29

Photos 30 to 35 - Photographic Composition of Activities for Schools and Community Members.



Photo 30



Photo 32



Photo 33



ASSOCIAÇÃO IEC - ALUMNI
Associação de alunos e professores • Instituto de Educação e Cidadania IEC

CANDIDATURAS A ESTÁGIOS CIENTÍFICOS PARA ALUNOS DO ENSINO SECUNDÁRIO

O quê?
Estes estágios são uma oportunidade de conhecer a realidade da investigação científica em Portugal.

Onde?
Símbolos centros de investigação participantes:

Quem?
Alunos do 10º ao 12º anos

Quando?
26 a 28 março 2018

Como?
Pelo menos 24 alunos (grupos de 2 alunos)
Deslocação e almoço incluídos

Porquê?
3 dias com cientistas

ESTÁGIOS CIENTÍFICOS NA PÁSCOA

Candidatura? Gratuita.
Data limite: 17 março 2018. Local: IEC ou <http://www.educacao-e-cidadania.pt>

Photo 31

Director: Prof. Doutor António Pato de Carvalho
Largo da Igreja 13770-033 Memarrães
Oleiros de Beira - Portugal | IEC: 503 500 411

Logos of partners: CIÊNCIA VIVA FCT, PLACINCO COLABORAÇÃO, CNC, biocont, gradiva, TOMAS INDUSTRIA, socientimind



Photo 30 – Painting course (Photo Credits – IEC)

Photo 31 – Advertising scientific Internship to secondary school’s students (Photo credits – IEC)

Photo 32 – Public ceremony for delivering certificates of participation on the advanced courses in science -9th grade and secondary schools (Photo Credits – Denise Esteves)

Photo 33 – Study visit to the University of Aveiro (Photo Credits – IEC)

Photo 34 – Conference held at a secondary school “Nos Limites da Ciência A Investigação Portuguesa no Ártico” 2013 (Photo Credits – IEC)

Photo 35 – Former ministry of Science and Technology giving a speech during the public ceremony for delivering certificates of participation in the advanced courses in science. 2013. (Photo credits – IEC)