Schools 4.0

Innovation in Vocational Education

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Co-funded by the Erasmus+ Programme of the European Union

Title	Schools 4.0 – Innovation in Vocational Training and Education
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INTRODUCTORY NOTE

The project ***Schools 4.0 – Innovation in Vocational Training and Education*** was born from a group of vocational schools belonging to the Network of Schools 4.0, which at a national level participated in several meetings under the guidance of investigators from the Research Centre for Human Development (CEDH) of the Portuguese Catholic University (UCP) that periodically organized informal reflection meetings with the aim of rethinking pedagogical practices and identifying the changes needed to transform a 19th century school to a "School 4.0" of the 21st century, capable of responding to the great and complex current challenges of Vocational Education, aligned with European benchmarks.

These meetings, gave rise to a joint will to extend this reflection to other international partners (Denmark, Greece and Belgium), aiming to build solutions that could be tested, evaluated and shared at the European level.

As a result, arose the idea of building an innovative quality assured pedagogical reference, an Intellectual Output (IO), that would be conveyable to most vocational schools in Europe in regards to educational changes capable of transforming and adjusting training and vocational education to the 21st century during the Covid-19 pandemic period.

The project was composed of four Portuguese VET representative schools, from distinct geographical locations. The **Raul Dória Vocational School** located in Porto, **INSIGNARE** – Educational and Training Association from Ourém, **Rio Maior Vocational School** situated in Rio Maior and as coordinating entity **EPATV** – Escola Profissional Amar Terra Verde established in Vila Verde, Braga.

It was relevant to include in the international partnership the experience of a Danish school, a Northern European country, the Køge Business College, located at Ørnevej in Køge, as well as a Southern European adult education/Life Long Learning Center, the DIAVIMA based in Athens, Greece.

In order to diagnose the project starting point, relevant inputs for its implementation and result diffusion, the valuable collaboration of one of the largest representative associations of vocational education and training in Europe, EfVET, based in Brussels, Belgium, proved to be an asset.

This e-book, one of the resulting products from the Action Research process, is a *pedagogical reference of innovation for professional education in the 21st century*, financed by the 2018-1-PT01-KA202-047463 project of the Erasmus Programme which was overseen by two UCP expert investigators and CEDH researchers, of national and international recognition, Professors **Joaquim Azevedo** and **Luisa Orvalho**, that led this venture and conducted the elaboration of the conceptual framework related to Part I.

In summary, it is expected that this pedagogical tool can contribute to stimulate and implement innovative processes and experiences of disruptive change, which will be further developed in Part II, that mirror the guidelines of National and European policies present in the curricular documents of the participating countries.

Within the autonomy, curricular flexibility and diversity of educational projects that characterize vocational schools is it expected that these mechanisms serve as a tool to help teachers, students and all internal and external stakeholders to reconceive original, suitable educational and training models, so that the youth can face the current challenges of the 21st century outlined in the "Strategic Vision for the Recovery Plan of 2020/2030" with more resilience, ensuring the transition to a Green and Digital Europe and a modern, more sustainable economy.

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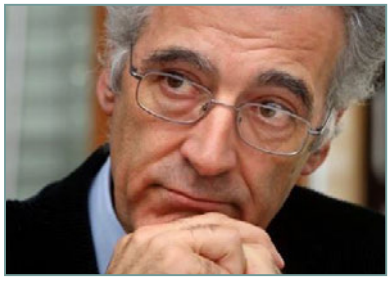
SHORT CV OF RESEARCHERS

Joaquim Azevedo



Joaquim Azevedo (1955, Santa Maria da Feira), with a degree in History and a doctorate in Education Sciences from the University of Lisbon, is a full professor at the Portuguese Catholic University and President of the Manuel Leão Foundation. He currently directs the Arco Maior Socio-Educational Project (www.arcomaior.pt), which is aimed at young people who have left school. He has held the posts of Director-General of the Ministry of Education (1988-92) and Secretary of State for Education (in 1992 and 1993). He is a member of the National Education Council (co-opted). He has represented Portugal in various international bodies (OECD, UNESCO) and is the author of several books and numerous articles on education and training. He is married, lives in Porto, has 3 children and 5 grandchildren.

Luísa Orvalho

Luísa Orvalho (1950, Tourém, Montalegre, Vila Real), graduated in Chemical Engineering and Educational Chemistry at the University of Porto. Master's degree in educational sciences, Specialization in Educational Computing, obtained from the University of Minho, PhD and Post-Doctorate in Educational Sciences, acquired at the Portuguese Catholic University. She has held various management positions in the Ministry of Education and has participated in many European projects (1989-2010), always related to Vocational Education. Consultant for the Support Service for the Improvement of Education (SAME) and Researcher at the Research Centre for Human Development, Católica Porto (since 2011). She is currently Coordinating Teacher at ISTEC Porto and Collaborating Teacher in the Master of Music Education at Católica Porto. Co-author of several books and numerous articles on education and vocational training, new learning environments and science technology and society. She is married, lives in Matosinhos, has 2 children and 2 grandchildren.

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1º Transnational meeting in 26 and 27 november 2018 in EfVET – Brussels – Belgium

2º Transnational meeting in 21 and 22 may 2019 in EPATV – Braga – Portugal

MEETINGS

3º Transnational meeting between the 4th and 8th of November of 2019 – Køge – Denmark

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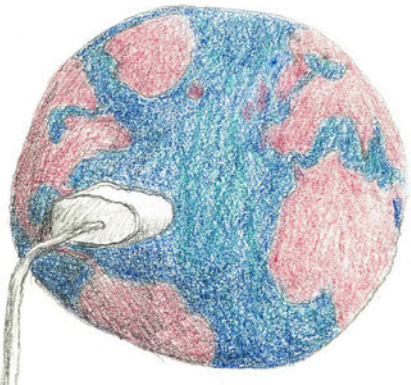
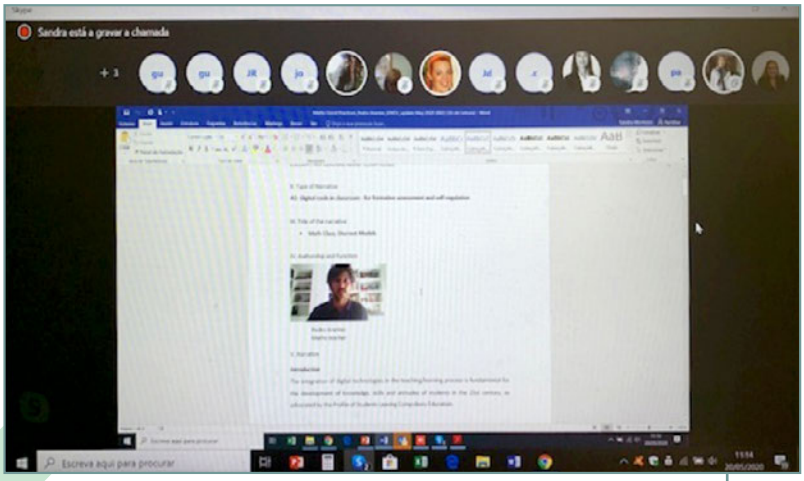
ONLINE MEETINGS

4º Transnational meeting online in 27 of November 2020 – SKYPE





5º Transnational meeting online in May 20th, 2020 – SKYPE

6º Transnational meeting online in June 29th , 2021 – SKYPE

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ACKNOWLEDGEMENTS

The IO – Intellectual Output resulting from this project, materialized in digital e-Book format (and also available in printed document), intends to be an inspiring working tool to mobilize all educational agents in the dynamics of innovation and in the challenging process of continuous change towards excellence in vocational education and training.

Project No. 2018-1-PT01-KA202-047463 – Schools 4.0 – Innovation in Vocational Education was conceived and started before the unforeseen Covid-19 pandemic, which, without warning, and or preparation, had strong impacts, one of them being emergency remote learning. However, every time I reread the content of this e-book, I recognize its timeliness, relevance and innovation; and even though we are already talking about Industry 5.0, and consequently about "Schools 5.0", I have no doubt that there is still much to be changed today within the school environment.

Becoming the coordinator of this ambitious project has given me an unforgettable experience, both personally and professionally. Reflecting on how much I learned, on how much I witnessed work done by all the participants, gave me a sense of privilege and a lesson in collaborative work that I need to highlight here.

Thank you all very much! For what you have contributed to the project and for making it an example of networked and shared learning whose knowledge is now freely available.

As project coordinator, and on behalf of EPATV, I would like to express my sincere gratitude and recognition to the entire national and international work team that over these three atypical years has been committed and reinvented to bring the project to a successful conclusion. At the risk of forgetting someone (for which I apologize), I must men-

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tion the EPATV teaching team (Pedro Arantes, António Cunha, José Dantas, Clara Sousa), among many others who, under the guidance of Pedagogical Director Sandra Monteiro, shared the good practices of this project; to teachers Laura Rocha, Joana Macedo, Clara Lopes and Marina Cruz from Escola Profissional Raul Dória who started the project, but had to leave it halfway through to embrace new challenges while always providing input when requested; to teachers Érica Marques and Daniela Guimarães from the same school, who replaced them and with the same "spirit" ensured the continuity of excellent work; to Maria João Proença from EfVET for her professionalism and compassionate attitude which greatly contributed to the European vision of vocational training; to Leonor Fragoso from EP Rio Maior, who left the project to embrace the public cause with responsibilities in the municipality of Rio Maior; to all the school directors; to all the partners, teachers, researchers, entrepreneurs, stakeholders, graduates and former students, private and public entities that participated in the collection of significant data for the completion of this project; to the teachers and directors of Koge Business College that made possible the realization of the excellent workshops in Denmark; to the teachers, trainers, and technicians who shared their best practices and methodologies in online meetings, always so dynamic and productive; to the illustrator Olga Neves (specialized in children's and youth literature) for her commitment and for having accepted this challenge in such short notice, conveying the conviction that Art can be a means of transmitting Knowledge; to LabGraf for the collaboration in the graphic design of this e-book, among many others, who even if not named had a relevant impact on this final product.

And with everyone in my heart, I must express a special thanks to Professor Luísa Orvalho who "put up with me" and above all exceeded her role as consultant and researcher, always focused on the final result of this IO that is now presented here; to Professor Joaquim Azevedo who, in the midst of so many and countless requests of high importance, always had "time" to give us his wise and enlightened opinion; to the whole Erasmus+ National Agency team, especially to our technician Ana Cunha, for the trust she placed in us by promoting the flow of knowledge that we all benefited from participating in the transnational experience and to the Eramus+ Program, which without the respective funding would not have been possible to carry out this project.

Finally, as this is a dynamic pedagogical reference, which has been constantly enriched throughout the process to achieve its objectives (far beyond those stated in its application), I would like to challenge all those who wish to put it into practice, in this new phase of dissemination, to promote its implementation and to send us feedback regarding the results, suggestions for new practices, constructive

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criticism, and improvements capable of involving and committing everyone in the continuous improvement of education and training for the 21st century, giving sustainability to the work developed by this transnational team, through the email epatv.schools4.0@gmail.com.

Since the Greek origin of the word "symphony" refers to different instruments that harmonize to achieve a result, the multiplicity of voices that make themselves heard will be the guarantee that it was worth it!

I hope this IO contributes to a education and professional training for all, where each one is seen as a young "bearer of the future", as a subject of their duties and responsibilities, as a fully committed citizen.

Good work and enjoy!

The Project Coordinator
Paula Fernandes
EPATV – July 2021

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PARTE II

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Part I

1. Introduction

Knowledge society is the key term that resides in this new millennium, which poses a great impact in regards to school (re)construction substantiated by the new paradigm – everyone has the right to education. But how can a 21st century school, and the VET education of the future respond to this huge challenge?

The answer lies within an establishment armed by differenciated educational organization and training spaces, along with an inclusive praxis - committed to a learning environment aimed at human diversity, a multidimensional characteristic of contemporary society.

1.1 Context

This e-Book is one of the products, intelectual output (IO), resulting from the Project No. 2018-I-PT01-KA-202-O4774463 "Schools 4.0 – Innovation in Vocational Education", Erasmus+, Programme of the European Union, which focuses on the reflection of this scenario. By analysing the theme in hand, consistent outcomes will follow, while simultaneously paths are opened for a School 4.0 surounded by globalization dilemmas and their effects.

It is a benchmark constructed in order to rethink pedagogical practices, identify the changes that need to be made in the school in order to build strong pillars relating to disruptive innovation, reinvent a school capable of responding to the new challenges and opportunities of Vocational Education and Training connected to our current times of "liquid modernity". A futuristic school, with Vocational Education – "School 4.0".

Is it expected that the product and process, resulting from the adopted model for the production of this IO, will cause very significant impact in regards to improving learning experiences, disruptive innovation of pedagogical practices, and their transformative effects concerning ways of thinking in relation to the more directly envolved partners, whether it be the principals, teachers and trainer of schools with vocational education, but also the external stakeholders, at the dissemination stage.

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1.2 Aims

Provide participating partners, and other schools from different countries, at the project dissemination stage, with information about their students' social and emotional skills, as well as cognitive, technical, and scientific skills.

Provide ideas, testimonials and best practices on how to support schools and teachers in developing these skills, which are essential for Industry 4.0 society life and the labor market.

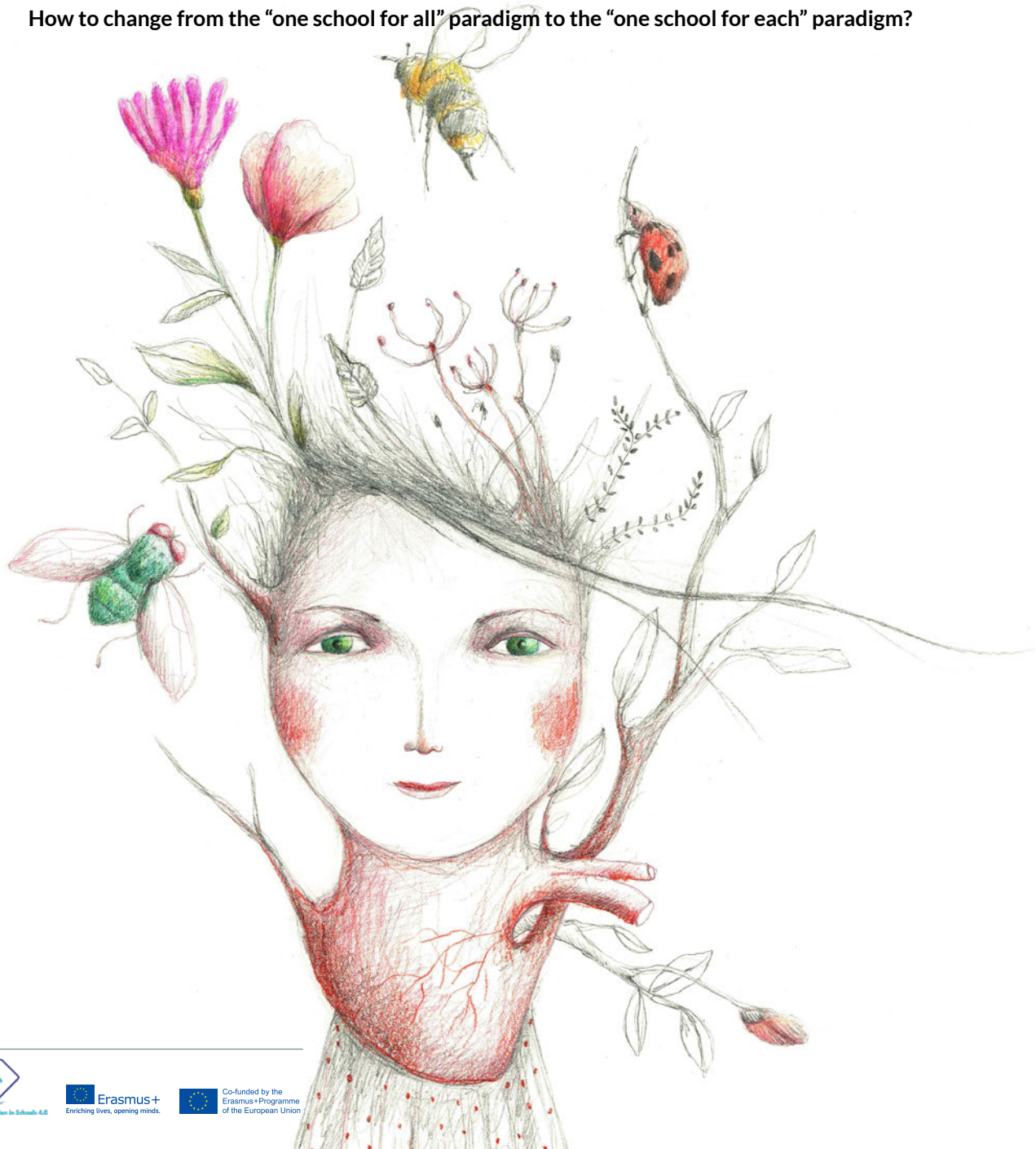
Answer questions like:

What should a VET for Industry 4.0 look like?

How to make VET fit for the future?

How to make vocational education and training the first choice?

How to change from the "one school for all" paradigm to the "one school for each" paradigm?



1.3 Goals

The following objetives were established in order making VET fit for the future:

- To characterize the curricular contextualization means that have been put into practice in VET schools of the transnational partnership;
- To establish relationships between practices of curricular contextualization and processes of producing qualifications, and assessing learning outcomes;
- To identify and select assessment instruments produced by VET schools, in the classroom and on-the-job training contexts, that fit the framing principles of the modular curricular structure of vocational education;
- To contextualize relevant curricular practices, capable of improving students' learning and promoting educational success, within the principles of an inclusive education, and citizen education, where everyone has equal chances of achieving success, learning and developing personal and social skills and not only technical and scientific ones;
- To unraveling how students are recruited for work-related training and Placements: tutoring, mentoring and coaching in VET;
- To promote learning for work, in and through work.

In summary, it is intended that this IO, resulting from the European transnational project, contributes, on the one hand, to clarify the position occupied by the contextualization of school autonomy in relation to reference curriculum policies and, on the other hand, to understand the ways in which these policies are interpreted and materialized in specific contexts of educational projects, by their authors, in a school 4.0, through the exemplification of "good practices". An IO that helps the different stakeholders in the reconceptualization of the current traditional school, in the operationalization of competencies for 2030, to rethink and identify the changes to be introduced in pedagogical, organizational and assessment practices, which allow development to a 21st century school "SCHOOL 4.0".

1.4 Methodological procedures

The study began with the application of a diagnostic questionnaire, using Google Forms, to teachers and school principals in Portugal and Greece, whose results are shown in the first attachement.

From an empirical point of view, a qualitalive methodology has been chosen, the Appreciative Inquiry (AI) model. The methodological device for appreciative action-in-action investigation, as shown in Figure 1, is characterized by a cycle of 5 phases: Define, Discovery, Dream, Design, Delivery / Destiny, and can be summarized as follows:

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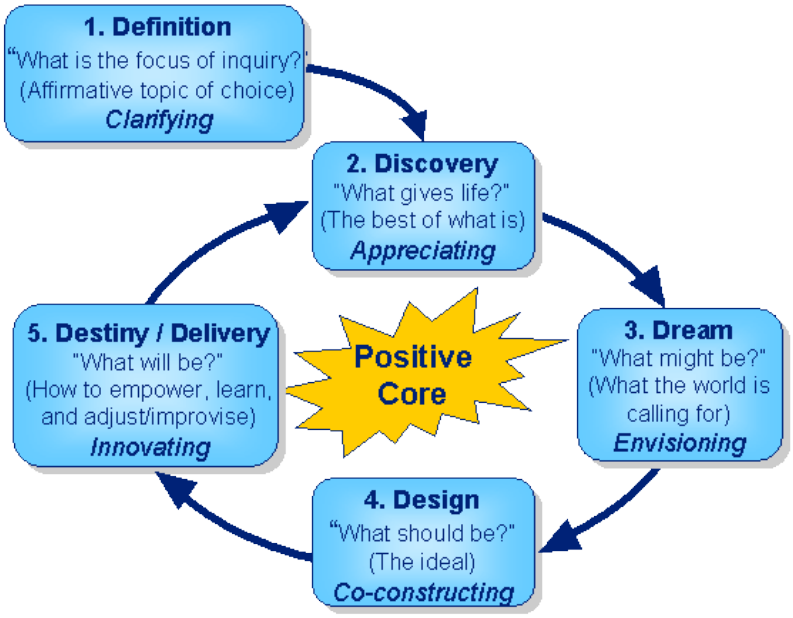
FIGURE 1 Appreciative Inquiry-Cycle 5D



Fonte: Susan Donnan, December 2005 (Copyright © 2005-2016 METAVOLUTION)
http://www.metavolution.com/rsrc/articles/whatis_ai.htm

Define — **Define** the invervention framework (in each active partner). What do we want to learn and how to do it? What do we want to change? Clarify and define the focus of the change. "**What is the focus of Inquiry**?"

Discovery — **Discover** the strenghts of each of our organizations / our schools / and distinctive milestones. What do we already do well and want to do even better? Diagnostic assessment and collective awareness of the talents and weaknesses of all active partners. Discover the strenghts and weaknesses of the current school organization. "**What gives life**?"

Dream — **Dream** about the innovative reference of what a School 4.0 should be (introducing the European dimension of the "Manifesto of the Schools 4.0 Network). What is the futuristic school we want? Prospect the collective future. "What might be? **What the world is calling for**?"

Design — **Design** the desired change plan, in each partner and school, respective projects and activities in the face of the desired changes. Collaborate to Learn and Innovate? What Innovation? Disruptive or incremental change? "**What should be**?"

Deliver — **Disseminate** sucessfully evaluated changes, once implemented in the specific contexts of each partner and school. "**What will be**?"

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2. The challenging and abrupt changes taking place in societies and economies

In this chapter we make reference to the times of cultural transition we are experiencing, with strong impacts on today's societies and economies; technological revolution, the digitalization of society, economic and cultural globalization, new lifestyles, profound transformations in the economy, at work and in employment, all of this poses a general picture of enormous challenges for children, young people and adults and for education and professional training, around a set of technical, social and emotional skills. "Industrial revolution 4.0 has changed the way of thinking about education. Changes made are not just a way of teaching, but far more necessary is a change in the perspective of the concept of education itself." (Lase, 2019, p. 13).

2.1 What should a VET 4.0 look like? A VET for the 4.0 industry in order to educate and qualify citizens for the complex world changes?

Societies that are improving social cohesion and economic growth are distinguishing themselves by fostering citizens' social and emotional skills: their ability to adapt to change, be resourceful, respect and work well with others, and to take personal and collective responsibility. The digitization education must be a priority for the next decade. Digitalisation is, and will increasingly, transform today's society, with the integration of digital technologies in all aspects of everyday life through the computerization of everything around us, with effects on human relations, work, culture and economy. Digitalisation brings with it a range of opportunities and risks, and the ability to address and solve new and complex problems will depend on how current and future generations are educated and trained.

Competitiveness, success, and the ability to solve 21st century problems is related to how current and future generations adapt to this new world.

2.2 The 3 main pillars of VET Industry 4.0

The 3 main pillars of a VET 4.0, capable of meeting the challenges of industry 4.0 (the name for which the 4th industrial revolution was coined at the Hannover fair in 2011 in Germany) are based on scientific, technical and social and emotional skills.

1st Pillar

Information Analysis and Data Set Interpretation are key learning areas in this century's curriculum

It is crucial that in VET 4.0 you learn to deal with the language of large numbers – mathematics and statistics – interpreting datasets and analyzing huge amounts of information. Understanding concepts such as the difference between correlation and chance are key to exercising citizenship and dealing with fake news.

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2nd Pillar
Informatics and Computational Programming are the basis of digitalization

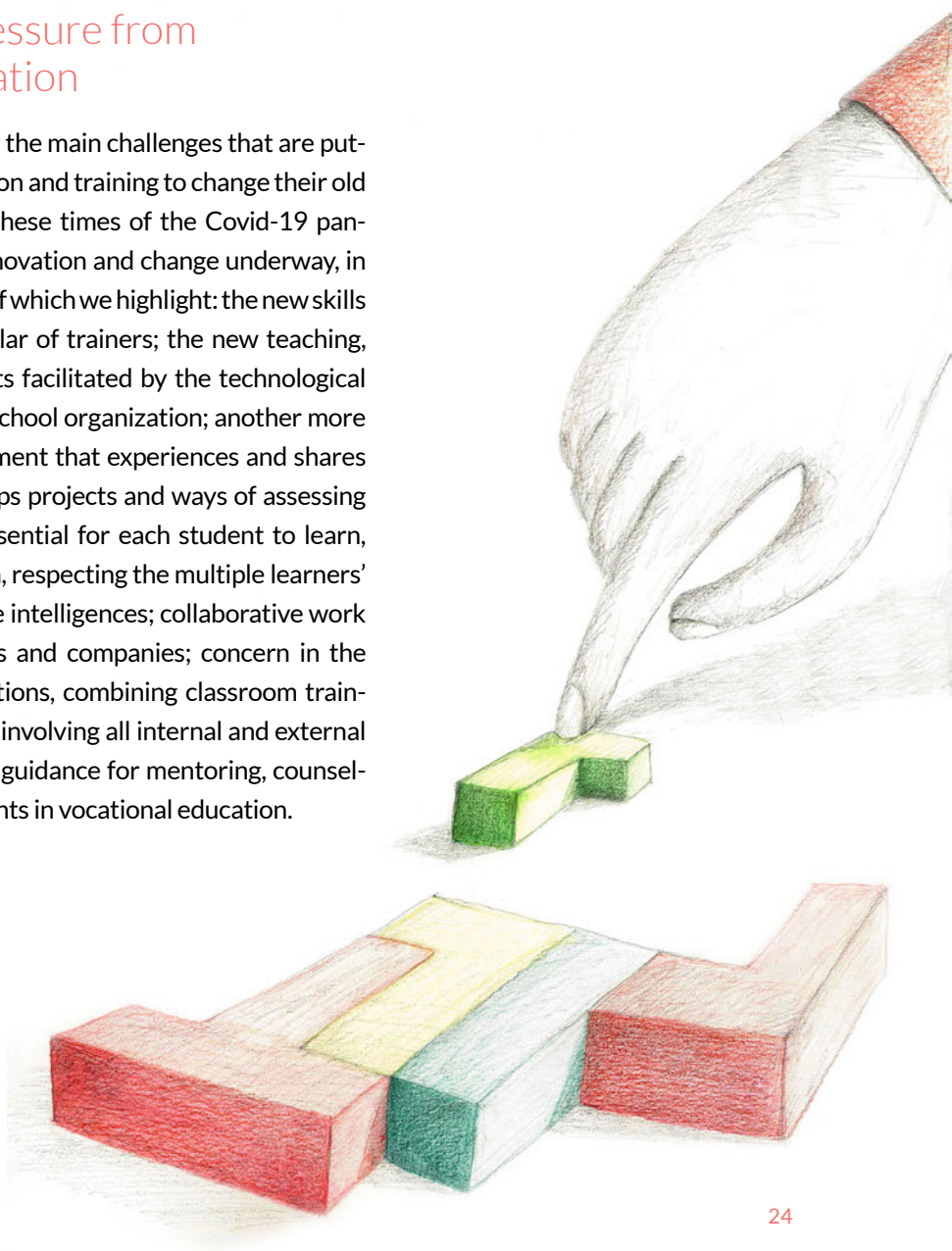
Automation and artificial intelligence will be the emerging digital technologies that are already, and will increasingly be the basis of all production and as such no citizen should no longer have skills in digital skills. The ability of each professional to express their activity in a structured way. Creating a more resilient society implies stimulating new digital skills, which are continually changing and evolving and must be built around 5 axes: i) Inclusion, ii) Education, iii) Qualification, iv) Specialization and v) Research.

3rd Pillar
The social and collaborative component of digitization

The ability of different people from different socio-cultural contexts,social strata and professional profiles to work together.

3. The school under pressure from innovation and digitalization

In this chapter, an approach is made to the main challenges that are putting a lot of pressure on school education and training to change their old educational paradigms, especially in these times of the Covid-19 pandemic. There is a new roadmap for innovation and change underway, in emerging trends to global challenges, of which we highlight: the new skills required of all citizens, and in particular of trainers; the new teaching, learning and assessment environments facilitated by the technological revolution and the digitization of the school organization; another more open and flexible curriculum management that experiences and shares new spaces, times, equipment, develops projects and ways of assessing learning, more focused on what is essential for each student to learn, than on what the teacher should teach, respecting the multiple learners' learning profiles, rhythms and multiple intelligences; collaborative work in a network of schools, communities and companies; concern in the production of higher quality qualifications, combining classroom training with training in the workplace and involving all internal and external stakeholders; school and professional guidance for mentoring, counseling, recruiting of candidates and students in vocational education.



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3.1 The school as a key unit for change and professional learning community

Sustainability of change and new skills for teachers, students and trainers.
New skills that should be at the center of school educational work

The world is changing very rapidly in very extensive ways. It is becoming commonplace for leaders to talk about an Education 4.0, appropriate to the context of Industrial Revolution 4.0 (Hussin, 2018).

The current reality won't be the same as the one our students will encounter when contact with labour markets has been made. The world has become a "Liquid Modernity", using an expression from Zygmunt Bauman (2015), and the educational institution must be rethought, from families, to students and teachers, to local, national and international directing parties.

The learning establishment cannot "act as a statue" and remain motionless in regards to what is happening around it. This is inthinkable, no matter how rigid the current school system is, and how long ago it was implemented.

Children and young people that take part in school today, are, in general, hyper-stimulated by the use of technology, they have acess to a lot of information, with limited power of judgement, given its variety and speed aquisition. And with a lack of analysing criteria, they tend to focus their attention on devices, apps, games, videos and programs that intice enormous attractiveness. However, they are minimalisticaly encouraged to stop and contemplate, to concentrate around some type of literature, dilemma, problem, presentation, debate or work of art.

Today's educative work presented by schools is developed in a very challanging context. The school cannot put its head down, focusing on the "manufacture" of disciplined, submissive and orderly citizens, "hamsters in a cage", taking refuge in the prescribed programs and in fragmented, decontextualized and dispersed disciplinary knowledge.

We just need to be aware of the signs that children and young people transmit, specially teenagers and young adults who are forced to stay in school for a longer period: (i) the growing lack of interest and (ii) the increase in their detachment from the type of schooling that is offered to them, (iii) the lack of motivation and displeasure shared with many colleges, that are only attending school because it is compulsary, (iv) the "hidden withdrawl" present in students who remain at school unmotivated and disconnected.

The school institution may become progressively irrelevant, as it witnesses widespread, immediate and pertinent access to information and knowledge by new generations, which in most cases is deeply riddled social inequality. This tends to lead to an increased lack of discipline in the school environment, manifesting that something is wrong, without knowing exacly what.

However, this is not a desirable future. As the OECD research, regarding forecasting education and skills for 2030 points out, we must learn to nagivate in a complex and uncertain world. Several institutions and forums have invested in reflecting uppon the "new competencies" that should be central to the school educational labor. The existance of multiple references, responsible for rethinking the educational model highlights two very important points: (i) that there is a societal effort to study and systemize what the training of newer generations should be, taking into consideration the evolution of society, the guarantee of equity along with quality, technological and labor market demands; (ii) that this effort of reflection and anticipation deserves to be heard, pondered and considered by those whose mission is to educate these new generations.

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There are competencies that, in terms of training, can be triggered by disciplinary and multidisciplinary approaches, and there are others that are promoted without direct connection to knowledge (curricularly prescribed content and learning goals), such as curiosity, initiative, persistence, resistance to frustration, leadership, solidarity, service to others, and promotion of the common good.

Dias de Figueiredo, Emeritus professor from the University of Coimbra (Portugal), has been working on this theme, and understands that there is a set of "new generation skills" that bring together the following characteristics: (1) transversatility, capable of covering more than one domain; (2) multidimensional, incorporating knowledge, skills, actions and values; and (3) inducing higher order behaviour, when applied to problem solving in complexo r highly uncertain situations.

The same investigator identifies five "competences for the new generations": (i) the "foundational skills", referent to the environment, health, culture, financial economics, digital world, science and technology, mathematics and general analysis, communication; (ii) the "skills to learn and innovate", stimulating curiosity, critical thinking and problem solving, creativity, logical thinking and systemic thinking, while enticing innovation; (iii) "emancipatory competencies", resulting from pedagogies that stimulate autonomy and empowerment, initiative and entrepreneurship, persistence and resilience, adaptability, leadership and tolerance to uncertainty; (iv) the "humanistic and artistic competencies", which comprise the higher cultural and transdisciplinary expertise, capable of giving human meaning to the results mechanically obtained by massive data analysis and algorithms, opening the horizons of a cultural, social, philosophical, ethical, historical, political, aesthetic, artistic formation necessary to humanize decision making; (v) "social and emotional competencies" such as self-awareness and self-regulation, interpersonal skills, empathy, tolerance and inclusiveness, sense of responsibility, and social awareness. These last competencies, which are closely intertwined with the others, are now recognized as strong predictors of success, and can determine in advance the success of those who possess them and the failure of those who do not develop and cultivate them (Figueiredo, 2017).

In 2007, the Finnish Ministry of Education had already supported a project study on "the futures of education". It identifies a set of competences that students should have in order to cope with change, such as survival skills, persistence and courage, emotional and social skills, being participatory and influential, ability to think, imagining and building, interaction and cooperational skills, creativity and self-knowledge (Halilen & Jarvinen, 2007). At the end of this assignment, seven dimensions are listed in which children and young people should grow into, through education: growing up as people who respect other people, with a sense of community; interculturality, since other cultures are a human asset; ability to use the media, know how to access information and know how to communicate; education for citizenship, democratic participation, entrepreneurship and innovation; responsibility for the environment, well-being and a sustainable future; security and peace; use and application of new technologies.

The Young Foundation (UK), on their study "A Framework of outcomes for young people" (2012) identified seven clusters of "skills" central to young people's early education and training in the social and emotional realm: communication, confidence and agency, planning and problem solving, interpersonal relationships and leadership, creativity resilience and determination, emotional control.

On the other hand, the World Economic Forum (WEF, 2016) has made predictions about key skills for the future. Comparing their estimates for 2015 and 2020 helps to understand the relevance of soft skills related to critical thinking, creativity and emotional intelligence. Table 1 shows the 10 key competencies for the future (in descending order of relevance), according to the World Economic Forum (WEF).

TABLE 1 10 key competencies for the future according to the WEF

Predictions for 2015	Predictions for 2020
1. Complex problem solving	1. Complex problem solving
2. Coordination with others	2. Critical thinking
3. People management	3. Creativity
4. Critical thinking	4. People management
5. Negotiation	5. Coordination with others
6. Quality control	6. Emotional intelligence
7. Service orientation	7. Discernment and Decision making
8. Discernment and Decision Making	8. Service orientation
9. Active listening	9. Negotiation
10. Creativity	10. Cognitive Flexibility

Source: World Economic Forum (2016)

In turn, the international organization Ashoka, which works around the world in the field of social entrepreneurship, fostering the empowerment of citizens as agents of change, points out and describes the same ten soft skills, in the 2020 scenario, and states: "anyone who wants to prepare for the future labor market will have to develop these skills, because it is not enough to put them on the resume – or say you have them – but also to prove them through your own behaviors."

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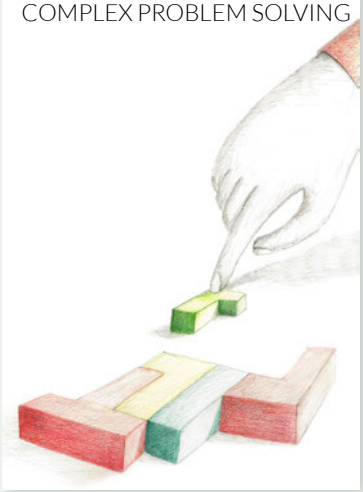
COMPLEX PROBLEM SOLVING



CRITICAL THINKING

CREATIVITY

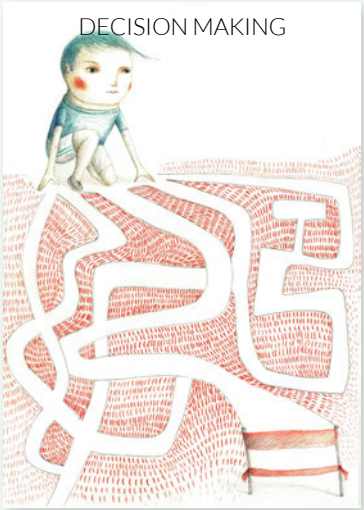
PEOPLE MANAGEMENT

COORDINATION WITH OTHERS

10 KEYS COMPETENCES FOR THE FUTURE

EMOTIONAL INTELLIGENCE

DECISION MAKING



SERVICE ORIENTATION

NEGOTIATION

COGNITIVE FLEXIBILITY

10 most valuable soft skills and described below, in order of importance

1. **Complex Problem Solving.**
2. **Critical Thinking**. Critical thinking is the ability to discern and question the outcome, evaluating what is before you, the actions, and the consequences of those actions.
3. **Creativity**. Creativity is important in many areas, not just in the field of work. A creative mind finds solutions to problems, but only a healthy mind can be creative and innovative.
4. **People Management**. Knowing how to manage people effectively is a skill that takes into account not only the results, but also the management of behaviors and expectations of all professionals that make up a team.
5. **Coordination with Others**. Effective and collaborative coordination is necessary for the sharing of responsibilities, organization, and compliance with deadlines and results, thus facilitating the development of cohesive teams with a high emotional balance.
6. **Emotional Intelligence**. Emotional intelligence is important for self-knowledge and cooperation. Who doesn't know himself, will hardly know his colleagues and clients. In any work environment it is necessary to deal with others, regarding their diversity of behavioral styles and cultures.
7. **Decision Making**. Knowing how to decide implies having the capacity for critical thinking, knowing how to choose and act, sometimes even in environments under pressure.
8. **Service Orientation**. To be at the service of others is a noble cause, to be solidary and committed to those who need it most. Knowing how to serve the customer - internal and external - is an asset to an organization, because organizations live off their customers.
9. **Negotiation**. Negotiating is part of the day-to-day professional life. Knowing how to negotiate with a colleague, with the boss, with the client or partner, will be a very important competitive advantage.
10. **Cognitive flexibility**. Cognitive flexibility consists of being open to adapting to different situations and not being delimited to one way of thinking or of knowledge acquired and interpreted by you.

Having described these new trends regarding the skills citizens should have when entering the labor markets, and as core skills for their lives, it is important to stress that the evolution of societies and economies brings with it much broader challenges, many of them impacting directly on organizations responsible for learning and teaching.

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Hussin (2018) reports nine trends related to Education 4.0 to respond to the "industrial revolution 4.0," which should be pondered by all schools in order to adapt to new contexts in diverse ways around the world:

1. Learning can happen anytime and anywhere, thanks to e-Learning tools, which offer great opportunities for distance, self-managed, single-person oriented learning, without a mandatory schedule (the "flipped classroom" can play a very relevant role).

2. Learning can be personalized for each individual, who can learn at their own pace, while teachers focus on supporting them for a more positive learning experience, promoting their confidence in their own academic abilities.

3. Students can decide how they want to learn, according to the learning tools or techniques they prefer.

4. Project-based learning will play a greater role, as students are required to apply their knowledge and skills in completing short-term projects, acquiring organizational, collaborative and time management skills that are very important for their careers.

5. Students will be exposed to more hands-on learning: internships, mentoring projects, and collaborative projects, that will guide student learning through hands-on assignments involving technology.

6. Students will be involved in data interpretation, where they are required to apply their theoretical knowledge and use their reasoning skills to make inferences based on logic and trends. They will prefer more hands-on work and being directly involved in the learning process.

7. Student evaluation will change. Students' factual knowledge can be assessed during the learning process, while the application of knowledge can be tested when they are working on their projects and in the field.

8. Students will contribute to the design and update of the curriculum.

9. Students will become more independent in their own learning, while teachers will act as facilitators guiding and supporting their students through their learning process.

Finally, the OECD has published its benchmark of competencies (understood as sets of knowledge, skills, attitudes and values) in the 2030 horizon (OECD, 2018). It notes that "rapid advances in science and technology may widen inequalities, exacerbate social fragmentation and accelerate resource depletion" (p.3) and the new environmental, economic and social framework that is formulating a new challenge to educational institutions and the entire community (set of stakeholders). This translates into the strengthening of "three other categories of skills, the 'transformative skills', which together address the growing need for young people to be innovative, responsible and aware: creating new values, reconciling tensions and dilemmas, and taking responsibility (p.3). Education plays "a vital role in developing the knowledge, skills, attitudes and values that enable people to contribute to and benefit from an inclusive and sustainable future" (p. 4).

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To ensure that this Education 2030 framework is achieved, the "stakeholders have worked together to translate the transformative competencies and other key concepts into a set of specific constructs (e.g. creativity, critical thinking, responsibility, resilience, collaboration) so that teachers and school leaders can better incorporate them into the curricula.

The OECD study also places particular emphasis on the concept of agency that should be central to the education and lives of the new generations. It explains: "agency implies a sense of responsibility to participate in the world and, in doing so, to influence people, events and circumstances for the better.

Agency requires the ability to frame a guiding purpose and identify actions to achieve a goal. To help enable agency, educators must not only recognise learners' individuality, but also acknowledge the wider set of relationships – with their teachers, peers, families and communities – that influence their learning" (p. 4).

But this reference framework for learning is only completed and achieved in a logic of "co-agency," that is, "the interactive, mutually supportive relationships that help learners progress toward their valued goals. In this context, everyone should be considered as learners, not only students but also teachers, school managers, parents, and communities.

In order to educate this capacity for agency, two factors are required: "the first is a personalised learning environment that supports and motivates each student to nurture his or her passions, make connections between different learning experiences and opportunities, and design their own learning projects and processes in collaboration with others. The second is building a solid foundation: literacy and numeracy remain crucial. In the era of digital transformation and with the advent of big data, digital literacy and data literacy are becoming increasingly essential, asare physical health and mental well-being." (p.5). This well-being constitutes the global benchmark in which the development of education is embedded, as UNESCO also points out.

In fact, the social changes are profound and the framework of inequalities remains persistent. But the opportunities that are opening up are also enormous and full of potential.

Learning knows no borders and, while this is a great opportunity, it also carries with it very demanding challenges in terms of equity and quality.

People can learn anywhere, anytime, and have unlimited access to new information. Students will want to pursue their learning paths more autonomously, and they will expect a new institutional attitude from schools. Changes will be imposed in the organization of teaching and learning spaces and times, in student groups and teacher teams, b-learning will be more widely applied as an added value arising from the complementarities between face-to-face and distance learning, assessment and feedback models may become much more personalized and enriched, and the socio-community involvement of schools may grow with the implementation of joint projects to address common challenges.

All these contributions, which already describe a time arc of about twenty years, converge in the need for schools, in cooperation with the social partners of education, to invest in a renewed education that is able to prepare children and young people for a world in deep transformation.

Access to relevant knowledge will have to take place in a new institutional context that is able to promote citizens with a human profile appropriate to this time, free, creative, responsible, and committed to the common good.

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New profiles of trainers and teachers

Teachers and trainers are professionals of their areas, their job is to make everyone learn, in a school where everyone can and has the right to learn, whose goal is educational and formative success, and the personal and social construction of the student-person, and not only their professional training.

Teachers and trainers are at the center of the volcano of change that is taking place in education. They are being asked to take a new view on education and of their own role as educators of new generations. All the challenges mentioned above will have impact on the classroom, on teachers and subsequently their leadership.

Therefore, the biggest risk we run into is to seek isolated and individual answers. In fact, the essential factor is played by the teaching teams in each institution, hardly anyone is a good teacher alone, no one in isolation causes significant learning and harmonious development in their students. We should focus on the responsibility of the pedagogical teams to renew, update and reconfigure, curricula and educational institutions (their methodologies, groups, facilities, equipment, etc.).

We are faced with the challenge of ending the "one teacher, one class group, one classroom" model. As Hattie says, the school is the "unit of agency" of educators and change, "collective efficacy" is not achieved by the action of each isolated educator, or by the action of a small group, or of a very innovative (willful, but isolated) direction.

This is a collective and cooperative task, and involves reflection, planning, time, and perseverance, which is why so many authors reinforce the view that it is especially important to empower professional learning communities.

With the recent spread of the COVID 19 pandemic we have entered a time of disequilibrium; disequilibrium is a central element of innovation in hyper-stable systems. This is a time when problems pile up and opportunities emerge.

It's important to be able to face the challenges of these hard times without letting emerging opportunities slip. They focus on: (i) times and places dedicated to learning, allowing the creation of new complementarities between face-to-face teaching and the use of distance learning platforms, (ii) new teaching and learning methodologies, that strengthen student autonomy, their problem-solving skills and their creativity; (iii) modalities of evaluation, enriching our tools and the type of feedback, which can become more formative and effective for the learning process; (iv) teamwork by the teachers of each class and each school

In conclusion: what is really at stake is the change of a dominant school culture. Joy and hope should be the main constants of every school's daily routine, for this is the purest and truest "air one breathes" in educational institutions.

The school is a social construct, that has strenghts and weaknesses which are inherent to it's nature, it can last for a great number of decades and centuries, and can fall from one second to the next. However, if we unite forces and find the will to change it can happen. Making this happen is our biggest difficulty.

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Pedagogical and transformational leaderships. A new type of high and medium level leadership

Better quality education and leadership that benefits all students and persists over time requires knowing, first whether change is desirable, second whether it is feasible, and third whether it can be made durable and sustainable.

Sustainable leadership

Educational leadership is sustainable when it preserves and develops deep learning for all (internal and external stakeholders), with benefits for all, now and in the future. This kind of leadership transforms schools into professional learning communities, gives sustainability to the new school paradigm, promotes the organizational and pedagogical functioning of the school, based on a differentiating philosophy of an inclusive and socially correct character, in which all students can and should learn. (Hargreaves, A. & Fink, D. 2007, cit. in Lopes, M. (2016, p. 152-153, Revista Iberoamericana de Educación, vol. 70 (2016), pp. 145-160 – OEI/CAEU).

The seven principles of sustainability in educational change and leadership are (Hargreaves & Fink, 2007, pp. 33-34):

1. **Depth** – meaningful learning to which everyone is entitled.
2. **Durability** – leadership that endures over time, preserving the mission, goals, and values of the school, leader after leader.
3. **Amplitude** – sustains distributed leadership, in the classroom, in the school, and in the educational system.
4. **Justice** – leadership that is socially fair and publicly accountable.
5. **Diversity** – leadership that promotes diversity in teaching and learning, as a cohesive element in the acquisition of knowledge and skills for all students.
6. **Resource availability** – a leadership that recognizes leaders for their talent, does not exhaust them with unrealistic changes, and knows how to wait for the results to materialize in the goals it has set.
7. **Conservation** – a leadership that respects the past, learns from the theories and practices of the past, focusing in building a better future.

Transformational democratic leadership

Bass and Avolio (1994) list five characteristics: i) intellectual stimulus; ii) individualized support; iii) motivation and inspiration; iv) influence on teaching work and v) ability to motivate.

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Leithwood, Jantzi and Steinbach (1999) point out nine dimensions for transformational democratic leadership:

1. Intellectual stimulus
2. Individual support
3. High expectations
4. Creation of organizational value models
5. Building a culture of collaboration
6. Strengthening a productive school culture
7. Developing a consensus view
8. Creating structures for participation in the decision-making process
9. Creating consensus on school goals (improvement plan)

António Nóvoa (1992, p. 22) argues that:

> the cohesion and quality of a school depend largely on the existence of an effective and recognized organizational leadership, which promotes cooperative strategies of action and stimulates individual and collective commitment in the execution of work projects.

Distributed leadership needs the contribution of all the stakeholders involved in education and training, and for this reason, the quality and cohesion of partnerships and the projects they implement are increasingly fundamental.

In conclusion, rethinking the teaching work so that change is sustainable, requires new skills for teachers, trainers, students, trainees and school leaders. A different school management and curriculum, where students are more active, participatory, and autonomous. Pedagogical leaderships need to develop a distributed and sustainable balance, democratic and transformational in nature, instead of a bureaucratic approach. Transformational democratic leadership is only effective and sustainable when it leads to a high level of continuous improvement in the quality of education (Hargreaves & Fink, 2002; Bass, 1985).

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3.2 New teaching, learning and assessment environments. A new pedagogical organization of the school

The multiple dimensions of intelligence

Another inclusive praxis – committed to an education aimed at human diversity, a multidimensional characteristic of contemporary society, respectful of different learning profiles, requires knowledge of pedagogical differentiation techniques and the construction of teaching materials adapted to the multiple intelligences of students.

The in-depth access to knowledge and the integral development of each child and youngster mobilize us every day. Each student is a unique person who deserves all our care and encouragement, with a focus on developing all the potential that lies within him or her and that may be undervalued, or even more or less evident.

Howard Gardner's theory of "multiple intelligences", developed at Harvard University with particular emphasis on his "Project Zero", that was followed by many scientists and educators since the 1980s, has provided a very useful tool at a time when every educator is faced with the imperative concrete need to promote the success of each and every student.

Every human being has multiple dimensions of intelligence that must and can be stimulated, or else each one will never reveal him/herself in all his/her plenitude and may be jeopardizing his/her personal fulfillment, either because he/she only takes care of the development of some dimensions of intelligence or because he/she hinders the development of others for which he/she may be particularly suited.

By calling these "intelligences" dimensions, talents or competencies Gardner wanted to emphasize their relevance and the need to attend to their global and individual promotion. It is obvious, as Thomas Armstrong states, that all dimensions interconnect and inter-impose, but their "division" allows educators not only to enhance them, but also to establish much clearer and more meaningful encouragement strategies.

We all know a student who is "good at physical education" or has a "brilliant English" or even "a math god", or perhaps another who is "very good at drawing". The detection of these talents is fundamental both to develop them (and not hinder them, as is often done at school and in the family environment), and to know what dimensions we need to stimulate more, so that their development is more harmonious and well-rounded. This is a huge challenge of school culture.

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The nine dimensions of intelligence are thus honored throughout our school space: linguistic, logical-mathematical, spatial, physical-kinesthetic, musical, interpersonal, intrapersonal, naturalistic, and existencial (spiritual)-Gardner, 1995,1999.

Stimulating all these dimensions, starting from pre-school education, will make the school environment much richer. This is a gamble that requires a lot of work, a lot of discipline in curricular management, as well as constant monitoring and evaluation. But we are certain about one thing: joy can strongly return to our schools.

In summary, knowing how to diagnose the multiple intelligences of each learner is fundamental for them to be developed, and for us to know which dimensions we need to stimulate more in each student, when planning strategic teaching actions.

New curricular management models. A new breed of curriculum management that is more open and flexible

In this context, new models of curriculum management are put into practice, with the aim of engaging, motivating and improving the learning of each and every student, making it deeper and more meaningful. These models of curriculum management may have some key features: (i) each school and each class should be able to enjoy a properly adequate curricular proposal, resultant of a professional, intelligent and local management that teachers make of the general and national curricular proposal; (ii) this curriculum proposal should always be guided by its enrichment and not by its impoverishment, that is, the path should not be to make the curriculum more fragile and disjointed, in an attempt to meet groups of students with more "learning difficulties", but to make it richer, more appropriate, more stimulating every day, and more able to generate significant learning, whatever they may be; (iii) the curriculum to be taught and learned should be well thought out in a shared manner, by the teachers of each class, and not fragmented between professionals, in a disintegrated manner (iv) the curriculum should be coherent and aligned, that is, it should propose the "essential learning" to be achieved (the knowledge, skills, attitudes and values to be developed), the "strategic actions" that will be developed in the class so that this can be achieved, as well as the most appropriate dynamics and assessment tools; (v) the "strategic actions" should include a multiplicity of learning methodologies and, whenever possible, learning should be contextualized to be coherently integrated in interdisciplinary terms; (vi) evaluation cannot be understood in isolation or as a sum of instruments or techniques, but as an integrated process in the search to improve student learning and teacher approach.

The integrated innovation model responsible of managing curriculum change in [public] schools with vocational courses in Portugal, proposed by Orvalho (2010, p.103), is based on four dimensions:(1) the modular curriculum development; (2) the professional development of vocational education teachers; (3) the organizational development of the [public] school with vocational courses; (4) the pedagogical development of the teaching and learning processes, which are related to each other for the improvement of modular structure, led by their course director, as represented in Figure 2.

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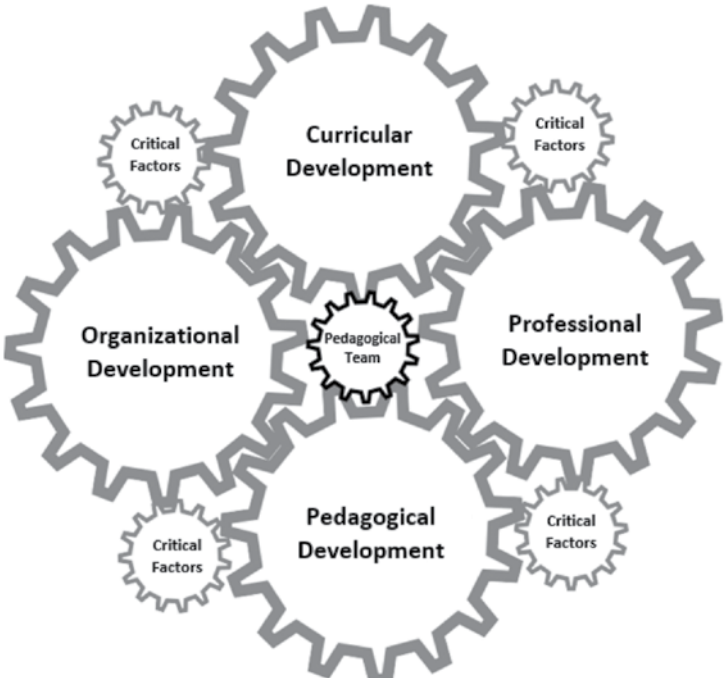
FIGURE 2 The integrated innovation model for managing curricular change in public schools with vocational courses



Fonte: (Orvalho, L., 2010, p. 103)

In short, more open and flexible curriculum management models that value key skills of each student and allow more autonomy for teachers to contextualize the national curriculum to the educational projects of each school.

The curriculum, be it related to math, history, music, or any other subject, is "understood as a road on which children travel, under the guidance of a mentor". In this way, "The educator becomes the most experienced companion (...) which travels, plans, organizes and evaluates each step, in order to reformulate for success" (Orvalho, 2020, p. 13).

Formative assessment and self-regulation of learning in context

Contributing to improve the processes of teaching, learning, and pedagogical assessment, develop the actions necessary for students to learn more and more effectively, with greater comprehension and depth. We must evaluate to improve learning. In vocational education, constant evaluation is essentially needed in that it aims at the perception of what students were able to learn (in class, at home, in Workplace Training, in field trips, project realization, etc.) However, it becomes of little use if, after the assessment moment, a new challenge follows, for those who failed to achieve the proposed objectives. What is the point in all this probing if there is no repeated learning and evaluation until the student achieves success? "So, it seems that these individuals are condemned to this cycle as they lack of opportunities" (student Maria Antónia Seara from AEJE, in Desafios 32. Cadernos de trans_formação, July 2020). Let's start by clarifying the concepts.

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Assessment is considered one of the most important goals in a student's learning journey. It provides both the teacher and the student with the opportunity to realise how well they have understood what they have learned. The Conversational Framework makes it clear that unless students have the opportunity to produce an output for the teacher to assess, whether or not it is graded, the teacher will not be in a position to know whether learning has taken place. For students, the prospect of grades and feedback can be a very motivating incentive for learning.

Feedback is the process by which the student receives detailed information about their submitted assessment. Assessment and Feedback processes have been widely explored over the last few years, including the ways technology can play an important role to support them – for example, by facilitating automated and peer assessment.

Summative assessment is the type of assessment most people are aware of: this refers to the assessment that happens usually at the end of a term of learning and carries with it a score or mark. Summative assessment is designed to evaluate student performance.

Formative assessment is used to monitor student learning, give feedback and also to provide information that might lead to adjustments in teaching. Feedback is usually qualitative rather than scores or mark.

In summary, it is necessary to create the right conditions for pedagogical evaluation to be integrated into the curriculum development processes and, in this way, to be articulated with teaching and learning.

Project and problem-based learning, cased based learning and integrative curriculum projects

Problem-based and project-based learning (PBL)

To make learning really meaningful and happen with each and every student, and to be contextualized and integrated in many countries and schools, projects and problem-based learning has gained a lot of relevance.

Project and problem-based learning calls for a pedagogy that: (i) provokes cognitive tensions and challenges students to research and discover new knowledge; (ii) promotes "multichannel learning" by combining multiple dimensions of intelligence and diverse learning modes and procedures; (iii) combines and articulates knowledge from various disciplines around new "units of direction" that can be worked around and acquired; (iv) contextualizes learning around authentic problems and concrete projects and mobilizes students to solve them; (v) promotes cooperation and peer-to-peer learning; (vi) is based on active working methods that promote students' availability and emotional involvement, their autonomy and creativity, as well as their ability to research and learn in greater depth; (vii) teaching gives an important role to students who learn and does not focus exclusively on the content and the teachers who teach it, but rather stimulates students to self-regulate their learning and to be involved in evaluation moments; (viii) it promotes positive engagement of students and their holistic development (knowledge, skills, attitudes and values).

Problem based learning tells us that it is possible for everyone to learn more and do better, making teachers own better learning processes. It is an active working method where students constantly participate in the teaching-learning process, in the acquisition of knowledge and skills, which involves and engages students and stimulates their participation in the construction of knowledge.

To be effective, Problem Based Learning needs to meet some elementary conditions: (i) teachers need to decide to cooperate and work in interdisciplinary teams, allowing the necessary time for their regular and periodical meeting; (ii) a suitable educational environment needs to be generated for students to work collaboratively; (iii) students need to be trained in regards to collaboration and teamwork, with differentiated and rotating roles; (iv) the process requires time and increased effort in a more intelligent and collaborative curriculum administration, so it is necessary to ensure teachers' security, which has to be conquered step by step, with practical work and reflection on their processes and results.

Schools that invest in Problem Based Learning in a systematic, well-architected way with regular assessment, witness some pretty clear advantages in this way of managing the curriculum and stimulating meaningful student achievement by integrating interdisciplinary concepts. Some of the advantages: (i) students are more motivated to work and learn; (ii) teachers become intelligent managers of the curriculum (rather than mere implementers); (iii) knowledge from multiple subjects is integrated and the curriculum is managed in a much more consolidated manner (avoiding repetition of material); (iv) student learning is deeper and more meaningful and retention of information/knowledge becomes long-lasting; (v) critical thinking, autonomy, creativity, communication, cooperation and teamwork skills are developed and students learn to think in a more logical and systematic way and more connected to the surrounding reality; (vi) students develop more self-regulated learning and well-being skills; (vii) teachers end up feeling more motivated to cooperate and to teach each student.

Although it is still poorly disseminated and applied, Problem Based Learning, as a pedagogical project, should be understood in the framework of a school's curriculum administration, as a central "teaching activity" that has the particularity of starting by developing the curriculum in a cooperative and interdisciplinary way. It is, therefore, the main course, not dessert. That is, it is not about doing some extra-curricular activities and the discussion of some interesting topics. What poses the biggest difficulty is to get teachers to cooperate by interconnecting the knowledge and skills they want their students to develop, based on interdisciplinary dynamics.

These dynamics tend to configure new connections between fragmented disciplinary knowledge, and to contextualize and link the construction of knowledge and the development of competencies to real life and community problems.

Cased based learning and integrative curriculum projects

It is necessary to rethink the teaching work in a logic of project and collegiality.

Wurdinger (2016) argues that PBL experiences can change lives when they lead to problems in the future and inspire students to discover new knowledge and develop skills and attitudes. Working on projects allows students to collaborate with classmates, take responsibility, communicate with members of the community, solve problems and, finally, learn how to learn. In this approach, the use of technologies is a natural process, as it is equally important that rethink teaching work in a logic of project and collegiality tudents are digitally competent.

For the Buck Institute for Education (2020) an international reference on this methodology, there are seven essential phases of PBL, inserted in what they call Gold Standard PBLEssential project elements, and which are listed below:

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1. **Challenging Problem or Question** – The heart of a project – what it is "about," if one were to sum it up – is a problem to investigate and solve, or a question to explore and answer. It could be concrete (the school needs to do a better job of recycling waste) or abstract (deciding if and when war is justified). An engaging problem or question makes learning more meaningful for students.

2. **Sustained Inquiry** – To inquire is to seek information or to investigate – it's a more active, in-depth process than just "looking something up" in a book or online. The inquiry process takes time, which means a Gold Standard project lasts more than a few days. In PBL, inquiry is iterative; when confronted with a challenging problem or question, students ask questions, find resources to help answer them, then ask deeper questions – and the process repeats until a satisfactory solution or answer is developed.

3. **Authenticity** – In education, the concept has to do with how "real-world" the learning or the task is. Authenticity increases student motivation and learning. A project can be authentic in several ways, often in combination. It can have an authentic context, such as when students solve problems like those faced by people in the world outside of school.

4. **Student Voice & Choice** – Students can have input and (some) control over many aspects of a project, from the questions they generate, to the resources they will use to find answers to their questions, to the tasks and roles they will take on a team member, to the products they will create. Student "voice" is somewhat different from "choice" – it means giving students the opportunity to speak in their own way, to express their own opinions, rather than speak in ways they think the teacher wants.

5. **Reflection** – Throughout a project, students – and the teacher – should reflect on what they're learning, how they're learning, and why they're learning. Reflection can occur informally, as part of classroom culture and dialogue, but should also be an explicit part of project journals, scheduled formative assessment, discussions at project checkpoints, and public presentations of student work.

6. **Critique & Revision** – Students should be taught how to give and receive constructive peer feedback that will improve project processes and products, guided by rubrics, models, and formal feedback/critique protocols. In addition to peers and teachers, outside adults and experts can also contribute to the critique process, bringing an authentic, real-world point of view. This common-sense acknowledgement of the importance of making student work and student products better is supported by research on the importance of "formative evaluation", which not only means teachers giving feedback to students, but students evaluating the results of their learning.

7. **Public Product** – There are three major reasons for creating a public product and note that a "product": First motivation. Second, create a "learning community, where students and teachers discuss what is being learned, how it is learned, what are acceptable standards of performance, and how student performance can be made better. Third, "open school" When the public sees what high-quality products students can create, they're often surprised – and eager to see more.

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The development of skills with regard to reasoning and problem solving; interpersonal relationship; information and communication; critical and creative thinking; personal development and autonomy; awareness and mastery of the body, scientific and technological knowledge, team work so fundamental for the job market. Competences that do not develop through the traditional teaching process, with exposure of concepts and application of written tests. "It needs to equip students with the skills they need to become active, responsible and engaged citizens" (OECD, 2018, p. 4).Trello is an example of tool for project planning: https://trello.com/

3.3 Learning dynamics and more inclusive educational practices

How to develop inclusive cultures for VET? How to change from the "one school for all" paradigm to the "one school for each" paradigm?

Rethinking the school as a public space implies critically questioning the current state of vocational education and training, and understanding the reasons that have prevented, and are still preventing, the school from fulfilling many of its historical promises. It is from this position that we can imagine proposals that reconcile the school with the current society and invite society to a greater presence in the school.

"Today, we know that this school model – closed physical spaces, rigid curricular structures, archaic forms of work organization – is fatally doomed. The school will have to define itself as a public, democratic and participatory space, within the framework of communication and culture, art and science networks." (Nóvoa, A., 2001, pp. 16-17)[1]

Student-Centred Teaching "vs" Lecture – Centred Teaching

A student-centred approach focuses primarily on what the student needs to do in order to learn, rather than on the course content or the transmission of information by the teacher.

The course outline will set out the desired learning outcomes of the course, which in turn will be aligned with the exit proflie. The answer depends on the students themselves, the nature of the content, the learning activities planned to enable them to construct their own learning and the assessment and evaluation strategies.

New environments and startegies of assessment, envolves helping students to better regulate their learning through the use of effective learning techniques. Cognitive and educational psychologists have been developing and evaluating easy-to-use learning techniques that could help students achieve their learning goals.

[1] O ESPAÇO PÚBLICO DA EDUCAÇÃO: IMAGENS, NARRATIVAS E DILEMAS
NÓVOA, António... [et. al] – Espaços de Educação, tempos de formação. Lisboa: Fundação Calouste Gulbenkian, 2002. ISBN 972-31-0956-5. URI: http://hdl.handle.net/10451/4797

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Improving Students' Learning with Effective Learning Techniques

Improving educational outcomes will require efforts on many fronts. One part of a solution envolves helping students to better regulate their learning through the use of effective learning techniques. Table 2 summarizes ten learning techniques that could help students achieve their learning goals, according to the authores Dunlosky, J., Rawson, K.A., Marsh, E.J., Nathan, M.J. e Willingham, D.T. (2013).

TABLE 2 Learning Techniques

Technique	Description
1. Elaborative interrogation	Generating an explanation for why an explicitly stated fact or concept is true
2. Self-explanation	Explaining how new information is related to known information, or explaining steps taken
3. Summarization	Writing summaries (of various lengths) of to-be-learned texts
4. Highlighting/underlining	Marking potentially important portions of to-be-learned materials while reading
5. Keyword mnemonic	Using keywords and mental imagery to associate verbal materials
6. Imagery for texto	Attempting to form mental images of text materials while reading or listening
7. Rereading	Restudying text material again after an initial reading
8. Practice testing	Self-testing or taking practice tests over to-be-learned material
9. Distributed practice	Implementing a schedule of practice that spreads out study activities over time
10. Interleaved practice	Implementing a schedule of practice that mixes different kinds of problems, or a schedule of study that mixes different kinds of material, within a single study session

Digitization education must be a priority for the next decade

The European Commission works on several political initiatives with the aim of modernizing education and training, through the use of digital technologies in learning.

How to choose the tools to engage online the lernears?

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When choosing tools, two approaches can be used:

a) examples of learning outcomes, the kinds of learning activities that could achieve those outcomes, and how those activities could be supported by various learning technologies;

b) examples of the tools you may be interested in using and the types of activities and learning outcomes that are likely to be relevant.

To learn how to select technologies, in both situations, examples of learning outcomes, the kinds of learning activities that promote those outcomes, and how the activities could be supported by learning technologies, or examples of the tools you may be interested in using and looks at the types of activities and learning outcomes that are likely to be relevant, see the website: https://teaching.unsw.edu.au/selecting-technologies

The framework described by Bates e Poole (2003) within the framework of cognitive psychology consisting of eight factors helps educators assess their selected technology before implementing it into their course design, to engage the learners:

S - students: Is the technology appropriate for the particular group or range of students? Will students be able to easily access the technology with their current computer devices (including mobile devices)? Will students continue to have access to their work on the online technology after the course has been completed (if this is important to you)?

E - ease of use: Will students need to take a lot of time to learn how to use the technology? Will I need to take a lot of time to learn how to use the technology? Am I comfortable enough with the technology to guide students if they have questions? If you answered 'no' to the last two questions, you may need to go to a training workshop (if available) or ask your colleagues for support. Or, if you don't currently have time to learn the technology, you may wish to select one that has a shorter learning curve or you are already familiar with.

C - costs: Will I or my students need to pay to access the technology? If so, you may wish to select a similar technology that is freely available either on the web or hosted by your organization. Are there licensing costs for archiving any of the course material after the life of the course (if it's required for you to maintain an archive of students' work)?

T - teaching and learning: Does the technology support the learning outcomes of my course? Does the technology engage students in their learning? Does the technology make my teaching more efficient (i.e. reduce marking time)?

I - interactivity: Does the technology support student-student, student-instructor, or student--content interaction?

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O - organizational issues: Are there support structures to update and maintain the technology? Is there help or support available to me or the students if needed? Is there a way for me or my students to retrieve their material if the technology fails or is replaced? Will I need to manage students' accounts or login information or can they register and login to the technology themselves?

N - novelty: Will this technology provide a new learning experience for students? Will this technology help me advance my teaching approach? Have others used this technology for educational purposes? If so, can I learn from their challenges and success? If it's a relatively new technology, am I prepared if there are technical difficulties?

S - speed: Can I update content on the technology whenever I want to? Can I and my students quickly get setup to use the technology?

How fostering interaction and student assessment? "How do I grade it?"

Integrate digital devices into your assessment plan only if adding them improves the quality of the student learning experience. Improving assessment management should be only a secondary consideration.

Learning and evaluating are indivisible facets of the same teaching-learning process. Assessing to improve learning, or assessing for learning or as learning is quite different from assessing learning. The use of digital tools in continuous assessment, such as e-portfolios, are examples of how it is possible to assess whether the learning objectives have been achieved by students, to know the process and the products, without using only face-to-face tests, the same for all.

Selecting Assessment Technologies "How do I grade it?"

Planning and managing assessment using technology should ensure that it enhances learning.

You can use it for **diagnostic assessment**, presenting low-stakes tasks that show students and teachers what students are ready for in terms of learning activities.

Formative assessment activities (ungraded assessments that help students manage their learning) can also be presented online.

Graded, **summative assessments** (contributing to the final course grade) lend themselves to online presentation. Some tests can be partly or completely computer-marked; others allow students to review each other's work.

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Table 3 Summarizes some of the CoConqr web tools that can be used to teach and learn.

TABLE 3 Teach and learn with web tools CoConqr

Lesson Plan	https://www.goconqr.com/mindmap/3914538/plano-de-aula-em-5-minutos
Educational resources for creating learning contents	ttps://www.goconqr.com/es/fichas/
	https://www.goconqr.com/slide/3355914/ensinando-com-as-ferramentas-goconqr?referred_by=library
	https://www.goconqr.com/pt-PT/library?subject_id=1549
	https://www.goconqr.com/slide/3403867/5-ferramentas-de-estudo-para-melhorar-sua-aprendizagem?referred_by=tags.study_aid

Table 4 Summarizes a list of technology-enhanced that can be used in assessment strategies, but can be used also for learning.

TABLE 4 Web-based assessment technologies

Assessment strategies	https://teaching.unsw.edu.au/assessment-technologies
Resources for engaging students with learning	https://www.instagram.com/p/B-wf22Ggi8W/?hl=pt [11]
Quizzes	https://quizizz.com
Blogs	https://teaching.unsw.edu.au/assessing-blogs https://wordpress.org/ https://firebase.google.com/products/hosting/
e-portfolios	https://pt.wix.com/
Discussion Boards	https://teaching.unsw.edu.au/assessing-discussion-board
Wikis	https://teaching.unsw.edu.au/assessing-wikis
Group Tasks	https://teaching.unsw.edu.au/assessing-group-work
Peer assessment of students	https://help.twitter.com/en/using-twitter/twitter-polls
Google Forms	https://support.google.com/docs/answer/7032287?hl=pt-BR&ref_topic=9055304

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Pratical Assessment and evaluation: Web tools for assessment scenarios

Student feedback is vital in shaping and enhancing our teaching. Some web tools for assessment:

1. Edmodo (Assess student progress and performance with a follow-up bulletin)
    a) Tellegami (discussion /collaboration, peer review)
    b) Kahoot (diagnostic and formative assessment)
    c) Piccolage (brainstorming /discussion with poster)
    d) Quizzes (formative and summative assessment)
    e) Google Forms (diagnostic, formative and summative assessment)

Weblogs e E-portfolios - The e-portfolio is based on a constructive view of learning and formative assessment, which is more authentic "because it demonstrates a direct link between teaching and the evidence presented in the portfolio" (Barton & Collins, 1993; Tillema, 1998) participatory, since the evaluation is done jointly between the student / students / and the teacher, it continues and contextualized because it occurs as the students carry out the proposed work, and reflective because the students reflect, criticize and modify their work by collecting new ones knowledge.

Rubrics to Measure Student Learning

A rubric is typically an evaluation tool or set of guidelines used to promote the consistent application of learning expectations, learning objectives, or learning standards in the classroom, or to measure their attainment against a consistent set of criteria (UCN, 2017).

By developing a pre-defined scheme for the evaluation process, the subjectivity involved in evaluating an essay becomes more objective. Scoring rubrics have become a common method for evaluating student work. There are different types of scoring rubrics, they are useful and provide a process for developing scoring rubrics. Scoring rubrics are descriptive scoring schemes that are developed by teachers or other evaluators to guide the analysis of the products or processes of students' efforts (Brookhart, 2005).

An evaluation rubric is mainly intended to support the assessment of student performance, for example, in the manipulation of a laboratory tool or equipment, which can be assessed by observing, or in a written essay based on a set of texts, which can be assessed by reading it.

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A rubric consists of 4 elements:

a) the general description of the task being evaluated;

b) the criteria;

c) the levels of performance description for each criterion;

d) the definition of a scale that gives a specific mention to each level of performance.

Some examples of how to build rubrics can be consulted in the rubric bank of the Maia Portuguese Project[2]: https://sites.google.com/site/bancoderubricasdeavaliacaocfac/home

Factors that can influence student involvement levels in evaluation at the classroom and school

Student engagement is a factor in students' school enjoyment and success. When it is used appropriately, assessment can improve learning (Wiliam, 2011), however, some evaluation practices can act to reduce student engagement. Newmann (1992) identified a number of factors at the school and classroom levels, that may influence engagement: clear school goals, basic fairness of practices; individual support; a caring environment; a sense of ownership on the part of stakeholders; clear connection to real world, and "fun". At the classroom level, that engagement would be enhanced by tasks that are authentic, that permit a sense of ownership, that permit collaboration, that contain a possibility of using various talents, and again can be seen as enjoyable. At the student level, Dweck (2006) suggests that motivational mindsets, like engagement, play a role in a student's challenge seeking (the growth mindset) versusfailure avoidance (the fixed mindset).

10 learning techniques in detail and their recommendations

1. **Elaborative interrogation** – Generating an explanation for why an explicitly stated fact or concept is true.

2. **Self-explanation** – Explaining how new information is related to known information, or explaining steps taken during problem solving.

3. **Practice testing** -Self-testing or taking practice tests over to-be-learned material.

4. **Distributed practice** – Implementing a schedule of practice that spreads out study activities over time.

5. **Interleaved practice** – Implementing a schedule of practice that mixes different kinds of problems, or a schedule of study that mixes different kinds of material, within a single study session.

[2] Projeto MAIA - https://sites.google.com/view/maiacfms

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6. **Summarization** – Writing summaries (of various lengths) of to-be-learned texts .
7. **Highlighting/underlining** – Marking potentially important portions of to-be-learned materials while reading.
8. **Keyword mnemonic** – Using keywords and mental imagery to associate verbal materials.
9. **Imagery for text** – Attempting to form mental images of text materials while reading or listening.
10. **Rereading** – Restudying text material again after an initial Reading.

(Dunlosky, J., Rawson, K.A., Marsh, E.J., Nathan, M.J., and Willingham, D.T. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. Psychological Science in the Public Interest 4(1) 4–58. Dennis Parker dp1018@pacbell.net)

Social networks that can instigate changes, too, in the way of teaching and learning.

The use of Twitter, due to its specificities, should prioritize synchronous activities that allow interaction and organization of productions. The **ten best ways to use this tool** are (EDUCAREDE, 2009):

1. **Notice board**: communicate to student's changes in course content, times, places or other important information.
2. **Summary:** ask students to read a text and summarize the results main points, with a limit of 140 characters.
3. **Share sites**: periodically, each student is committed to share an interesting new site you've met on the web.
4. **Twitter on the prowl**: follow a famous person and document your trajectory.
5. **Twit * in other times**: elect an important character in the history of civilization or his country and create a Twitter account for him. In a given time, write on Twitter like this character, with style and vocabulary of the time, wondering what he would say.
6. **Micro meetings**: to hold conversations in which all students who participate subscribe to Twitter.
7. **Microtexts**: progressive and collaborative writing to create micro-stories.
8. **Language of Twitter**: **send twits** * in foreign languages and ask students respond in the same language or translate twit * into their native language.
9. **Text stream**: start a meme * so that all content created can be automatically captured by an aggregator *.
10. **Cultural exchange**: encouraging students to find a tweeter * of another city, state or country and regularly talk with him for a period time to get to know your culture, your interests, friends, family. Ideal for learn about other cultures.

The multiplicity of references for rethinking the educational model and the collaborative modalities of online learning

Many "disruptive" technologies have been introduced into society in the last two decades, while teaching has remained static, but after the announcement of the decision by the Portuguese Ministry of Education to cease all face-to-face teaching in response to COVID-19 on March 16, homologated by Decree-Law 14-G / 2020 of April 2 (in a general way it happened in other countries), all schools developed and launched an E@D "Distance Learning" regulation, and teachers were forced to apply it on the spot.

Planning for distance learning (synchronous or asynchronous) is challenging because it requires teachers and trainers to rethink many of the face-to-face teaching-learning and assessment processes that work effectively in a face-to-face classroom environment. From lecture and project redesign to collaboration, feedback, and assessment, teaching and learning are very different in a face-to-face or remote environment. From that moment on, encouraging teachers to formulate a new vision of online pedagogy became the priority.

Although there are many ways to move the face-to-face classroom to an online form, we list below learning models based on the so-called learning communities and on constructivist and socio-constructivist theories of teaching-learning, technologically mediated by collaborative web tools, which allow for widening the space and time for interaction and acquisition of new roles for both students and teachers.

By evaluating literature related to the new 21st century distance learning environments we can underline several theorical references, such as:

i) the conversational model of Laurillard (2000);

ii) the communities of inquiry model (Garrison et al., 2000);

iii) the e-moderating model (Salmon, 2000);

iv) the model of collaboration in asynchronous communication (Murphy, 2004);

v) the model of collaboration in virtual environments (Henri & Basque, 2003);

vi) and the model of interaction in virtual environments (Faerber, 2002).

In this Intellectual output we will only refer in more detail to Laurillard's conversational model, Garrison's and Salmon's model, as they provide a practical guide on how to use web tools and services to reinforce the online social component in learning processes.

According to Cabero (2005), virtual communities are directly related to the aspects of sociability and social interaction among their members, which requires a collaborative involvement rather than isolation. Participation in a community is necessarily for learning, since the need to know and to share is one of the main motivations for being part of a society. (Dillenbourg et al., 2003, cit. in Meirinhos & Osório, 2004). Figure 3 represents the six types of learning and educational techniques that can occur in online teaching and learning process (Laurillard).

FIGURE 3 Six types of learning and web tools

Fonte: Laurillard´s Conversational Framework
https://eileenkennedylearningtech.wordpress.com/learning-types-and-learning-techs/

The digital tools responsible of supporting these six types of learning, are, according to Laurillard: Answergarden (discussion), Tricider (discussion), Scoop.It (research), Pearltrees (research), Pinterest (research), Mendeley (research), RefMe (research), Padlet (collaboration).

The three examples of models that contribute to the establishment of a new pedagogical and didactic relationship in distance education, called learning communities, within the emerging virtual collaborative paradigm, are schematically represented in Figures 4, 5 and 6.

Understanding these theoretical frameworks can help teachers enhance social interaction, collaboration, and monitoring of their students' learning process, even at a distance.

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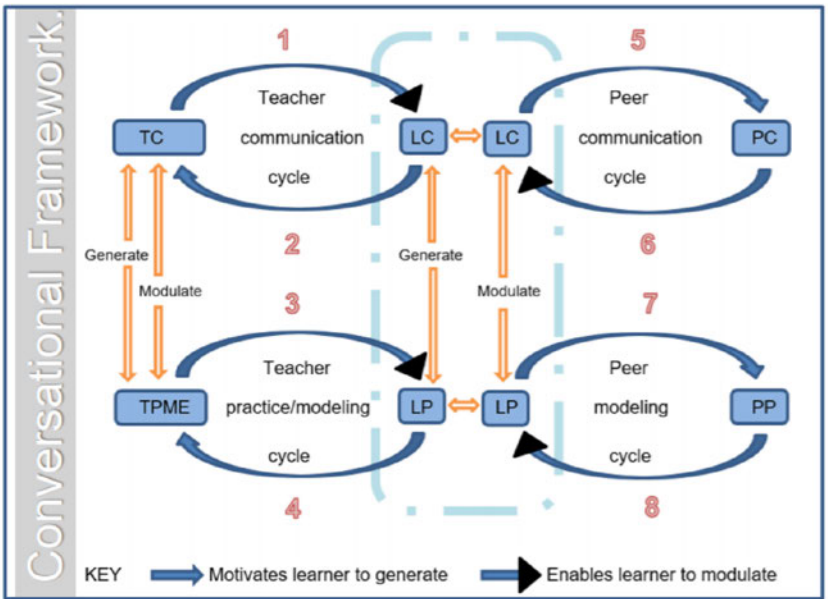
FIGURE 4 Laurillard´s Conversational Framework



Fonte: Maaike Wessels-Compagnie, The University of Manchester, 6 de janeiro, 2019
https://www.researchgate.net/post/What_is_conversational_framework_by_Laurillard

Laurillard's conversational framework shows the different ways in which a teacher and students motivate interactions in the internal learning cycle.

In each internal learning circuit, we can distinguish four cycles:

The teacher's communication cycle (TCC): (1) allows each student to modulate their concept by giving them access to the teacher's concept, (2,1) motivates each student to generate questions or articulations of their concept and practice because the teacher is giving extrinsic feedback.

The teacher's practice cycle (TPC): (4,1) motivates each student to modulate their practices by generating actions that provoke extrinsic feedback from the teacher.

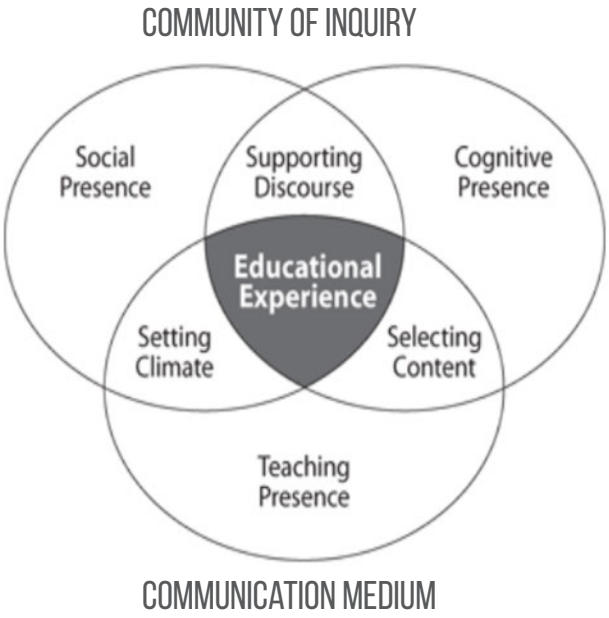
The teacher modeling cycle (TMC): (4.3) motivates each student to modulate their practice by generating actions that elicit intrinsic feedback from the modeling environment.

Peer communication (PCC): (6) allows each student to modulate their concept by providing peers access to their concepts, (5,6) motivates each student to generate deduction because they are receiving extrinsic feedback from their peers.

The peer modeling (PMC): (4,7) motivates each student to generate actions in a practical environment because they are sharing the result of their practice, (8) allows each student to module their practice using

The Community of Inquiry (CoI) theoretical framework by Garrison et al. (2000), Garrison and Anderson (2005), represents a process of creating a deep and meaningful (collaborative-constructivist) learning experience through the development of three interdependent elements – social, cognitive, and teaching presence, as shown in Figure 5.

FIGURE 5 Modelo de Community of Inquiry de Garrison



The practice of investigative community as a pedagogical possibility, uses dialogue, critical and reflective discourse as a strategy for mutual development and learning.

Social presence is "the ability of participants to identify themselves with the community, communicate purposefully in a trusted environment, and develop interpersonal relationships by projecting their individual personalities" (Garrison, 2009).

Teaching presence is the design, facilitation, and direction of cognitive and social processes for the purpose of achieving, personally meaningful and educationally valuable learning outcomes (Anderson, Rourke, Garrison, & Archer, 2001).

Cognitive presence is the extent to which students are able to construct and confirm meaning through sustained reflection and discourse (Garrison, Anderson, & Archer, 2001).

Salmom's model, Figure 6, is based on 5 stages and is especially recommended for asynchronous classes using electronic forums, as a means of asynchronous communication, with the teacher's role being to e-moderate the work among the group members.

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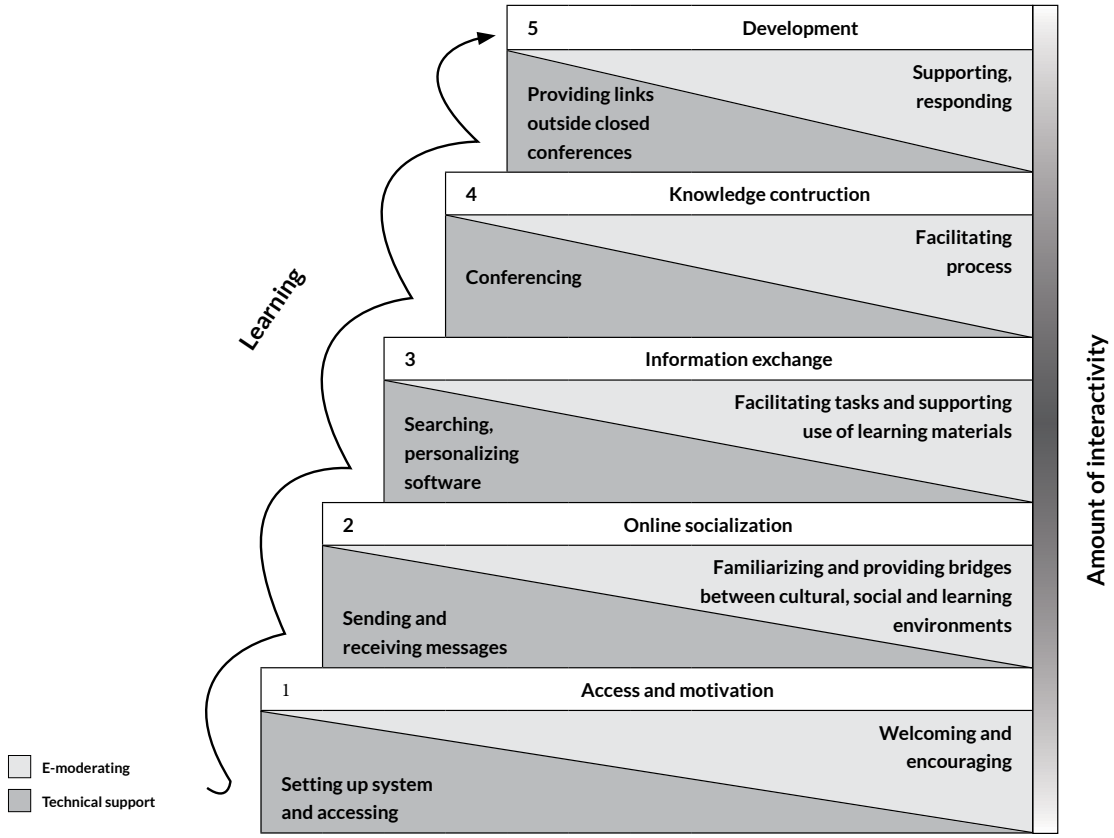
FIGURE 6 Salmon's learning model (2000)



***Stage 1* – Access and motivation –** critical for students to master technology, and access the online communication system easily with drive. It begins with a welcoming encouragement session for the students.

***Stage 2* – Online socialization** – creating communities of practical dynamics that engage participants in sharing their repertoire and reflecting on action.

***Stage 3* – Exchange of Information** – to facilitate cooperative tasks between group members and the e-moderator who makes diversified learning resources and materials available, as needed.

Stage 4 – **Knowledge construction by the participants**. The e-activities focus fundamentally on debate and critical reflection, via videoconference, about the collaboratively constructed knowledge.

Stage 5 – **Development**. Participants are expected to become autonomous, creative, responsible for their learning, and developing metacognition and self-evaluation. What have I learned and what do I still need to learn?

In summary, these are some of the recommendations and strategies for delineating distance learning with a greater social presence.

3.4 Vocational guidance, mentoring, coaching and counseling: some similarities and particularities in practice

Nowadays, the terms career guidance, vocational guidance, educational guidance, occupational guidance and career counseling coexist with others that have become part of the day-to-day life of organizations such as: mentoring, coaching, counseling, tutoring. This chapter presents some of the singularities and similarities in these strategies, leaving for PART II, the "toolboxes" (Martins, H., 2009), instruments and strategies of guidance, that each Psychology professional can explore, through testimonies of good practice "Tutoring of students – Denmark", to enrich their repertoire of resources. Denmark is at the forefront of this subject, because since the early stages of primary education, around 7 years of age, it provides students with guidance regarding future professional options, taking into account the personal characteristics of each student, in relation to gender, social, ethnic and social background, religious background and abilities or difficulties experienced. This service, responsibility of municipalities, is monitored by the Ministries of Education and Labor, with the work being carried out by guidance counselors and mentors, who are part of the school teams.

Vocational guidance

The terminology adopted by the OECD (2005, p. 84) for the term of "orientation" contemplates:

> a set of activities which enable citizens of any age, at any point in their lives, to identify their skills, competences and interests, to make important decisions at school, in their training, and at a vocational level to manage their individual life projects in study, work and other settings in which these skills and competences are acquired or used. Guidance can be provided in a variety of contexts: education, training, employment, at both community and private levels (OECD, p. 84).

Regardless of whether or not each participating country interprets this term as a reference to its own services.

The International Association for School and Vocational Guidance (AIOEP/AIOSP/IAEVG2), made presence in September 2001, at the Paris conference, and expressed that school and vocational guidance aims to help individuals understand their talents and potentials and enable them to plan appropriate actions to develop competencies that add personal, economic, and social value to the individual, their family, community, and nation. Thus, career guidance can concern not only the individual, but also the collectivity. The person who performs this function is called a career counselor.

Vocational guidance in regards to school environment

Vocational orientation, has characteristics that are fundamental to the triggering of psychological and vocational development in the young student. "Vocational guidance, embedded in the school context, should allow reflection about the choices to be made, contributing not only to the development of the adolescent's life project, but also to clarify the meaning of school and the value of studies (Almeida. M. E., 2008, p. 39).

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In Portugal, the Decree-Law No. 190/91 of May 17, creates in public education and teaching establishments the Psychology and Guidance Services (SPO), under the Ministry of Education.

> In this context, educational guidance emerges as an important component of the whole educational process. Its role is to accompany the student throughout his school career, helping to identify his interests and aptitudes, intervening in areas of difficulty that may arise in the teaching-learning experience, facilitating the development of his personal identity and the construction of his own life goals.

In this domain, the attributions and competences of the Psychology and Guidance Services were defined as:

a) providing support of psychological and psycho-pedagogical nature to students, teachers, parents and guardians, in the scope of educational activities,

b) to support students in the learning process and the integral development of the school's relationship system;

c) to promote educational and professional guidance favoring the articulation between the school and the labor market;

d) develop psychosocial and vocational counselling actions for students, supporting the process of choice and career planning.

According to the " Guidelines for Educational Psychology development in schools"(DGE, Portugal, 2018), the concept of vocational guidance was assumed as the set of activities that enable individuals, of any age and at any stage of life to identify their abilities, skills and interests, to make decisions regarding education, training and employment, while managing their individual pathway in education, work and other situations where these abilities and skills can be acquired or used.

If the career guidance strategy is methodologically supported by a clinical approach, there will be significant similarities with counseling procedures. If the guidance methodology is based on non-therapeutic approaches, the guidance action will have significant similarities with mentoring and coaching procedures.

Mentoring

The Integrated Coaching Institute (ICI) (2009) defines coaching as a collaborative relationship that aims to develop skills to achieve the client's desired professional or personal goals.

The focus of mentoring is on preparing the younger professional for career advancement, that is, professional growth and development, although personal development also permeates the entire process. The person who performs the mentoring function is called the mentor, and can be understood as someone specialized in a certain area of expertise, who intends to share his knowledge and experience with a less experienced person.

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Mentoring in school environment

> In the North American and European educational setting, the mentor is often referred to as a tutor, a teacher who is in charge of instructing his or her students to "learn how to learn", especially seeking to facilitate problem-based learning. In this context, the term mentor tends to be used more to describe a teacher or field professional, always more experienced, who guides, mentors or advises a young person at the beginning of his or her career. In such cases, the goal of the mentor-mentee relationship usually goes beyond simple guidance in the study of course material to embrace both the pursuit of broader educational and personal goals. In some situations, a third denomination (personal tutor) may be used, in this case condensing the two functions described previously (Oliveira, 2010, p. 210).

Coaching

Coaching, as a personal development process that consists in the co-creation of new possibilities, makes each human being responsible for him/herself, capable of giving free expression to his/her dreams and objectives. The professional who practices coaching is the coach, and his function is to conduct, guide, and walk alongside, supporting the coachee (the one being guided) to achieve pre-established goals and objectives.

Coaching in a school setting: the key to success

Educational coaching is a modality of coaching aimed both at the development of teachers and other education professionals, and at the socioemotional improvement of school-age children and adolescents, which defines a new teaching methodology and a different way of understanding the concept of learning.

In the student realm, coaching provides self-knowledge that allows them to identify their points for improvement in relation to school subjects so that they can work on them more assertively, enhancing their knowledge and identifying their difficulties in order to overcome them.

At the teacher's level, peer coaching and peer interaction, for example, can be an alternative for the evaluation of teaching performance and pedagogical supervision, associated with training models and teachers' professional development with a view to improving teaching and student learning.

Teaching children and young people to reflect, to question themselves, to think, to perspectivize each moment, to leverage the construction of a healthy self-esteem and self-confidence, to deepen the art of possibility to reinterpret their school and life path, and is a way to motivate for success.

Counseling

According to the American Counseling Association (2010, Conference in Pittsburgh) **counseling** is defined as, "a professional relationship that empowers diverse individuals, families, and groups to accomplish mental health, wellness, education, and career goals."

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In **counseling,** the central objective is the search for the individual's well-being, and the process may contemplate any dimension of his or her life, including emotional aspects, with the client being the only one responsible for defining the objectives to be accomplished at work.

According to the criteria adopted by AIOEP/AIOSP/IAEVG, several authors consider that counseling is one of the several functions performed by educational and vocational guidance professionals. There are two types of counseling (Stéfano, 2005): career counseling, which focuses on planning the life project/career project, and emotional counseling, which should be conducted by a psychotherapist. Counseling processes can have similar characteristics to mentoring and coaching practices, as far as career-related aspects are concerned. In these cases, the context of professional action by the counselor/adviser usually takes place in private consultations, outside the organizational environment.

Ferreira (2008) points out that the main difference between coaching and counseling activities is the fact that the latter is essentially exercised by a psychologist qualified for therapeutic activities.

In summary, the difficulty in characterizing the boundaries between the processes of career guidance, coaching, mentoring and counseling is evident, however, the characteristics that differentiate them (singularities), or those that give them a common feature (similarities), all intend to contribute to the development of people; assess their career and life paths; guide them in their career choices; help them build a life and career project compatible with their values and interests and, consequently, enhance their effectiveness in the workplace and improve their interaction within society.

3.5 New quality assurance models for schools and VET

Quality System in line with the European Quality Assurance Reference Framework for Vocational Education and Training (EQAVET)

When aligned and articulated with the quality cycle of the European Quality Assurance Reference Framework for VET (EQAVET), inclusive VET models can contribute to the production of higher quality qualifications based on learning outcomes.

The EQAVET is defined as a common quality management toolkit and has been designed to improve VET in the European community by promoting mutual trust, mobility of workers and learners, lifelong learning and encouraging creativity and innovation, including entrepreneurship, at all levels of VET. EQAVET was adopted by the European Parliament and Council Recommendation, which took place 18th June 2009 and focuses on the improvement and evaluation of VET outcomes.

This tool allows, at an ideological level, to document, develop, monitor, evaluate and improve the efficiency of VET provision and the quality of pedagogical, curricular and evaluative management practices.

The EQAVET quality cycle to be implemented includes four interconnected phases:

Planning – defining appropriate and measurable goals and objectives

Implementing – determining procedures that ensure achievement of defined goals and objectives

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Evaluate and Assess – developing mechanisms for collecting and processing information/data to support an informed assessment of learning outcomes

Adjust – stablish new goals or determine procedures for achieving deviant results to ensure necessary improvements.

According to the process guidelines for the alignment with the **EQAVET** framework – Quality Assurance in Vocational Education and Training, (2020, p. 5):

> (…) it is intended that the implementation of quality assurance systems aligned with the EQAVET Framework, allow the consolidation of a culture based on continuous improvement, that is strategically important for the National Qualifications System and that is the driving force for the strengthening of confidence in the modalities of double certification of the System, contributing to:
>
> - the increased attractiveness of VET to young people and parents;
> - the credibility of the VET system;
> - the involvement of employers in quality assurance processes for VET provision;
> - raising the visibility of VET among the general population.

Evaluating results is not the same as recognizing the impacts that education and training produces on students at the end of a training cycle. For this to happen, it is necessary to create specific environments for the Person to develop in an integral way. The impacts can be of the operative type (doing things), epistemological (thinking things) and or ontological (perceiving reality), they are "the mental frameworks" (Aragay, X., 2017). It is necessary that, in each school, the participants involved in education and training formulate their "theory of change" (Aragay, X., 2017, cit. in Orvalho, L., 2017, pp. 6-9).

When we talk about the production of qualifications, in relation to learning outcomes, we need to take into account the processes and not only the products of training. It is necessary both to reinvent the pedagogy of the classroom and to change the traditional school environment. A school is truly for everyone when all students are able to learn, where the student and his or her learning process are the main focuses of the entire school dynamic (Nóvoa, A., 2016). Reimagining a new school brings new challenges and requires other forms of collaboration, which are more participatory, to be able to train people and not only competent professionals. The "School for All" must give way to the "School where Everyone Learns and Succeeds". Transformative schools that produce profound impact on their students require disruptive innovation. The paradigm of the 21st century school finds metaphorical richness in a kind of orchestra in which each one plays a different role, by the collaborative effort in the common mission of transforming diversity into cohesive harmony (Machado, T., 2017). The traditional school model, created one hundred and fifty years ago, does not respond to the new challenges of today's rapidly changing society. If it does not undergo a metamorphosis, it may disintegrate (Nóvoa, A., 2017). We need a new organization of venues (where one can work together), other arrangements of times and places of learning, other themes and curricula, ..., a new social contract of education (Orvalho, L. & Nonato S., 2017, p.150). The urgency of changes in the way we teach and how we learn, from constructivist learning optics, to the simple complexity of cyberculture, encounters a very fertile field in Vocational Education (Modular Structure) that needs to be further explored. For this to happen, teachers must (Re)learn how to teach and evaluate in order to innovate and put their knowledge into action.

3.6 Different Perspectives of work-based learning/work-based training

Work-based learning (WBL) is an educational strategy that provides students with real-life work experiences where they can apply academic and technical skills and develop their employability. Work Based Training(WBT) involves the majority of training and assessment occurring in a real workplace. WBT is competency-based training (CBT), which means learners can progress once they have demonstrated competency. CBT means learners progress at a pace that suits them. They are not held back when they are ahead or pushed forward when they are not ready to progress. WBT allows learners to find the most efficient and effective path to achieving a qualification.

The supply of excellent, high quality vocational education is one of the strongest and most ambitious goals of Vocational Education and Training. The fundamental mission is to provide students with a range of academic, professional, social and personal skills that go far beyond the curriculum of their course and also extend to the environment in which they live. More than learning to be excellent, highly qualified intermediate technicians, it is intended that VET students are active collaborators and agents of change in the companies they go through, that they take the plurality of knowledge that characterizes a socio-cultural and scientific training, so that, in an articulated manner, they can acquire those skills that can only be developed in a real work environment.

How to promote learning for, on and through work?

> Work-based learning (WBL) is frequently described in the literature as a set of learning practices that differs from those of school-based or classroom learning. WBL is learning that takes place in a real working environment through participation in the work process, irrespective of whether the learners are young people, students, unemployed people or employees, or whether they are paid or unpaid. Some definitions go further and also encompass some forms of classroom-based learning (i.e. simulations, virtual firms) or see WBL as a component of a broader learning programme that also includes theoretical lessons and classroom learning (European Training Foundation, 2013, pp. 4-5)

Figure 7 shows the main forms of WBL, including apprenticeships, alternance training, placements, internships, job shadowing, in-company training for employees as well as WBL-focussed reintegration and re-training programmes for the unemployed and for disengaged youth.

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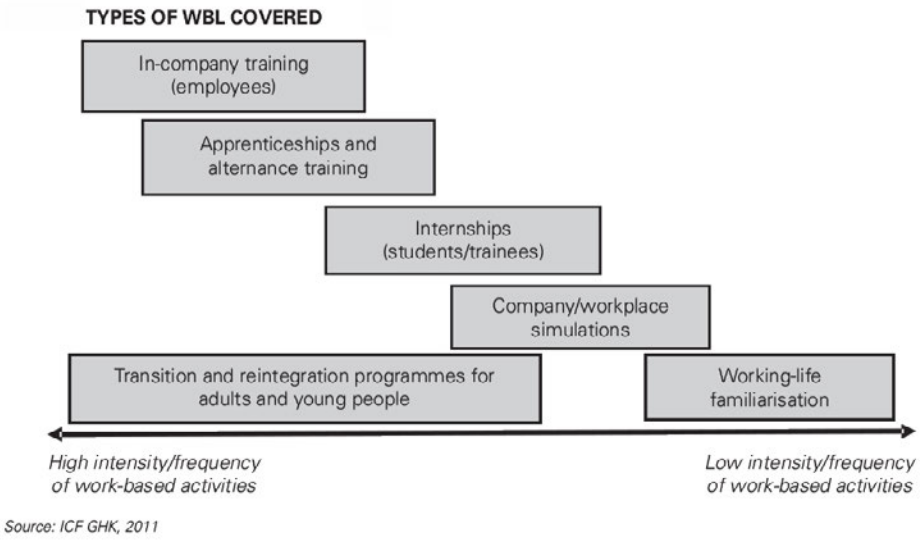
FIGURE 7 Forms of WBL



Fonte: European Training Foundation, 2013 "WORK-BASED LEARNING: BENEFITS AND OBSTACLES" https://www.etf.europa.eu/sites/default/files/m/576199725ED683BBC1257BE8005DCF99_Work-based%20learning_Literature%20review.pdf

WBL is found at all levels of VET—initial, post-secondary and third level—and in continuing vocational education and training (CVT). However, the actual proportion of learning that takes place in a real workplace can vary considerably, ranging from a high-intensity and high frequency of work-based activities (apprenticeships, in-company training) to a low-intensity and low frequency of work-based activities (internships, work-life familiarisation).

With the Covid-19 pandemic, schools and many areas of vocational training have been forced to consider other ways to replace on-the-job training, such as simulated practice and project development.

EU policy guidelines (European Commission, 2012, 2010 and Agenda 2020) increasingly emphasize the importance of apprenticeships, internships and other forms of WBL, with a focus on the need to foster cooperation between education and businesses. The OECD, recommends a wider use of WBL and highlights the need to improve its quality. The International Labour Organization (ILO), the oldest specialized agency of the United Nations, celebrated its 100th anniversary in 2019, whose success and longevity is greatly explained by the social dialogue and concertation it promotes, believes that today we are facing a new framework that urges us to look for new solutions. To this extent it recommends filling existing and foreseen skills gaps, paying special attention to ensuring that education and training systems respond to the needs of the market taking into account the evolution of labor.

In the context of the Portuguese Presidency of the European Council, in February 2021, the informal videoconference of Ministers responsible for Employment, Social Policy, Health and Consumers (EPSCO) on "Jobs, Skills and Cohesion: Priorities for a Stronger Social Europe", the ILO Director-General stressed the need to invest in people, labor institutions by investing in the jobs of the future and welcomed the process leading to an Action Plan to implement the European Pillar of Social Rights, which is of strategic importance for recovery.

In Part II, the good practice entitled “From Practice to Innovation in work-based training: Reflections around student’s perspective”, written by EPRM, identifies some practices around learning on and through work, in the context of the new Economy 4.0 paradigm. This vocational school, after experiencing multiple possibilities, defends internship as the main modality of practical training, distributed over the three years of education, with increasing periods of duration and responsibilities, as shown in Table 1.

It is essential to strengthen the cooperation networks between schools, universities and polytechnics, local authorities and innovation institutes; the strategic partnerships and the relationships between schools and work-based training organizations, win-win relationships; sharing responsibilities regarding employability and the qualification of human resources for a sustainable European development, within its economic, social and environmental dimensions and; knowing the degree of satisfaction of entrepreneurs regarding the evaluation of the qualifications produced in terms of learning outcomes.

4. How did VET teachers, schools and our countries react to the Covid – 19 challenge?

School closures in all countries to contain the spread of COVID-19 hindered education and increased inequality of opportunities of millions of students across the globe. UNESCO, in March 2020, shared COVID-19: 10 Recommendations to plan distance learning solutions to ensure that learning remains uninterrupted during this period.

1. **Examine the readiness and choose the most relevant tools.**
Decide on the use high-technology and low-technology solutions based on the reliability of local power supplies, internet connectivity, and digital skills of teachers and students. This could range through integrated digital learning platforms, video lessons, MOOCs, to broadcasting through radios and TVs.

2. **Ensure inclusion of the distance learning programmes.**
Implement measures to ensure that students including those with disabilities or from low-income backgrounds have access to distance learning programmes, if only a limited number of them have access to digital devices. Consider temporarily decentralizing such devices from computer labs to families and support them with internet connectivity.

3. **Protect data privacy and data security.**
Assess data security when uploading data or educational resources to web spaces, as well as when sharing them with other organizations or individuals. Ensure that the use of applications and platforms does not violate students’ data privacy.

4. **Prioritize solutions to address psychosocial challenges before teaching.**
Mobilize available tools to connect schools, parents, teachers and students with each other. Create communities to ensure regular human interactions, enable social caring measures, and address possible psychosocial challenges that students may face when they are isolated.

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5. **Plan the study schedule of the distance learning programmes.**
Organize discussions with stakeholders to examine the possible duration of school closures and decide whether the distance learning programme should focus on teaching new knowledge or enhance students' knowledge of prior lessons. Plan the schedule depending on the situation of the affected zones, level of studies, needs of students needs, and availability of parents. Choose the appropriate learning methodologies based on the status of school closures and home-based quarantines. Avoid learning methodologies that require face-to-face communication.

6. **Provide support to teachers and parents on the use of digital tools.**
Organize brief training or orientation sessions for teachers and parents as well, if monitoring and facilitation are needed. Help teachers to prepare the basic settings such as solutions to the use of internet data if they are required to provide live streaming of lessons.

7. **Blend appropriate approaches and limit the number of applications and platforms.**
Blend tools or media that are available for most students, both for synchronous communication and lessons, and for asynchronous learning. Avoid overloading students and parents by asking them to download and test too many applications or platforms.

8. **Develop distance learning rules and monitor students' learning process.**
Define the rules with parents and students on distance learning. Design formative questions, tests, or exercises to monitor closely students' learning process. Try to use tools to support submission of students' feedback and avoid overloading parents by requesting them to scan and send students' feedback.

9. **Define the duration of distance learning units based on students' self-regulation skills.**
Keep a coherent timing according to the level of the students' self-regulation and metacognitive abilities especially for livestreaming classes. Preferably, the unit for primary school students should not be more than 20 minutes, and no longer than 40 minutes for secondary school students.

10. **Create communities and enhance connection.**
Create communities of teachers, parents and school managers to address sense of loneliness or helplessness, facilitate sharing of experience and discussion on coping strategies when facing learning difficulties. (https://en.unesco.org/news/covid-19-10-recommendations-plan-distance-learning-solutions).

The planning of distance learning is challenging, as it requires rethinking processes face to face. At a time when schools were forced to suspend face-to-face classes due to the Covid-19 pandemic, the priority was to encourage schools and teachers to formulate a new vision for E@D.

Part II shows how the teachers, in the partnership schools, responded to this challenge with exemples. This pandemic has taken us out of the comfort zone and the examples show how each country reacted.

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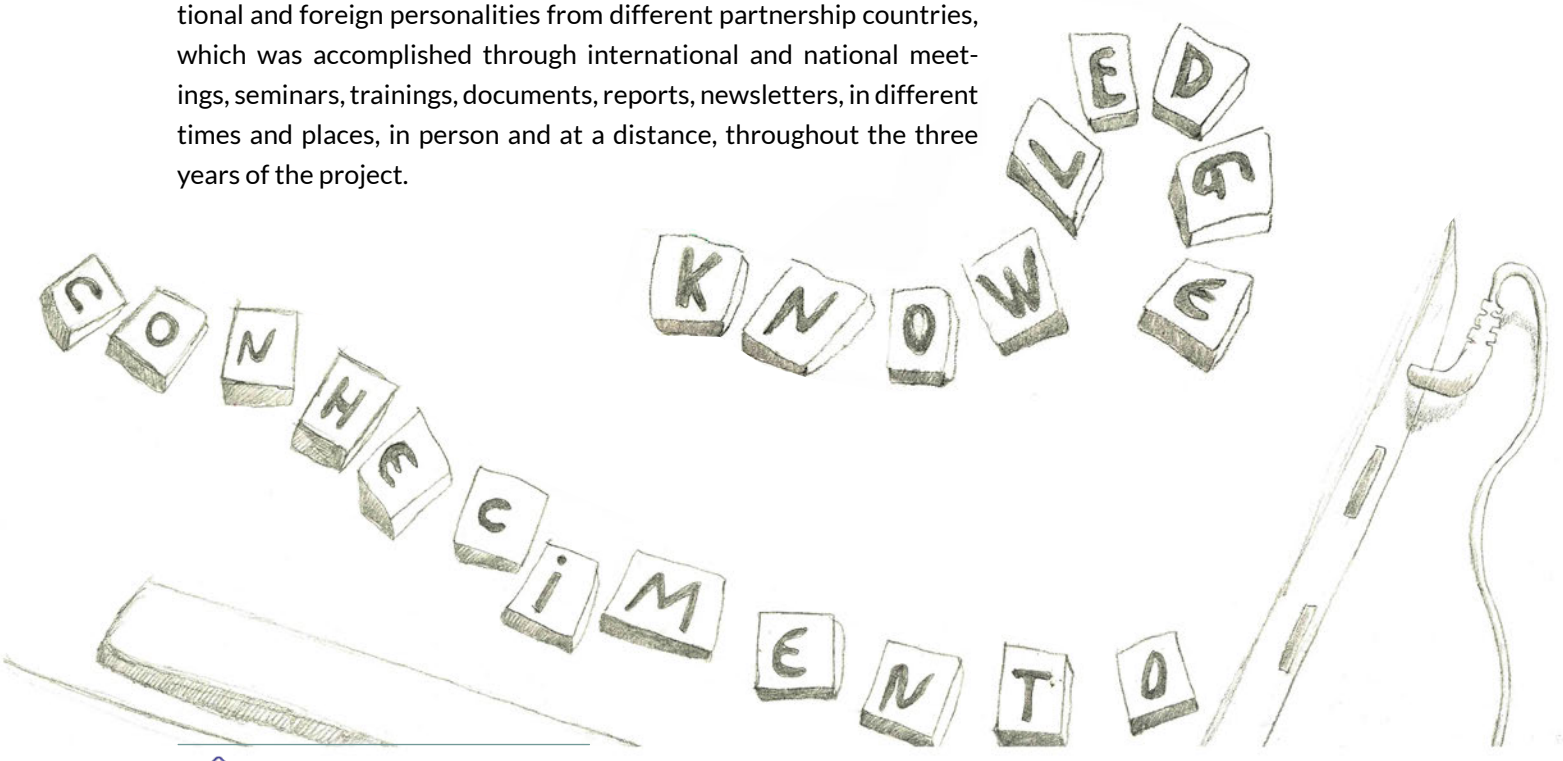
Part II

In Part II, the theoretical and conceptual framework of the IO is illustrated with examples of good practices and case studies carried out in schools (based on documentary research) designed, implemented and tested by the different partners, in classroom and on-the-job training contexts, complemented by narratives, testimonies and recorded interviews of experts, entrepreneurs and graduates of the VET system.

The presented "cases" try to shed light on a set of educational practices that deserve to be highlighted, illustrating the idea that it is possible to innovate, pursue ambitious goals, overcome resistance and misunderstandings, surpass contextual difficulties, and help all participants learn more and do better, without leaving anybody behind.

By presenting these examples, it is also intended that each VET operator promotes reflection in and towards action on the implications that these changes produce, on the competencies oriented to shape the future of VET, based on a more sustainable, empowering and inclusive model of human development.

Some of the life narratives of personalities and companies involved in on-the-job training and in the Professional Aptitude Tests (PAP), as well as the testimonies of former vocational education graduates, which are included in Part II, help highlight the level of the action-reflection-collaboration and interactive journey that was possible of being achieved by all the members involved, namely the schools, scientific community of Educational Sciences, teachers and students, national and foreign personalities from different partnership countries, which was accomplished through international and national meetings, seminars, trainings, documents, reports, newsletters, in different times and places, in person and at a distance, throughout the three years of the project.



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1. Examples of good practices/ Case-studies /Innovative practices from all partners

This chapter presents examples of practices that have been designed, implemented and evaluated in the partner schools of the project "Schools 4.0 - Innovation in VET" with very positive results regarding the involvement and interaction of students in the teaching and learning process and development of high level cognitive and metacognitive skills.

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A1 Digital tools in classroom for formative assesment and self-regulation

GP1 The use of the Schoology platform in the teaching of computer networks, using the Cisco network simulator (Packet Tracer) and screencast

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Master's Degree in Informatics Teaching
Informatics teacher

INTRODUCTION

Web technologies allow teachers to define innovative pedagogical strategies that include the use of social software as a work tool in order to make individual and cooperative learning contexts more flexible, teaching students to learn in the cyberspace, to think, to co-operate, to share and build their own knowledge.

It is in this learning context that the use of Schoology is inserted in the teaching of computer networks.

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As a learning management system (LMS[1]), Schoology is a platform aimed at educational communities, which provides, in an easy way, the possibility to create and share educational content, as well as curriculum management, pedagogical support, creation and distribution of content to students, interaction between everyone involved in the teaching and learning process, online learning and, also, a management system for courses/classes/subjects.

This type of platform has the capacity to involve all users in the educational process: schools, teachers, students and parents/tutors. Therefore, the term educational social network comes from this interaction between teachers and students, which enhances a collaborative learning process.

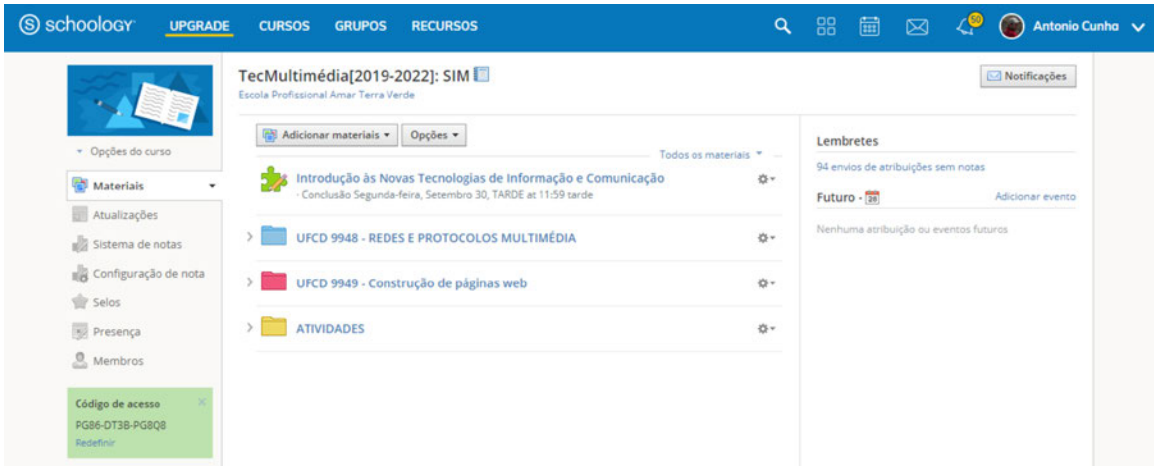
To access this platform, only one device with Internet access is required. The use of this tool allows teachers, in this new digital age we live in, to update their teaching methods, making them more creative, innovative and, consequently, more motivating for all students and for teachers to learn new ways to connect with students' different profiles and learning styles.

Although almost all schools have implemented LMS systems, with the Moodle platform being preferred by the majority, the utilization rate is still far from desirable, due to the resistance of some teachers.

The implementation of this platform implies installation and configuration by specialized technicians and the existence of specific infrastructures, which require prior investment in physical means and software. Although highly customizable, the Moodle interface, unlike Schoology, is not very intuitive. The latter gains an advantage due to the fact that it is based on the model of social networks, particularly Facebook, whose usability is facilitated by the familiarity that most users have with this social network.

On one hand, as it incorporates the characteristics of systems like Moodle, Schoology allows for data import and easy system migration. On the other, as it has the characteristics of a social network, it also allows the interaction between student-student and student-teacher, a trademark of a collaborative learning system, which extends beyond space and school time.

FIGURE 1 Course Area in the Schoology platform



[1] Software developed on a pedagogical methodology to assist the promotion of virtual or semi-presential teaching and learning.

Upon review of this tool based on personal experience, we highlight the main positive aspects:

- Facilitates communication/interaction/collaboration between student/student, student/teacher and allows parents/tutors to closely monitor the educational and training paths of students and trainees;
- Intuitive and dynamic interface, of easy acess and usability, which makes students feel more comfortable in its adoption and more motivated to work and interact;
- Possibility to create several courses and files, as well as providing efficient tools and free resources for teachers to optimize instruction;
- Allows attendance records and daily activities to become visible to the student;
- The student can integrate several classes/groups/messages in a single place from several teachers;
- Easy to add groups;
- Teachers are the ones providing access codes to parents/tutors;
- Similar to social networks (*Facebook*), which facilitates the transfer of digital skills;
- It goes beyond "school walls", enabling the student to learn anywhere and anytime they desive;
- Sustainable to the extent that teachers have a place to store teaching materials, and can receive the tasks performed by students online, avoiding the waste of photocopies;
- Free of charge for any user who adopts the profiles of teacher, student or parent/tutor, without the need to install any type of software, which proves to be a huge advantage with regard to its maintenance and updating;
- Allows integration with Google Apps, Facebook and Dropbox;
- Being multiplatform, it can be run in any browser.

This platform was used as an integrator of several educational tools, namely, the use of the computer network simulator (Cisco Packet Tracer), as shown in Figure 2, which allows the resolution of problems with different degrees of difficulty, enhancing the teaching and learning process at different rates. To make this possible, screencasts (Figure 3) were made available, which support learning outside of school time and space. Finally, the possibility of giving immediate feedback to the work submitted on the Schoology platform makes its evaluation an instrument for the self-regulation of learning.

FIGURE 2 Network simulator “Cisco Packet Tracer”

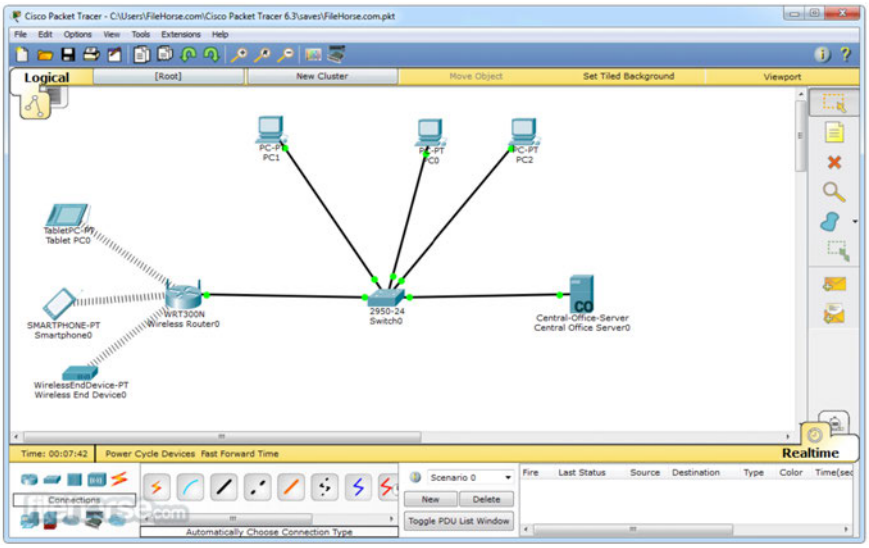


FIGURE 3 Example of a Screencast

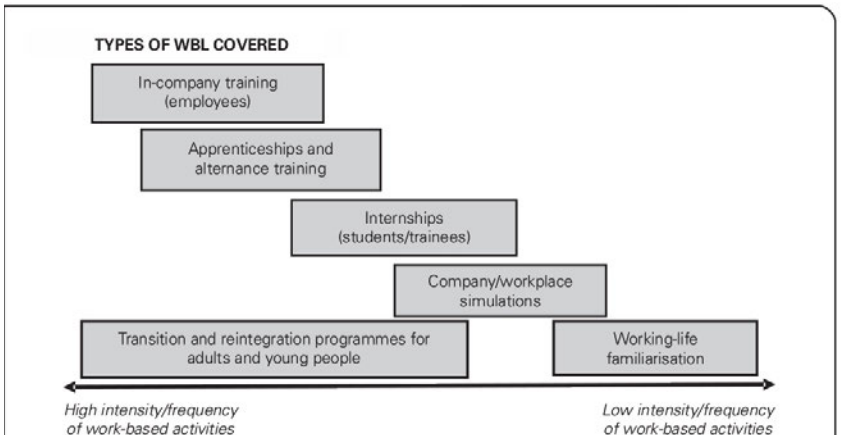
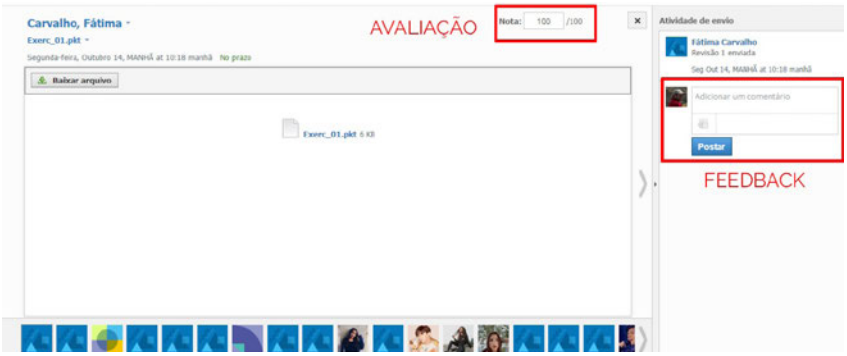


FIGURE 4 Formative assessment feedback



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DEVELOPMENT

Module Short Training Unit 9948 – MULTIMEDIA NETWORKS AND PROTOCOLS

Theme Computer Networks - 25 hours

OBJECTIVES

- Identify hardware and operating systems;
- Identify the components, characteristics and functionalities of a communication system;
- Recognize the Internet network model including the main protocols involved in its architecture;
- Associate different protocols to the respective services and applications on the Internet;
- Identify the main Internet standardization and management bodies;
- Characterize, install and configure web servers.

CHARACTERIZATION OF THE CLASS

Class from the first year of the level 4 VET course of Multimedia Technician, composed of 18 students, aged between fifteen and nineteen years old.

RESULTS

The use of the Schoology platform as an integrator of different educational tools, with particular emphasis on the Cisco network simulator (Packet Tracer) and screencasts, allowed us to conclude that:

- This platform made it possible to respect the students' different learning rhythms;
- The teaching-learning process was not confined to school time and space;
- The immediate feedback given by the teacher allowed students to use this information to overcome difficulties and, as such, the assessment of learning became not just a number, but an integral part of the teaching and learning process;
- Learning promoted collaborative work;
- Students developed greater autonomy and freedom to carry out practical activities, without constraints on equipment or availability of access to laboratories;
- Students' interest has increased because they can control simulations more easily and are not dependent solely on practical laboratory sessions, leading to faster and more meaningful learning;
- The results obtained with the use of the Cisco network simulator (Packet Tracer) lead us to verify the significant impact on the strengthening of the cognitive structure of most;
- students, evidencing that the use of this type of software can contribute to a meaningful learning path, taking into account a constructivist methodology (Cunha, A., 2015, p. II).

DISCUSSION AND ANALYSIS (ASSESSMENT OF CURRICULUM DEVELOPMENT)

It seems to be a consensual idea that, in a world where technologies are increasingly ubiquitous, schools cannot fail to use them, incorporating new methods and methodologies that allow students to be involved through a communicative and sharing process more consistent with current society. In this way, it will be easier, on the one hand, to motivate students, involving them in a collaborative learning process and, on the other hand, to establish a communicative process that involves the entire educational community.

However, the use of technologies outside of school space and time can create some constraints when access to these technologies is not available to all students because, in that case, instead of making the school inclusive, we will be promoting exactly the inverse. We run the risk of info-exclusion. We will therefore have to guarantee equal access for everyone to the technological tools used.

Another constraint is the fact that simulators do not replace real equipment because any model, represented through a certain simulation, should not be seen as a real phenomenon, because often, for the simulation to be possible, simplifications are used, which the student and the teacher are unaware of.

In schools, this contact with physical reality is not always possible, either due to the cost of equipment or the lack of spaces dedicated exclusively to this learning.

In general, we can conclude that the inclusion of these tools proved to be quite effective, contributing to the development of significant learning. There was an increased motivation in solving problems using a simulator, instead of doing it only theoretically, registering a greater involvement and participation of students.

GP2 Eletrotechnical and Mechatronics Workshop Practices

Carlos Marinho

Electrotechnical / Engineer / Designer / Trainer

INTRODUCTION

The need to use computer programs to simulate the functioning of electrical installations and telecommunications as well as electrical and electronic circuits is evident for all who are dedicated to the task of designing these types of circuits. Although the majority of circuit simulation programs were originally developed with a view of analyzing systems of reasonable complexity, it is evident that any circuit can be simulated with such programs. However, the first programs for simulation required large computers, limiting their use to large companies or research centers. From the availability of microprocessors and programs for the simulation of circuits that work on low-cost microcomputers, the advantages of the simulation have been opened up to the technicians of any electrical/electronic system. They present advantages such as being able to check, among several available configurations, which will be the best solution to make the performance more suitable to its application, as there is no need to build several prototypes and make tests and measurements in the laboratory. In addition, it is also unnecessary to acquire or obtain components for experimental assemblies. All "components" of the simulator "work" and "do not burn". When a prototype is assembled in the laboratory, it is possible

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that one has the misfortune of using defective components or with characteristics different from those contained in the catalogs. In this way, unlike simulation, if the prototype does not work properly, it will not be known for sure whether this is due to a wrong design, to wrong assembly or even to damaged or components out of specification.

It is possible to do all kinds of measurements, tests and trials on the simulated circuit, even if such parameters are difficult or impossible without having the necessary equipment. It is perfectly feasible with a simulator to conduct experiments, such as changing component values or even trying new configurations, however strange they might be, without fear of damaging the circuit or the testing equipment.

Therefore, the use of simulators assumes a very important role, enabling students to perform the essential tasks in a computational environment.

DEVELOPMENT

SIMULATOR – CACEL AUTOMATION

Tool designed to complement classroom learning and simulate power circuits and automation controls.

FIGURE 5 Overall look of the CACEL simulator

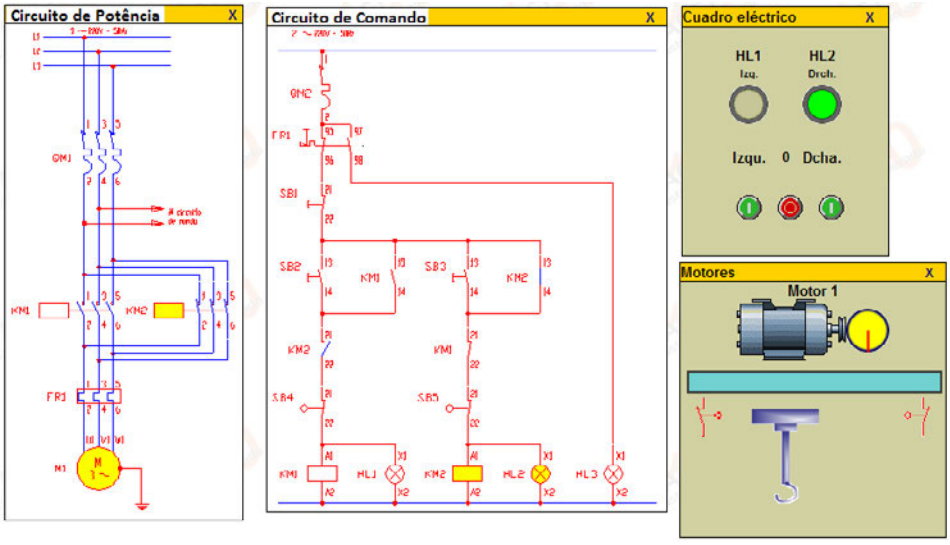

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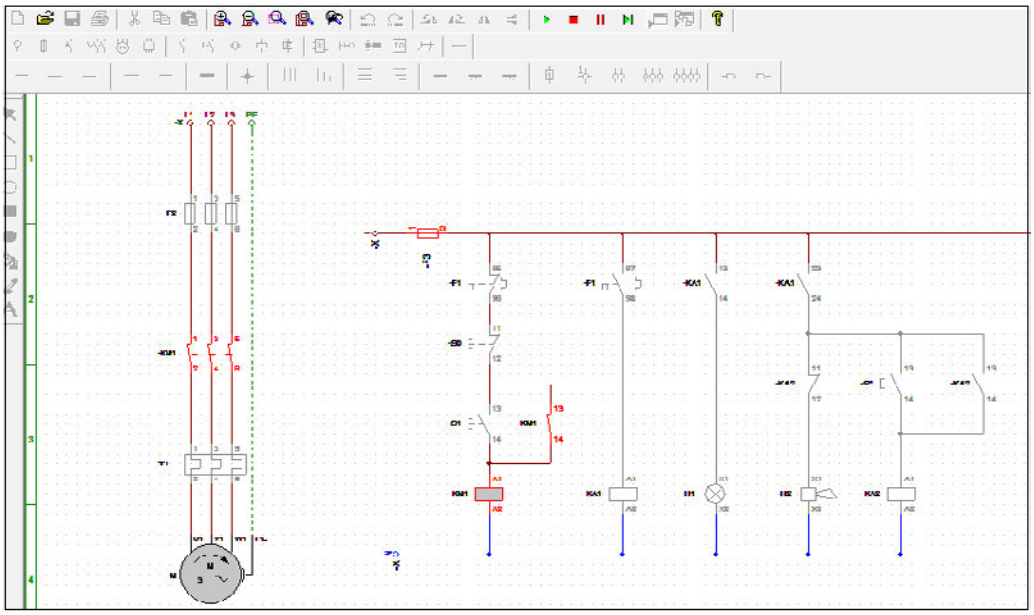
FIGURE 6 Overall look of the CAD and SIMU simulator



MODULE

Short Training Unit 6057 – Electromechanical Automations - applications (duration: 25 hours)

OBJECTIVES

- Define and use criteria for choosing and dimensioning contactors and relays;
- Select equipment and accessories according to a specific problem;
- Implement electric command and power circuits for motor control;
- Start and control motors;
- Perform small command projects, using electromechanical devices;
- Implement circuits with timers.

CHARACTERIZATION OF THE CLASS

Class from the third year of the level 4 VET course of Electrotechnical Technician, composed of 19 male students.

EXAMPLES OF ACTIONS TO BE DEVELOPED IN THE SHORT TRAINING UNIT

- Interpret command, signaling and power schemes;
- Select the components of an electromechanical automation;
- Understand the operation of engine starting systems;
- Present and defend work/projects.

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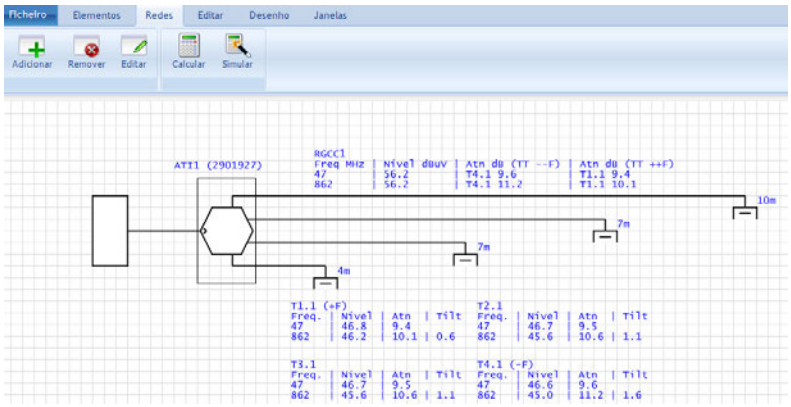
SIMULATOR – CAD ITED/ITUR

Software for the design, calculation and budgeting of ITED / ITUR networks, using a complete database of TEKA products, whose specifications largely comply with ITED / ITUR requirements.

FIGURE 7 Overall look of CAD ITED/ITUR simulator



MODULE

Short Training Unit 6088 – ITED - Reading, interpretation and execution of projects (duration: 25 hours)

OBJECTIVES

- Define and characterize the equipment needed for an ITED installation (ITED manual);
- Identify and characterize the elements of a TV network for the CATV and SMATV systems;
- Characterize antennas for national channels, FM radio and satellite dishes;
- Make the budget for the elaborated project;
- Simulate the mandatory tests for the coaxial network.

CHARACTERIZATION OF THE CLASS

Class from the second year of the level 4 VET course of Electrotechnical Technician, composed of 18 male students.

Examples of actions to be developed in the Short Training Unit:

- Perform mandatory tests on coaxial cable networks;
- Simulate faults and detect them;
- Assess ITED;
- Perform the functionality test report;
- Prepare the respective budget;
- Present and defend work/projects.

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PROGRAM – AUTOCAD

Launched in 1982 by Autodesk, Inc., AutoCad is a Computer Assisted Design software program, used to create engineering projects.

In the 1980s, AutoCad worked mainly using polygons, circles, lines, arcs and text to create custom objects.

Since the 90's, this software started to use more in-depth resources to customize these objects, built with an advanced programming interface using C ++.

As of 2007, the program started to have much more advanced 3D tools, which allow greater flexibility and exploration, with higher quality and greater speed.

AutoCad is mainly used by designers, although engineers, surveyors, interior designers, architects and even technicians from different professional areas also use this software.

FIGURE 8 Overall aspect of AUTOCAD program

MODULE

Short Training Unit 6098 – Schematic drawing of electrical circuits (duration: 25 hours)

OBJECTIVES

- Interpret basic rules of design;
- Exercise visualization in space, transposing the corresponding projections to the software, using conventional methods;
- Use of the diverse electrotechnical symbology, applying it to different types of electrical schemes;
- Use CAD drawing tools correctly.

CHARACTERIZATION OF THE CLASS

Class from the first year of the level 4 VET course of Mechatronics Technician, composed of 24 male students.

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Examples of actions to be developed in the Short Training Unit:

- Introduce technical design in the computing environment;
- Study projections;
- Perform single-line, multi-line and principle electrical schemes;
- Present and defend work/projects.

CONCLUSION

The implementation of technology and innovation has been the driving force of educational institutions that aim to attract more students, especially in the face of the rapid changes arising from the digital world. For this, it is essential to establish a strategy, such as the use of simulators in the training of students. In addition to technology, this tool raises learning levels and mobilizes the entire class.

This true technological innovation has possibilities of adaptation to various subjects of vocational courses. In general, it can be said that it is a concrete way of projecting difficulties that are typical of a career in school life. Except that these goals, very risky when tried in real life, would be nothing more than a simulation. In addition, other characteristics that are highly valued in the present professional environment can be developed, such as cooperation, teamwork and initiative spirit.

The use of these simulators in the classroom made it possible to conclude that:

- They are a very important complement and reinforcement of theoretical and practical classes in the laboratory context;
- It allows students to have greater autonomy and freedom in order to carry out practical activities, without limiting materials, equipment and tools;
- It gives students the possibility to evolve through more advanced analysis and experiences.

DISCUSSION AND ANALYSIS

The school environment provides an exchange of information and interaction between students and teachers, who mutually seek knowledge. But this collective space of knowledge is not the same as it was a few years ago. In regards to the 21st century student, it is impossible not to notice that he is increasingly inserted in the technological environment, and migrates these tools to the educational environment.

Excluding technology in the classroom creates a barrier that makes the teacher a negative figure. It is necessary to bring these devices to the teaching context, bonding them together and facing them as a tool for building knowledge. However, it is up to the teacher to provide directed freedom, so that the student does use the technology he has, but in favor of the proposed class, involving the student so that he feels he is being participative in this process.

Computers, mobile phones, tablets, among others, that present knowledge at a touch of a finger, are the clearest evidence that these technological devices have invaded the school environment. However, these are not the only ways to introduce new technologies into the classroom: the teacher can make use of them, not to replace a theme, but to improve it with the aim of adapting this student to the current reality.

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In addition to these advantages, another form of technology that is growing is distance learning because it presents the possibility of not being physically present. For that, it is only necessary that the student has a computer with internet access. If we think about the school dropout rate, for multiple reasons, these challenges would be overcomed with the ease of access to recorded classes, in the student's available time.

GP3 Math Class: Discret Models

Pedro Arantes
Mathematics teacher

INTRODUCTION

The integration of digital technologies in the teaching/learning process is fundamental for the development of knowledge, skills and attitudes of students in the 21st century, as advocated by the Profile of Students Leaving Compulsory Education.

The exponential evolution of technology and the new pedagogical--didactic demands challenge the teacher to rethink practices, in order to engage students in the development of their skills.

Despite the teacher posessing a diversity of technologies and digital tools, it is not enough to present his students an appealing teaching model, with the presence of interactive content. When preparing new learning environments to be applied in the classroom, the teacher will have to choose the digital resources that best ensure the effectiveness of the teaching/learning process and contribute to the education of the student as a responsible, autonomous and active citizen in the society in which he lives.

In view of the specificities of the modular curricular model of vocational education of the Maths subject and the low results obtained in the evaluation of module A8 – Discreet Models in previous academic years, this academic year, 2019/2020, I chose to apply new pedagogical practices to the third year of Electrotechnics Technician course, that is, to associate work in small groups when solving tasks, with digital resources, including smartphones, QR codes, Padlet and Socrative.

The teaching strategy based on working in small, heterogeneous groups, promotes cooperative learning, as it fosters positive interdependence, individual and group responsibility, stimulating interaction, mastery of social skills and group assessment (Lopes, J., Silva, H., Dominguez, C. & Nascimento, M., 2019).

The **mobile phone/smartphone**, which a decade ago only served as a means of communication between people, today, is undoubtedly a tool with great potential in the classroom, so its use in the construction of effective learning cannot be postponed.

QR codes incorporate information in the form of URL, SMS, phone number, contacts and text, in a two-dimensional matrix and, when associated with education, fit the principles of *Mobile Learning*. They promote the quality of the teaching/learning process, as they allow the exploration of new learning spaces, expanding the horizons of traditional classrooms and/or creating other types of interactions within the classroom itself.

Padlet is an online virtual platform, where students and teachers can collaborate, reflect, share links, documents, videos and photos. Creators can also moderate/remove posts and manage their spaces.

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These three digital tools can be incorporated in the same activity, allowing students who, by pointing their devices (**smartphone**) to the **QR code** inserted in the worksheet (on paper), can access a set of contents hosted on **Padlet**, namely introductory videos to the topics, in this case the series "*Isto é Matemática*", theoretical contents presented by the teacher, as well as tutorials with solved exercises. They can also make posts on this platform with solved exercises or clarify doubts.

Socrative is a free app that allows the studied contents to be quickly evaluated through interactive, challenging and motivating dynamics.

This app allows direct intervenients (teacher and student) in the teaching/learning process to access the results immediately, since feedback is given in real time. As such, it is an effective tool for formative assessment in a formal or informal learning context, as the teacher and the student realize, in rapid time, the skills that have been or have not been acquired.

These technological and digital tools associated with cooperative work enable the development of the seven survival skills necessary for 21st century life, work and citizenship, namely: critical thinking and problem solving; collaboration and leadership; agility and adaptability; initiative and entrepreneurship; effective oral and written communication; information access and analysis; curiosity and imagination (Lopes, J., Silva, H., Dominguez, C. & Nascimento, M., 2019).

FIGURE 9 Padlet A8 – Discreet Models

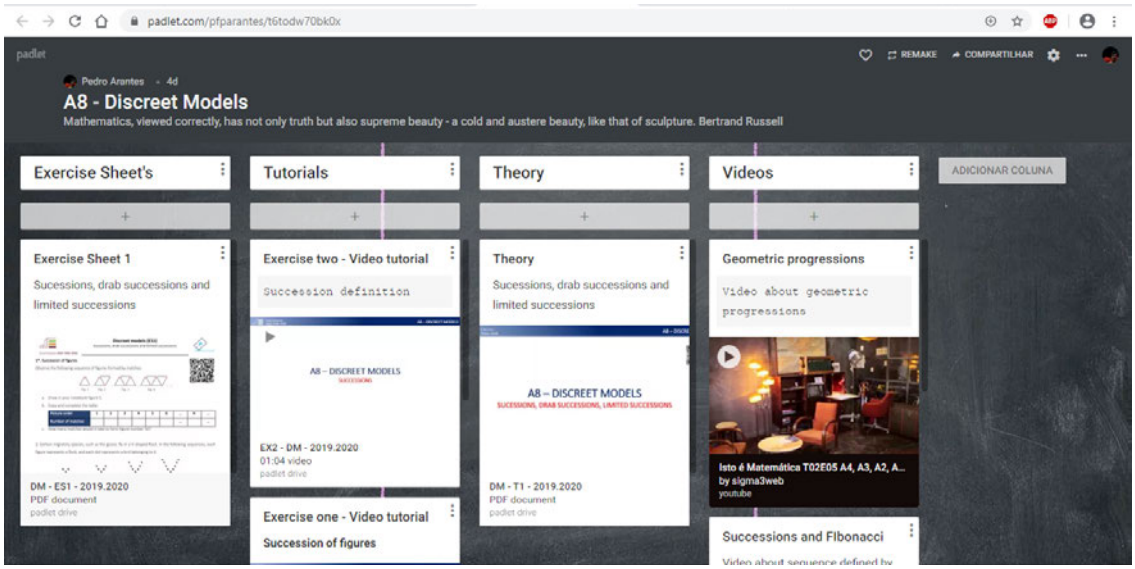

FIGURE 10 QR Code to access Padlet A8 – Discreet Models

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DEVELOPMENT

Mathematics Module

Theme Discreet models - 26 hours

Subtheme Successions, drab successions, limited successions - 6 hours

OBJECTIVES

- Understand the definition of succession;
- Identify drab successions, increasing and decreasing successions;
- Compare limited and not limited successions;
- Apply succession concepts to problem solving;
- Build successions from situations of everyday life.

CHARACTERIZATION OF THE CLASS

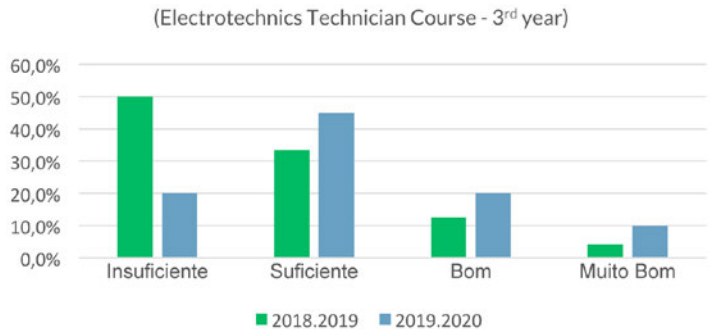
- Third year of Electrotechnics Technician;
- Twenty students aged between sixteen and eighteen;
- Two students in need of measures to support learning and inclusion;
- Students are responsible, autonomous, organized and group-minded.

RESULTS

The students:

- have a more active attitude in the pursuit of knowledge;
- become more participative and critical;
- show more respect for the opinions of their peers;
- become more responsible in the accomplishment of established deadlines.

GRAPHIC 1 Module A8 – Discreet Models evaluation results



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Graphic 1 presents a comparative analysis between the results of the final evaluation of module A8 - Discrete Models, in the last two academic years. There is a significant evolution in student results, which is reflected in a decrease of approximately thirty percent in the number of students who failed the module.

It is important to note that, in the academic year 2018/2019, the teaching of module A8 - Discreet Models - was supported by little innovative teaching practices, the teacher presented the contents, solved standard exercises and students limited themselves to reproducing them.

DISCUSSION AND ANALYSIS (ASSESSMENT OF CURRICULUM DEVELOPMENT)

Undoubtedly, the application of digital tools associated with group work proved to be quite enriching in the teaching and learning process, but, on the one hand, they demand that the student play a central role in the search for knowledge, on the other, they imply that the teacher becomes more active and creative, so that the teaching and learning process takes place in a cooperative action between the student and the teacher.

However, the performance of students, as can be seen in Graphic 1, was still below expectations. There is still a significant number of students who have not completed the module. Perhaps, my lack of experience in the application of these new methodological strategies may, in some way, have conditioned the attitude of the students, because, despite being responsible, organized, autonomous and with the ability to work in groups, they presented, at times, weak involvement in solving tasks and when faced with particular challenges they tended to disperse or give up. Another aspect that can also be pointed out may be related to the students' little experience in solving this type of tasks, since it forces them to leave their comfort zone.

However, despite recognizing that we have a long way to go, it is inevitable to consider digital technologies as a fundamental tool in the teaching and learning process. They are an essential ally to mobilize the various areas of competence, advocated in the Profile of Students Leaving Compulsory Education, as they enable students to have a more active role in the search for knowledge.

GP4 The use of simulators for teaching the assembly of a PC

José António Pereira Dantas

Master's Degree in Computer Science Education

Computing teacher

INTRODUCTION

Currently, simulation plays a decisive role in the design, analysis and implementation of electronic equipment, automation, computers and communication systems, especially when these systems are expensive and complex. The teaching of these areas requires practical classes, which allow the exemplification of several key concepts. However, the creation of specialized laboratories requires heavy investments and is difficult to maintain. Therefore, the use of simulation tools in teaching is a way to guarantee students a more realistic practice, through interaction with virtual devices that have behaviors similar to real ones, but without the need for a specialized laboratory.

Simulation is one of the most premature and most striking human characteristics, being evident, from a very early age, in the symbolic game of "make-believe". People use simulation to build mental models of situations and objects, with which they are not related, so that they can later explore different possibilities within these imaginary constructions (Lévy, 1993). For Lévy (1993, p. 76), «Simulation, which we can consider as a computer-aided imagination, is therefore, at the same time, a much more powerful tool to help reasoning than the old formal logic that was based on the alphabet».

Simulators are currently indispensable tools in the development of projects in different areas of technology, with a wide variety of applications that simulate real situations of total or partial application of technological devices in the most diverse situations.

There is a considerable number of literature that considers that the use of simulators can play a major role in the teaching and learning process (Arevalillo-Herráez, 2012; Djordjevic, 2009; Expósito, 2010). Simulation programs allow students to interact with more, or less complex models and processes, in a controlled manner, without risks and without prohibitive costs, arousing and increasing the interest of students, because they can control the simulations and are not dependent on its practice exclusively in laboratory sessions, inducing a faster and easier learning (Expósito, 2010).

Level 4 Vocational courses in the electronics and automation area, contain in their curriculum, part of the technological training component, subjects on computer assembly, robotics, automation and computer networks. These are subjects, mainly composed of practical characteristics, which provide students with an approximation to the labour market, and, complemented with an internship, can create learning situations that provide students with sufficiently deep contact with the business world.

In these circumstances, the tasks and activities that students perform in the laboratory are of paramount importance, in order to provide them with the most appropriate practical experience on the use of the various equipment, otherwise, the subjects may become too theoretical, reducing interest and student motivation (Arevalillo-Herráez, 2012). However, it turns out that it is not always possible to have the necessary laboratory practices, for various reasons, such as:

- the high price of equipment;
- reduced amount of equipment in the laboratories;
- excessive waste of time, due to the need to perform equipment reconfigurations;
- difficulty in reusing previously created models;
- incompatibility of school schedules.

Therefore, in view of the constraints presented above, the use of simulators assumes a role of paramount importance, as it allows students to practice configuration tasks and perform activities without the need to be in presence of real equipment (Guo, 2007).

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DEVELOPMENT

SIMULATOR – CISCO VIRTUAL DESKTOP

Cisco Virtual Desktop is a tool designed to:

a) Complement classroom learning;

b) Provide practical virtual experience, where equipment is limited.

FIGURE 11 Overall look of the Cisco Virtual Desktop simulator

MODULE

Short Training Unit 6186 – PC Assembly (duration: 25 hours)

OBJECTIVES

- Identify the necessary components for assembling a PC;
- Identify the assembly rules and procedures;
- Perform the assembly of a PC;
- Configure communication system tests.

CHARACTERIZATION OF THE CLASS

Class from the second year of the level 4 VET course of Electronics, Automation and Computer Technician, composed of 12 students, aged between seventeen and nineteen years old.

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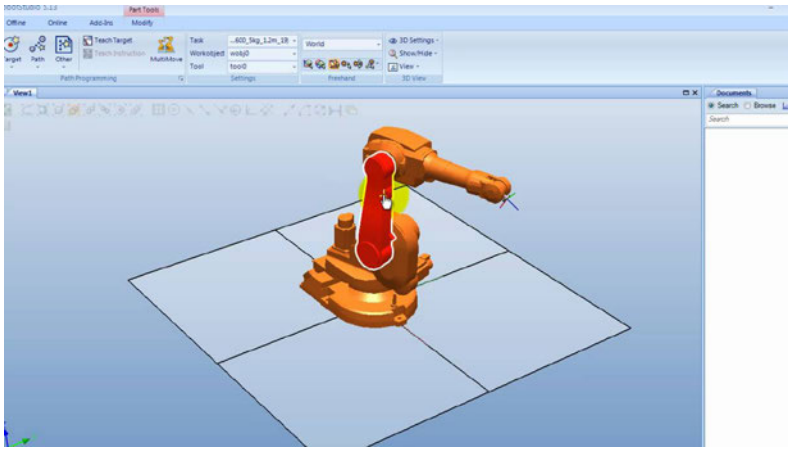
EXAMPLES OF ACTIONS TO BE DEVELOPED IN THE SHORT TRAINING UNIT

- Perform research tasks with autonomy;
- Encourage the search and deepening of information;
- Select the components necessary to assemble a PC;
- Identify possible incompatibilities in the selection of components;
- Reading and interpreting schemes;
- Perform the assembly of a PC;
- Configure the installed components;
- Present and defend work/projects.

SIMULATOR – ROBOT STUDIO

RobotStudio – from ABB VirtualController – is an exact copy of the real software present in ABB robots used in production, which allows a wide range of very realistic simulations to be carried out, using programs from real robots and configurations identical to those used in a factory.

FIGURE 11 Overall look of RobotStudio simulator



MODULE

Short Training Unit 6162 – Robotics – Applications (duration: 25 hours)

OBJECTIVES

- Identify the most suitable robots for a given application;
- Structure and plan a work layout;
- Schedule equipment interaction;
- Perform equipment maintenance.

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CHARACTERIZATION OF THE CLASS

Class from the first year of the level 4 VET course of Electronics, Automation and Computer Technician, composed of 14 students, aged between sixteen and eighteen years old.

EXAMPLES OF ACTIONS TO BE DEVELOPED IN THE SHORT TRAINING UNIT

- Perform research tasks with autonomy;
- Collect data and information regarding industrial robotics;
- Encourage the search and deepening of information;
- Reading and interpretation of schemes;
- Select the appropriate equipment;
- Structure and plan a work layout;
- Schedule equipment interaction;
- Present and defend work/projects.

SIMULATOR – PACKET TRACER

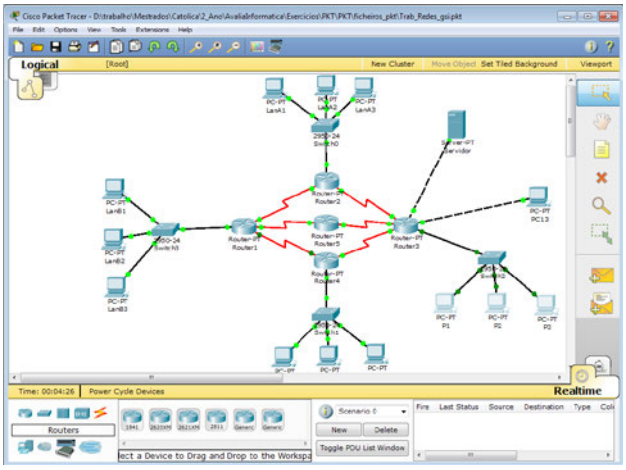
Packtet Tracer is a network simulator, which presents a simple and complete graphical interface, that can be run on both Windows and Linux, featuring a configuration environment faithful to the functioning of real devices, of very easy use and grasp by students – a very important aspect for the success in the use of simulators.

Added to this user-friendly feature, a strong didactic component is present - very important for those who are starting to study computer networks – for obtaining the ideal balance between the variety of simulation equipment, ease of configurations and didactics in connections and tutorials, present in a way students can observe, in a simulated environment, employing animations and explanatory descriptions, the processes between the various network devices.

With Packet Tracer, students can easily build networks of different topologies by dragging, connecting, and grouping virtual network devices, such as hubs, switches, routers and servers (figure 12).

The simulator consists of an interactive graphic environment. It allows students to design the virtual scenario of a network, perform simulations and configurations in the same way that they would be used in a real scenario (figure 12).

FIGURE 12 Overall aspect of Cisco Packet Tracer simulator



MODULO

Short Training Unit 6129 – Computer Networks - Installation (duration: 25 hours)

OBJECTIVES

- Critically analyze the various options taken in the design of computer networks, their architectures and protocols;
- Identify the main internet protocols;
- Perform the installation of small local computer networks;
- Select and apply the appropriate architecture to the desired characteristics;
- Identify and install the available equipment;
- Use the available administration tools correctly.

CHARACTERIZATION OF THE CLASS

Class from the third year of the level 4 VET course of Electronics, Automation and Computer Technician, composed of 16 students, aged between seventeen and twenty years old.

EXAMPLES OF ACTIONS TO BE DEVELOPED IN THE SHORT TRAINING UNIT

- Perform research tasks with autonomy;
- Critically analyze the various options in the design of computer networks;
- Encourage the search and deepening of information;
- Reading and interpretation of schemes;
- Identify, install and configure active network equipment: hubs, routers, bridges, access points to wireless networks, firewalls and VOIP gateways;

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- Perform connectivity tests and network testing;
- Present and defend work/projects.

CONCLUSION

The use of these simulators in the classroom made it possible to conclude that:

- They are a very important complement and reinforcement of theoretical and practical classes in laboratory context, given the content and diversity of experiments that can be carried out;
- Students developed a set of skills such as: greater autonomy and freedom to carry out practices, without constraints on equipment or availability of access to laboratories;
- Students' interest has increased due to the fact that they can control the simulations and are not dependent on their practice exclusively in laboratory sessions, inducing them to learn faster, easier and more meaningfully;
- It allows students to analyze and experiment with a much wider range than it would be possible in laboratories using physical equipment;
- It motivated our students to continue learning, even after completing the module.

DISCUSSION AND ANALYSIS

One of the constraints found is the difficulty of making classrooms available for students in extracurricular periods, in order to allow greater autonomy and freedom for carrying out simulated practices without equipment constraints. Despite the fact that the school has four classrooms equipped with approximately twenty-two computers each, the number of courses that need this type of classroom is very high.

This factor could be circumvented if students used their personal computers. However, it appears that approximately 50% of students do not have a personal computer, or the equipment they have does not allow the installation of this type of software. Another important aspect is due to the fact that some students are still unaware of how the computer can help them in the learning process.

Nevertheless, a different class motivates students. This pre-disposition is of fundamental importance, and makes them want to acquire new knowledge. Simulators, when applied at appropriate times, help students acquire new knowledge.

In general, the students considered the use of simulators in learning very relevant and a good alternative to laboratory practices. However, when asked about what is most relevant for learning, "The simulators" or "Laboratory practices with physical equipment", most students considered both situations important, because they see them as a complement.

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VIDEO

Demonstration of the simulator – CISCO VIRTUAL DESKTOP

INSIGNARE

EDUCATION AND TRAINING ASSOCIATION, PORTUGAL

A2 Digital tools for formative assessment and self-regulation of students

GP1 EQAVET at Insignare schools

José Pegada

Pedagogical Headmaster

Carina Oliveira

CEO of INSIGNARE

INTRODUCTION

The European Quality Assurance in Vocational Education and Training (Reference Framework) was consecrated by the recommendation of the European Parliament and the Council of Ministers in the 18th of June, 2009, in order to improve Vocational Education and Training in Europe, providing authorities and operators with common tools in order to develop a culture of quality, promoting mutual trust, the mobility of workers and learners, and lifelong learning.

EQAVET is a voluntary instrument that allows documenting, developing, monitoring, assessing and improving the efficiency of VET and the quality of current practice, through the implementation of regular monitoring procedures, involving internal and external evaluation strategies and progress reports.

The EQAVET quality cycle that will be implemented comprises four interconnected stages:

1. Planning (setting up appropriate and measurable goals and objectives);
2. Implementing (establishing procedures to ensure the achievement of previously defined goals and objectives);
3. Assessing and The European Quality Assurance System: designing mechanisms to collect and process data in order to make informed assessments;
4. Reviewing (developing procedures in order to achieve the targeted outcomes and / or new goals based on evidence generated to ensure the introduction of necessary improvements).

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Taking into account that indicators are a fundamental pillar in the definition and implementation of a quality assurance process in accordance with EQAVET, ANQEP has chosen a set of criteria for schools to initiate their Quality Assurance System.

These indicators are:

Completion rate in VET programmes:

a) Percentage of students/graduates who complete VET courses, in relation to the total number of students/graduates who join those courses.

Placement rate after finishing VET programmes:

a) Proportion of students/graduates who complete the course of VET and enter the labour market, training or other destinations, from 12-36 months after completion of the course.

Use of acquired skills at the workplace:

a) Percentage of students/graduates who complete a VET course and work in jobs directly related to their course/education or training area;

b) Percentage of employers satisfied with the trainees who have completed a VET course.

The Vocational School of Ourém considers that an institution of vocational education and training can only achieve the objectives proposed with full commitment and responsibility of all stakeholders in the educational process.

In this sense, depending on the concrete objective to achieve and/or strategies to develop in order to achieve it, it is necessary to clearly define and assign responsibilities so that each intervener can be aware of its role and the goals expected from him / her, so that he / she can take responsibility for them.

DEVELOPMENT

However, in order to integrate this concept, we must first understand how Insignare is structured so that it makes sense to implement such strategies and methodologies that lead to the creation/integration of quality systems.

Mission – To contribute to the development of the municipality of Ourém, but also of the entire region where it operates, training young professionals equipped with the skills and aptitudes of their technical professions, providing education for citizenship, fostering innovation and entrepreneurship, and seeking an effective and lasting relationship with the labor market.

Vision – To be a regional reference in vocational education in technical areas, as an institution that fosters talent, discovered in each and every young person, by empowering and strengthening the regional business environment, based on the quality and differentiation of teaching, ethics, professionalism and the search for individual and collective growth of all students.

Strategic goals – In an organization, values "speak" and behaviours "deliver". Recognizing that the construction of a strong identity and culture is determined by overcoming our challenges, while sharing with the community core principles we believe in:

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- Valuing and respecting people;
- Social responsibility and integrity;
- Innovation and ambition;
- Inclusive education with a culture of diversity;
- Investment in internationalisation through participation in projects supported by the Erasmus+ Programme;
- Education towards citizenship, where the following competencies are highlighted.

FIGURE 13 Strategic goals of Insignare Schools

Based on the initial diagnosis regarding the organization's current position, below we present a prospective vision and trends for the next three years during which this educational project will be in effect, in a very concrete and quantifiable way, perfectly aligning the EQAVET quality levels with its organizational strategy.

GO	General Objectives	Description	Goals (in 3 years)
GO.1	Completion rates of vocational courses	Percentage of students completing vocational courses compared to the total number of students enrolling these same courses	**67%**
GO.2	Employability rate	Percentage of students who conclude the vocational course and are present in the labour market or who have continued their studies	**70%**
GO.3	Employment rate in the training areas of the course	Percentage of students working in professions directly related to the course / Education and Training Area they concluded	**50%**
GO.4	Employer satisfaction	Percentage of Employers who answered "Satisfied" and "Very Satisfied" in the satisfaction survey about employed graduate students	**80%**
GO.5	Students' satisfaction	Percentage of students who rated INSIGNARE's overall performance "Good" or "Very Good" in the satisfaction surveys conducted	**80%**
GO.6	Satisfaction of guardians / parents	Percentage of parents and guardians who rate INSIGNARE's overall performance as "Good" or "Very Good" in satisfaction surveys conducted	**80%**
GO.7	Investment in teachers and trainers	Percentage of teachers and trainers participating in training programs in relation to the total number of INSIGNARE teachers and trainers	**80%**

According to the Indicator Monitoring Framework (INS111 - QMI) of INSIGNARE, annual goals will be defined regarding specific objectives, whose regular monitoring will measure the path followed by a certain general objective, with sufficient useful time for its rectification in case of possible deviations from the target.

That is, each General Objective is composed and divided into several Specific Objectives, which support it and which contribute to its achievement.

Therefore, a table of correspondence between specific objectives and general objectives is presented below:

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SO	Specific objectives	Description	General Objectives they support
SO.1	Reduce school dropout	Percentage of students that drop out from school completion, measured in relation to the number of students that initiated the vocational courses.	**GO.1** **GO.5** **GO.6**
SO.2	Reduce absenteeism	Percentage of the difference between the percentage volume of given lessons and percentage volume of lessons attended by students	**GO.1** **GO.5** **GO.6**
SO.3	Improve school success	Percentage of students without overdue modules in relation to the total number of students enrolled in professional courses during the period in question	**GO.1** **GO.5** **GO.6**
SO.4	Improve the success rate of Professional Aptitude Project in the third (12th grade) year	Percentage of students who successfully complete the PAP within the defined time-frame, in relation to the total number of students attending the training cycle	**GO.1** **GO.5** **GO.6**
SO.5	Intensify the relationship between the Students' Guardians during the three academic years	Percentage of students' guardians that attend the courses and attend the final assessment meetings in each term	**GO.1** **GO.6**
SO.6	Increase/Intensify the relationship between the companies/ employers of work context training (WCT)	New partnerships established, which can take the form of technical sessions/classes. com, school trips, and various forms of linking up with the job market	**GO.2** **GO.3** **GO.4** **GO.5** **GO.6**
SO.7	WCT companies' satisfaction	Percentage of the sum of "Satisfied" and "Very Satisfied" answers in the trainee's overall performance questionnaire, in a specific item of the WCT evaluation model	**GO.2** **GO.3** **GO.4** **GO.5** **GO.6**
SO.8	Perform labour market integration sessions	Number of job search sessions	**GO.2** **GO.3** **GO.4** **GO.5** **GO.6**
SO.9	Adequate the student's profile to the profile of the internship site, trying to maximize its employability	Percentage of the sum of "adequate" and "very adequate" ratings in relation to the location of the internship in question	**GO.2** **GO.3** **GO.4** **GO.5** **GO.6**
SO.10	Students' degree of satisfaction with teachers' performance	Percentage of students who rate the performance of EPO teachers as "Good" or "Very Good" in satisfaction surveys	**GO.1** **GO.5** **GO.6**
SO.11	Students' level of satisfaction with the performance of the class instructors	Percentage of students who rated the performance of their classroom instructors as "Good" or "Very Good" in satisfaction surveys	**GO.1** **GO.5** **GO.6**

SO.12	Students' degree of satisfaction with the performance of the course instructors	Percentage of students who rated the performance of their course instructors as "Good" or "Very Good" in satisfaction surveys	**GO.1** **GO.5** **GO.6**
SO.13	Students' degree of satisfaction with the PAP tutors' performance	percentage of final-year students who rate the performance of their PAP instructors as "Good" or "Very Good" in the satisfaction surveys conducted	**GO.1** **GO.5** **GO.6**
SO.14	Degree of student satisfaction with the provision of administrative and pedagogical services	Percentage of students who rate the services provided by the secretariat, pedagogical support office, technical supervision and pedagogical direction as "Good" or "Very Good" in the satisfaction surveys carried out	**GO.5** **GO.6**
SO.15	Degree of student satisfaction with the provision of bar and cafeteria services	Percentage of students who rate the Bar and Cafeteria services, combined, as "Good" or "Very Good" in satisfaction surveys	**GO.5** **GO.6**
SO.16	Degree of student satisfaction with facilities and cleanliness	Percentage of students who rated the facilities and their cleanliness, combined, as "Good" or "Very Good" in satisfaction surveys	**GO.5** **GO.6**
SO.17	Creation a Training plan tailored to the pedagogical needs of teachers and trainers	No. of Training plan sessions dedicated to the training of teachers and trainers	**GO.7**

PLANNING

The first phase of the quality assurance process is Planning.

This phase is part of the joint reflection between internal and external stakeholders on "where I am" and "where I want to be", taking into account several indicative descriptors (Annex 1), which support VET providers in self-assessing the effectiveness of their current practice and identifying future strategies.

Firstly, we consider that the EPO, following the process started in 2015 towards alignment with the EQAVET framework, possesses a strategic vision and provides visibility of processes and outcomes in its management.

We have aligned all of the organization's strategy documents based on the EQAVET quality system, thus relying on its full compliance and outlining from the beginning, all the organization's current planning, with no discrepancies or parallel systems of operation.

The results can be verified in the following evidence:

i) The fact that the goals and objectives of the EPO, reflected in its educational project and, consequently, in the EQAVET base document and action plan , have been aligned with European, national and regional policies, in particular by meeting the goals set out in the POCH notices regarding applications for professional courses, including Ordinance 60-A/2015 of 2 March (Article 18);

ii) The integration of the baseline document in the educational project itself, so that it is included in the school's designs and objectives on a daily basis, and not just as a parallel process, having been discussed and approved by the Insignare Board of Directors, which includes the Ourém City Council, ACISO (business association) and CEF (Centro de Estudos de Fátima), as external stakeholders, and also in the pedagogical council of EPO (composed of several representatives of internal stakeholders), confirming that the outlined actions reflect the strategic vision shared by internal and external stakeholders;

iii) Considering the existing QMS (Quality Management System) ISO9001:2015, which defined the integration and monitoring of the goals/objectives in that QMS, INS111 - QMI and INS125 - QIRO, being done in a systemic and controlled way, perfectly aligned with EQAVET. Thus, it is understood that it is adequate, and it is the ultimate responsibility of the pedagogical direction to monitor the process as a whole, as mandated by the statutory rules of the EPO, in collaboration with the GGQ (Quality Management Office);

iv) The action plan is developed in the planning stage and leaves no doubt as to who is responsible for the operationalization and monitoring of the entire quality assurance process, in all intermediate and global goals considered within it;

v) We also seek to establish appropriate partnerships to achieve expected goals, not only those embodied in the scope of this process of quality certification, but also others that seem important in the implementation of the school's educational project. As an example, under WCT, in addition to the internship protocol, a partnership agreement is signed with each company/entity, opening the doors to a more intense and lasting relationship between both parties, believing that it can leverage the employability of graduates and also maintain channels of dialogue with the school in future prospects;

vi) Audit Report on the Quality system, which is aligned towards the EQAVET Framework, with mention and evidence of its full effectiveness;

vii) For the sake of transparency and as a critical condition for the successful implementation of the EQAVET quality assurance system, all documents inherent to it are made available on the EPO website.

Therefore, the quality assurance system is explicit, in the clear definition of goals, operationalization mechanisms and those responsible for evaluation indicators. In addition, all EQAVET documentation resulted from a series of work meetings between the pedagogical directors of the two schools of Insignare: professional school of Ourém (EPO) and professional school of hotel management of Fátima (EHF), with the commitment of a group of supporting teachers, sustained by the experience gained over the past 3 years of implementation.

It is, therefore, a system built in the light of the inherent needs of the school and with an intrinsic articulation in its operation.

Secondly, and as has also been made explicit above, there is a clear and direct involvement of internal and external stakeholders in the implementation process of the quality assurance system.

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Thus:

(i) The teachers participate annually in working groups, whose objective is the updating/amending/ elaboration of the internal documents of the school, as well as in the definition of the intermediate goals that appear annually in the Indicator Chart (INS111 - QMI), of the QMS, thus covering a bottom-up analysis of the needs perceived within the system.

For example, the Activity Plan for each school year is the result of a joint and coherent proposal of the course instructors and teachers gathered by subject area or individually considered, if they are the only ones teaching the subject.

(ii) In the advisory board, with the composition referred to and contained in the statutes (article 10), opinions are sought on the training needs felt in the business environment.

These suggestions are then sent by the pedagogical director to the technical supervisor, for analysis at the technical supervision meeting, which brings together all course supervisors, who also have a privileged perspective regarding these issues.

Within the EPO structure, the reflected and grounded suggestions are analyzed for the purpose of defining a final proposal to be sent to the EPO board, in the pedagogical council, whose composition ensures the involvement of internal stakeholders (see statutes, article 9).

In addition, the EPO management practice provides for continuous improvement of vocational education and training using the selected indicators (4, 5, 6a) and 6b3). As already mentioned, taking into account the integration of the monitoring of objectives/goals in the QMS, causing them to be regularly analyzed and their targets annually reviewed, based on continuous improvement.

Given an integrative and holistic view of the entire training process and the quality assurance system present in the EPO, it would not be possible to achieve all the goals of the general objectives without the existence of support processes, called specific objectives. The main purpose of these is to serve as intermediate measures, which are present continuously throughout the training cycle.

If the intermediate goals are not achieved, the pedagogical director, together with the person or people responsible for achieving results, should reflect on what is failing, and may and should define new operational mechanisms aimed at achieving the goals set under the internal documents of the EQAVET quality assurance system. Thus, improvement plans arise, in a perspective of continuous improvement of vocational education and training provided at the school.

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IMPLEMENTATION PHASE

Regarding the principle of strategic vision and visibility of processes and results in VET management, we understand:

i) that human and material/financial resources are dimensioned and allocated in order to achieve the outlined objectives in the action plan for the various indicators. The action plan contemplates the intervention/ concrete action of each of the EPO's collaborators (teachers, course instructors, class instructors, PAP instructors) in reaching perfectly defined goals that have been clearly assigned to each professional.

In relation to what was already being done, this quality assurance system ensures greater clarity throughout the process and a more precise and tighter control of the results of the various goals agreed upon and included in the basic document and action plan;

ii) With a focus on continuous improvement, which is an integral part of quality assurance systems, the school provides its teachers/trainers with training courses to develop their professional skills, as has been done gradually. In order to leverage not only the success rate in the various subjects (especially the socio-cultural and scientific subjects, where the results have shown that students have more difficulty in successfully completing the modules), but also the completion rate of courses in general, this academic year 2019/2020, aligned with the implementation of the EQAVET system and the need to achieve the set targets, some pedagogical guidelines were defined, namely:

   a) the increasing use of multidisciplinary project pedagogy (Project Based Learning, at the level of the best European standards) in the integrated assessment of the modules of the various subjects.

   b) the use of an evaluation model, created from scratch, which allows respecting the individuality and specificity of each student, in its various aspects, both as a student and as a person.

   c) the diversification of methodologies and tools that promote the success of the teaching-learning process.

With regard to the involvement of internal and external stakeholders at the implementation level, since:

i) All teachers attend at least two of the trainings referred to in the previous point regarding quality management systems;

ii) All teaching staff participate periodically (quarterly) in specific meetings to ascertain and collect data on indicators;

iii) With regard to collaboration with external stakeholders, the teachers of the technical area of the various courses have strengthened and updated their knowledge, through: internships and training in foreign companies/organizations (supported by the Erasmus+ program); the intense relationship they have with companies in the technical area they teach, which can be seen, for example, by conducting classes.com, sessions/technical sessions and/or master classes; and also in the relationship achieved in the monitoring of WCT;

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(iv) In each school year, partnerships with companies/entities are formalized, in a specific document, in order to achieve set targets. These partnerships were and will be the basis of the relationship with external stakeholders, namely in the collaboration with the EPO in technical sessions/classes.com, field trips, on-the-job training and other informal and/or occasional relationships.

Regarding the implementation of the criterion and principle of continuous improvement of VET, this happens at two different stages:

i) when changes are introduced (e.g. in the defined targets or in the proposed operationalization mechanisms), in relation to what was being done in the school, phasing the pursuit of the targets in a perspective of continuous improvement of results (see base document and action plan);

ii) when improvement plans are foreseen and whenever there are deviations from the defined goals that are diagnosed through early warning mechanisms (e.g. overdue modules and unjustified absences at the end of the school term).

Basing the collection and processing of data in various instruments, such as: surveys to employers; to students; minutes of class councils, among others, whenever the analysis of the results obtained shows non-compliance with the predefined goal or a deviation on the way to its achievement is observed. In this case, an improvement plan should be prepared/negotiated that reflects the results of the self-assessment carried out, the diagnosis of the causes that prevented the goal from being reached and proposes action so that the goal is effectively achieved.

This cycle is continuous and assumes its implementation at this time, but also in the next cycle.

ASSESSMENT PHASE

At this stage of the EQAVET quality certification process, we understand that we have met the EQAVET principles.

In relation to the principle of strategic vision and visibility of processes and results in the management of VET, several early warning mechanisms are inscribed in the action plan, for the possibility of quarterly analysis (end of the 1st and 2nd school terms), possible in some intermediate targets, namely: number of overdue modules per subject; number of unjustified absences; number of dropouts; attendance rate of parents in meetings for the submission of assessments; assessments of PAP tutors in intermediate reports; number of classes. com/technical sessions and field trips.

If in this assessment, under the responsibility of the class teachers, the PAP supervisors, the technical supervisor and, ultimately, the pedagogical director, who will gather a concerted collection of the results, there are deviations from the defined partial or intermediate targets, improvement plans will be drawn up. These are negotiated, as has also been mentioned, between those responsible for achieving the goals and the pedagogical direction, with a view to continuous improvement of processes and results. At the end of each school year, an overall assessment is made, not only regarding the results of each specific goal, but also of the overall objectives.

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Regarding the principle of the involvement of internal and external stakeholders, their contribution is carried out in the following manner:

i) The annual assessment of the goals is formally carried out by the School Board, a support body for the pedagogical management. This body has, in its composition, representatives of several internal stakeholders (three teachers, one employee, the course supervisor and the headmaster);

ii) In the advisory council, where several representatives of external stakeholders present and discuss the obtained results;

iii) In a compartmental way through monthly internal meetings with the 3 associates (Municipality of Ourém, Associação Empresarial de Ourém / Fátima and Centro de Estudos de Fátima);

Note that, from another perspective that not only the EQAVET results, but in the evaluation of the formative journey of the students, the external stakeholders also intervene in various situations and moments, such as:

i) In Work context Training (WCT), since part of the final assessment is given by the WCT Tutor of the company/host company;

ii) The jury of the Professional Aptitude Tests (PAP) includes representatives of business associations, trade unions, a personality of recognized merit in the area of vocational training or in activity sectors related to the course, in addition to the class supervisor, technical supervisor, PAP supervisor, course supervisor and the pedagogical director (external and internal stakeholders);

iii) Employers of certified students are asked to respond to a satisfaction survey regarding the performance of former students in various competencies.

Finally, regarding the principle of continuous improvement of VET using the selected indicators, it can be considered that there is compliance in the EPO's management practices, because:

i) We consider that the periodic self-assessment framework consensualised between the internal and external stakeholders is embodied in the targets set and, in the evaluation, indicators provided for in the action plan annexed to the EQAVET base document which, having been approved or having obtained a favourable opinion, is understood to be born from the consensus expected between the aforementioned typology of stakeholders.

ii) With regard to the fact that the improvements to be introduced at the level of processes and results take into account the satisfaction of internal and external stakeholders, satisfaction surveys were applied to the employers of graduate students, with a degree of 96% satisfaction in all parameters. Thus, we understand that we must continue to work, every day, to maintain this excellent result that exceeded expectations. Regarding external stakeholders, this is the only way in which we measure the degree of satisfaction.

iii) Concerning internal stakeholders, to date, satisfaction surveys are only applied to students at the end of each school term, where they are asked to rate their satisfaction with the teachers, services and infrastructure of the school. The results are statistically treated and there may be intervention by the pedagogical director or executive director in order to understand and remedy any problem that becomes evident through the interpretation of these results. Improvements can always be made to the processes and results, depending on the results of the satisfaction surveys, but, to

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date, they are limited to a joint analysis between the concerned individual and the pedagogical director about what went wrong. There is also a council of students, where all class delegates have a seat, in which they are requested to give their opinion, so that a consensus may be reached on how to increase the degree of student satisfaction, without losing sight of the parameters of rigor and demand that have always guided the EPO's actions;

We should extend this survey to the teaching staff so that there is compatibility and argumentation between the students' opinion and the teaching staff's vision, also contributing to the process of continuous improvement.

Similarly, a survey involving parents is planned to be included, so as to obtain a 360º view of the whole system.

REVIEW PHASE

Concerning the principle of strategic vision and visibility of the processes and results in the management of VET, it is expected that, depending on the annual result analysis, a report is elaborated responsibility of the school Headmaster, to be presented:

i) At the first pedagogical board meeting in September for analysis and discussion;

ii) At the first meeting of INSIGNARE's management, starting in September for analysis and discussion.

The analysis of this document will determine the need to develop improvement plans, which will then be consensual and agreed between those responsible for achieving the goals and the pedagogical director.

The annual result of the evaluation of these goals, as well as the procedures proposed for the review of existing practices will be published on the school website, sent by email to all teachers and shared on the TEAMS™ platform, accessible to the entire educational community.

In addition to the quantitative assessment, tutors can leave comments and suggestions in a specific section created for that purpose, in the WCT assessment form.

Regarding the principle of continuous improvement of VET using the selected indicators, it is conducted as follows:

i) Based on the results obtained and the calculation of the goals that were left unachieved, improvement plans are elaborated, based on a process of reflection and negotiation among those involved. It is at this stage that other specific objectives and/or intermediate goals can be created, which are considered to be more efficient for achieving the global goal, which in the action plan is called "general objective".

   These changes should be publicized in the means already mentioned above. It is also at this stage that reflection is promoted about the way we did it and whether or not we should do it differently and how

ii) This revision exercise is done annually, after the annual results are determined and analyzed and taking into account the legal and/or pedagogical guidelines in effect

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RESULTS

Insignare, Escola Profissional de Ourém (EPO) and Escola de Hotelaria de Fátima (EHF), after submission of the project described above, were audited by external experts, in order to obtain the EQAVET Seal.

Below the conclusions of their reports are presented.

EPO - Vocational School of Our

Overall assessment of the aliment of the quality assurance system with the EQAVET Framework

EPO participated in the ANQEP pilot program related to the alignment towards the EQAVET framework. This participation proved to be important so that today, our school has consistent quality assessment practices aligned with the EQAVET framework, which have a very high degree of maturity and consolidation.

RECOMMENDATIONS FOR IMPROVING THE VET QUALITY ASSURANCE PROCESS

The EPO quality assurance process is now well established, and it is important that the existing self-assessment and review mechanisms remain in constant update and result in careful analysis, so that they have a significant impact on the quality of the training given at school. The implementation of an internal stakeholder assessment system is recommended, allowing for a real appreciation of the work of all those involved in the school's teaching process.

CONCLUSION

Given the results of the evaluation of the alignment process of the quality assurance system with the EQAVET Framework, developed by the Vocational School of Ourém, we propose the attribution of the EQAVET Seal.

EHF – Escola de Hotelaria de Fátima

General Assessment of the process of alignment of the quality assurance system with the EQAVET Framework

EHF reveals a consolidated position regarding the alignment of the quality assurance system towards the EQAVET framework. This consolidated position stems not only from a very clear strategic definition, by the institution, regarding the development and implementation of a quality cycle, but also from an experience matured over the past few years that involves the search for certification under the ISO 9001:2015 Standard, already implemented in the INSIGNARE entity since June 2017 and the participation in the pilot project of the Verification of Alignment of the Quality Assurance System with the EQAVET Framework, led by ANQEP.

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Recommendations for improving the VET quality assurance process

Despite demonstrating a consolidated position regarding the Alignment of the Quality Assurance System with the EQAVET Framework, we recommend EHF to:

- Develop new strategies to stimulate a more continuous participation of external stakeholders, despite recognizing the efforts and initiatives already taken by EHF. Ensure that they participate from the definition of the institution's strategic objectives and not just in a sporadic fashion.
- Implement an employee satisfaction questionnaire;
- Publicize and disseminate more clearly the results of the satisfaction questionnaires of stakeholders (internal and external) and post them on the institution's website, as well as the interim results.

CONCLUSION

Given the results of the evaluation of the alignment process of the quality assurance system with the EQAVET Framework, developed by the Escola de Hotelaria de Fátima, we propose the attribution of the EQAVET Seal.

GP2 "A Digital Tool for Regulating Student Learning Assessment in Professional Courses and its instruction manual"

INTRODUCTION

Looking back to 1989, where in Portugal, VET system was (re)created, one of the basic standards stated that each student should learn at their own pace.

In current days that statement is still one of the most important and truly the main difference between VET and other educational systems.

The purpose of all educational systems should be to get all students to learn, using all technology and pedagogical resources they have to offer.

FIGURE 14 Engaging learning through technology

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Therefore, at Insignare we developed a system for innovative pedagogy, and a consistent assessment tool which focused tremendously on the student.

The principle behind the Tool: Innovative and individual Methods concerning teaching and assessment leads to an engaging Education that sets you apart.

In the twenty-first century, significant changes are occurring related to school, finding different ways in which we can help student achieve the same end goal.

In 2010, UNESCO recommended the following teaching strategies for the twenty-first century: experiential learning, storytelling, learning through enquiry, appropriate assessment, future problem solving, outside the classroom learning, and community problem solving.

We consider a holistic approach to teaching, with the introduction of competences approach, and skills recognition, moving the discussion to the importance of understanding different pedagogies for different students, and the ability of combining discrete teaching practices.

Students enter school with a vast range of differences on several dimensions, which together determine how well and how fast they will learn at school.

Most students have short-term memory, therefore, new methods of transfering knowledge concerning long-term memory need to be adopted.

> *By definition "Learning the text by heart, ignoring the meaning, understanding – is known as a superficial approach, and an integral and critical assessment, the study of the material is known as a deep approach." "Superficial learning is a superficial approach; it is the reproduction of knowledge, the teacher-regulated training, passive epistemology, dual vision, and the consumption of knowledge. Deep approach, knowledge transformation, self-regulatory learning, active epistemology, relativistic views, and knowledge building approach can lead to deeper levels of learning".*
>
> *In, Bernard-Cavero and Levot-Calvet (2018), New Pedagogical Challenges in the 21st Century: Contributions of Research in Education, IntechOpen.*

Currently, we focus on using active and innovative teaching methods, while at the same time complementing them with more traditional ones (tests, brainstorming, case study, group teaching methods, etc.).

This understanding is even explained by the modern methodological principle of science—the principle of addition and complementation, by Bernard-Cavero and Levot-Calvet (2018).

In education, the understanding of learning outcomes has shifted from knowledge, or knowledge and skills, to the formation of competencies. If knowledge is formed consistently, then competencies develop in a complex manner.

Competencies are difficult to form in one lesson, so we need to implement learning strategies focused in the long term.

Training strategies are aimed at competence – the expected results of education. Strategies for active, innovative teaching, project-oriented, and playful learning can materialize the concepts of constructivism.

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The active use of innovative teaching methods by teachers is a necessity, and should be adapted for every single student. In Portugal this is also a mandatory principle based on the recent legal changes for "Diversity and Inclusion" Laws, which establishes the principles and norms that guarantee inclusion, as a process that aims to respond to the diversity of needs and potential of each and every student, by increasing participation in the learning processes and in the life of the educational community.If greater strategies and methods of teaching are implemented, curriculum will become more interesting, student's cognitive activity will increase, shaping the experience of solving nonstandard problems.

A good teacher constantly improves his didactic skills, selects, and develops new methods and technologies of teaching. This is one of the world trends in the development of education: the introduction of a competence approach, informatization, globalization and diversification of education.

Teacher decides the design of the content, methods, strategies, and technologies of education, but the journey starts from the learner's perspective: **How can I learn better?** This is the crucial question in our system and it´s the starting point, the analysis of the learner's voice.

Howerver the teacher is never alone. We have a Multidisciplinary Team that analyses the most difficult cases and help develop plans in order to combat difficulties pupils might be facing.

By doing so, we also empower students in their own learning process. This requires putting the student at the center of the process while providing adequate learning contexts, methods and tools that enable the development of targeted and traced competences.

Students need to learn ways in which they can develop their capacity to solve situations that are commonly encountered in everyday professional life.

This is best achieved by including contextual variation, through Simulations, Problem-Based, Case-Based and Project-Based Learning.

Through this kind of learning activities students should develop their competences in a greater fashion than passively reading a large number of text-based documents.

Having all this in mind we developed a tool, based on Excel, that tracks student progress from day 1 to their final school day.

No one is left behind, and we do not give up on any student.

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About the Tool: how we use it, how it is built and the results

The most common evaluation spreadsheets used by teachers are similar to figure 15:

FIGURE 15 Example of a common assessment spreadsheet

		Cognitive features				Attitudes and Values (Soft skills)					
	Instruments	Test 1	Test 2	Work 1	Work 2	Participation	Collaboration	Engagement	Critical Thinking	etc...	Total
N.º	Name	20%	20%	10%	10%	10%	10%	10%	10%		100%
1	student 1										0
2	student 2										0
3	student 3										0
4	student 4										0
5	student 5										0
6	student 6										0
7	student 7										0
8	student 8										0
9	student 9										0
10	student 10										0
11	student 11										0
12	student 12										0
13	student 13										0
14	student 14										0
15	student 15										0
16	student 16										0
17	student 17										0
18	student 18										0
19	student 19										0
20	student 20										0
21	student 21										0

However, this tool doesn't allow easy distinction of student needs, rhythm, etc...

We evolved teacher evaluation in our VET courses to a different level.

If each student is different, then we must start from that point of view and create an evaluation sheet unique for each student.

The formatting is simple and can be used by any teacher with low informatic skills, by using a simple Excel tool. Something like figure 16 and 17.

FIGURE 16 Example of a spreadsheet, regarding specifically to one student

I - STUDENT IDENTIFICATION

Student's name: Class: 0 N.º

II - COGNITIVE / PROCEDURAL DOMAIN (70%) | II.1 LEARNING OUTCOMES (56% of the final mark)

Learing Outcomes		Evaluation Instrument 1	Evaluation Instrument 2	(...)	(...)	(...)	(...)	(...)	(...)	(...)	(...)	MARK LO
Weighting (%)												0%
0												0%
0												0%
0												0%
0												0%
0												0%
0												0%
0												0%
0												0%
0												0%
0												0%
Total (%)	0%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,0
											Nota AE (80%) + Nota CT (20%) =	0,0

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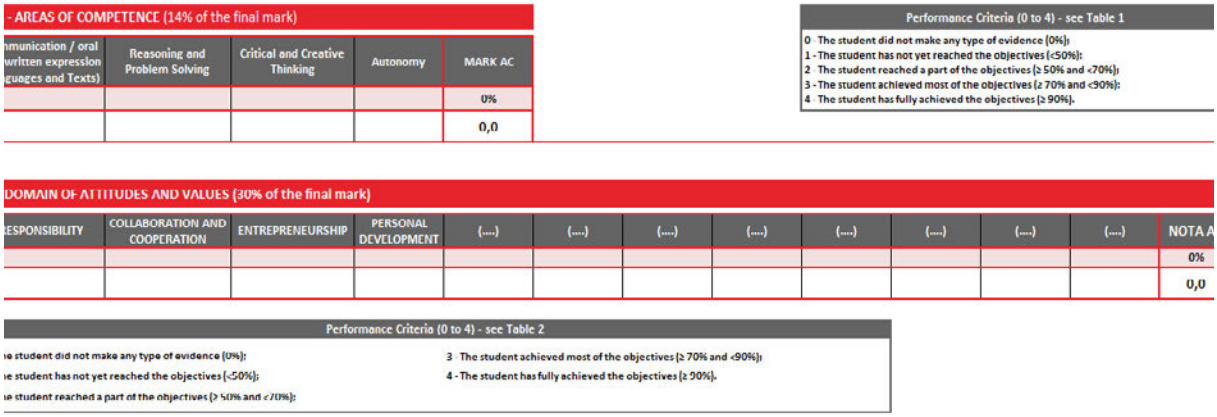

- AREAS OF COMPETENCE (14% of the final mark)

mmunication / oral written expression guages and Texts)	Reasoning and Problem Solving	Critical and Creative Thinking	Autonomy	MARK AC
				0%
				0,0

Performance Criteria (0 to 4) - see Table 1

0 - The student did not make any type of evidence (0%);
1 - The student has not yet reached the objectives (<50%);
2 - The student reached a part of the objectives (≥ 50% and <70%);
3 - The student achieved most of the objectives (≥ 70% and <90%);
4 - The student has fully achieved the objectives (≥ 90%).

DOMAIN OF ATTITUDES AND VALUES (30% of the final mark)

ESPONSIBILITY	COLLABORATION AND COOPERATION	ENTREPRENEURSHIP	PERSONAL DEVELOPMENT	(....)	(....)	(....)	(....)	(....)	(....)	(....)	(....)	NOTA A
												0%
												0,0

Performance Criteria (0 to 4) - see Table 2

ie student did not make any type of evidence (0%);
ie student has not yet reached the objectives (<50%);
ie student reached a part of the objectives (≥ 50% and <70%);
3 - The student achieved most of the objectives (≥ 70% and <90%);
4 - The student has fully achieved the objectives (≥ 90%).

Our «**Digital tools for formative assessment and self-regulation of students» is based on two domains:**

1. The cognitive domain;
2. The attitude and values domain.

Besides those two domains, we also created competences and skills for each Evaluation module, so that it would be clear were students are good or need improvement at.

In VET system it is very important to get students to learn effective knowledge – based around the course that they pursuing (cognitive domain). But it is also very important to promote what is known as "soft skills" (attitude and values domain).

As previously described, the concept is based on two major dimensions:

i) cognitive – acquisition of skills in terms of curricular know-how:

ii) attitudes and values – acquisition of skills in terms of moral intelligence.

Based on the EQAVET quality cycle (PDCA), our proposal for good practices starts with a planning sheet.

At the end of the assessment tool, it will be clear if a student has fulfilled the minimum standards in order to obtain a positive mark or which areas/skills/competences still need improvement.

To fully explain the approach of this tool, we created a Document: "Descriptive Memory".

We will now describe the process step-by-step, so that it can be understood.

The first thing to do is to download the evaluation tool and then follow these instructions:

Instruction manual on how to use this tool

All documents were created regarding the evaluation of the modules based on the principle of assessment of essential learning (academic and personal), appraising what students can do and demonstrate.

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Here are some very important considerations, so that there is uniformity, consistency and accuracy within the Insignare schools.

1. Never, in any case, there should be a renaming of files (in Excel) related to the evaluation. It is advisable to organize files for each class, subject and teaching module. For example, Class X → Subject Y → Module Z.

   The .zip file with the evaluation files is organized in this logic.

2. You can, without worry, change the name of the files in order to customize them according to the specificity referred to in the previous point. For example, PMP.18.21 (class) → Mathematics (subject) → Module 1, instead of Class → Subject → Module.

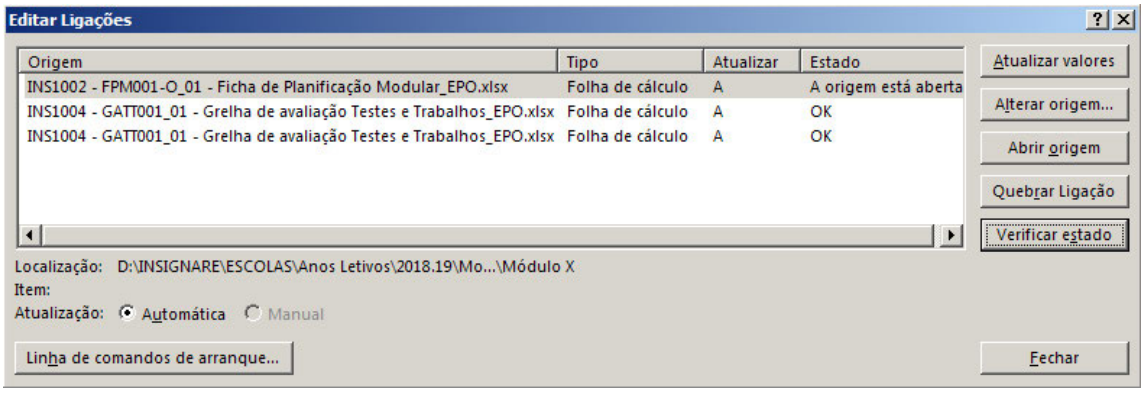
3. Once you have extracted the files and renamed them, you can copy the file "Module X" several times into the file "Subject", in order to have the number of files equivalent to the number of modules to teach in this subject. You can repeat this same procedure but copy the file "Subject" if you teach more than one subject. However, in regards to filling in the files, namely personal data, it is advisable to do this procedure module by module, after your evaluation is finished.

4. The present (and next) step is essential. After the previous changes, open the files in Excel, Modular Planning Sheet (INS 1002) and Modular Assessment Grid (INS 1003) for a given module.

   The **Modular Planning Sheet** does not have links to other files, so you do not need to do anything additional with it, other than filling it out.

   The **Modular Assessment Grid** has links to three files. You can check this by clicking on the "Data" tab and then "Get External Data". In the window that will appear, in the column on the right side, select the option "Edit Query".

FIGURE 17 Example of Excel Link Editing



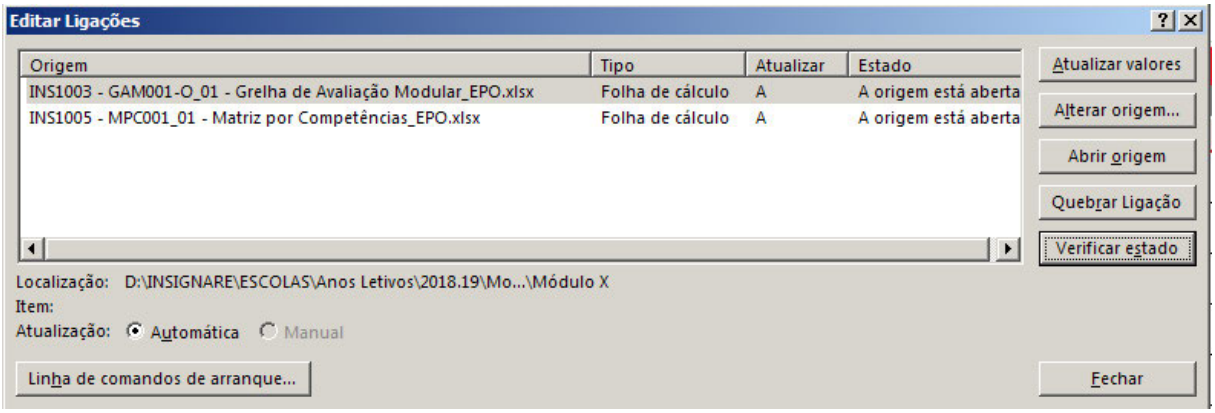
If the status is "The source is open" (I hope you did what was requested on the 1st paragraph of topic 4 correctly), then the document is being well read and you do not need to worry. As far as the Assessment grids files are concerned, the status will only change when they are open, as previously mentioned.

5. Inside the "**Assessment tool 1**" folder (it is the same for "**Assessment tool 2**" folder), open the documents "**Assessment tool grid**" (INS 1004) and "**Matrix by skills**" (INS 1005).

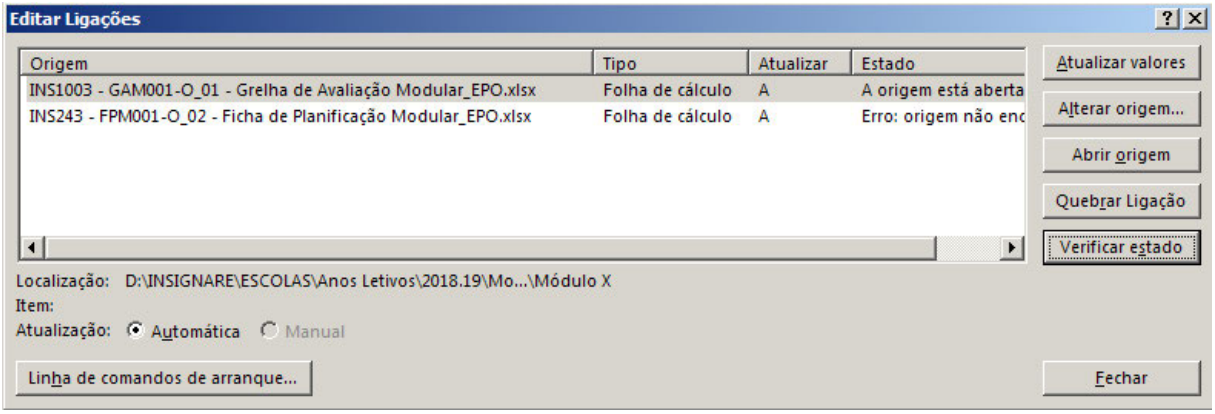
   When you are performing the checking procedures mentioned before, you will face the following issues presented in figure 18.

FIGURE 18 Example of possible issues regarding to the checking procedures

Assessment tool grid



Matrix by skills



To note: These mistakes only appear if you change the file name (Module X to a different name, for example).

Whenever the mentioned mistake appears, you should:

i. Click the document whose status is “Error: file not found”;

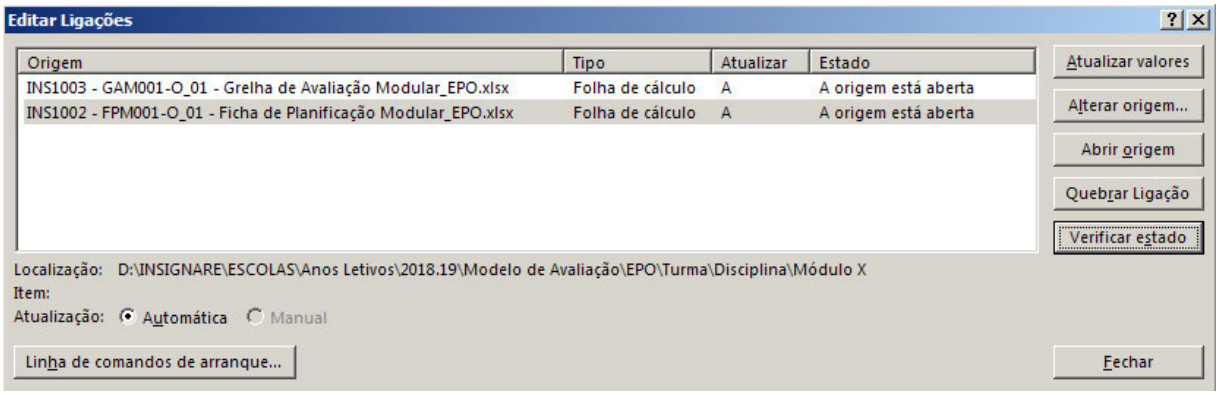
ii. Click the option, on the right side, “Change origin…”;

iii. On the pop-up window, locate the file that contains the documents previously extracted;

iv. Select the corresponding file and click ok.

It should develop as shown on figure 19.

FIGURE 19 Example of Excel link editing



As previously described, as the edit query indicates that the source is open, the reading is done successfully. You should then save the file in order to store and cumulate these connections.

These two files, are unprotected, so that they can carry out the previously mentioned operations, therefore the formulas can be erased or altered inadvertently. Thus, you must be careful. However, it´s advised that you always have a file with the original content, so that in case some errors occur they can be always recovered and replaced by the original.

Note 1: Pay attention to the following procedure. You should never, change the name of a sheet, in order to avoid the risk of the formulas being lost.

6. The basic file, for which many links exist, is the Modular Planning Sheet, and this document must be the first one to be completed, however there are some important steps:

   a) Write in text document (Word, for example), according to the fields to fill (General aims, Essential Learning, etc.), the respective texts.

   b) Format the texts using the following tab (the only one allowed in Excel):

   c) Whenever there is only one cell, (General Aims; Assessment Tools, etc.), you can copy the whole text at once and paste it directly to the right cell. It is advisable to paste to the formula bar, blank line, next to the f_x symbol, instead of doing it directly on the cell itself.

d) On the remaining fields, each line must be copied in separate, following the same pasting procedure mentioned previously.

e) If you decide to fill in the document directly, without using the copy/paste procedure, you cannot use (+, -, *, /) as a paragraph indicator, but only the > symbol. Furthermore, and only concerning the fields mentioned on c), to change the line you must click "ALT + Enter" at the same time.

7. The second file to be filled in, bearing in mind the number of links that you have, is the Modular Assessment Grid. This is the main file, that receives the various assessments from tests, work, etc. Its filling in must begin by the cover, on which you must write your name and school year.

8. The remaining fields will be filled in as soon as the Modular Planning Sheet is open.

   Afterwards, you must fill in each sheet with the student's name and number.

   After you have filled in the student's name and number for every student, you must select every student's sheet. In order to do that, you just must click the first student's sheet, pressing the "Shift" key at the same time, and then click the last student's sheet. This way, all the changes you perform on the first student's sheet will be repeated for all students. With all the students' sheets selected, you will fill in the fields related to the assessment tools that you will use and its percentages regarding their final mark. Some of the fields are locked and common to all subjects, while others are customizable. You have 10 different assessment criteria available.

   The sum of all percentages, that can be seen on the last column regarding the AE Mark and the CT Mark (essential learnings and common skills) should be 100%. After finishing the previous task, don't forget to deactivate the selection of all the students' sheets. In order to do that, just click with the right mouse button on any sheet and select "Ungroup Sheets".

The deleting of unused students' sheets is not advisable.

9. For every Test and/or Work performed, the filling in of a Skills Matrix is mandatory. There is a file named "Test 1" and another one labelled "Work 1". These files can be copied whenever you need them, bearing in mind the amount of tests and works to be performed throughout a given module. You must never change the names of the Excel files, whether they are inside or outside the files.

   In the Matrix by Skills document, you will find two sheets. One is labelled "Version to be filled in" and the other one is labelled "print version". This difference can only be identified when you print the document and /or in .pdf format. Consequently, you must use the "print version" to inform the students before the assessment, so that they know which learnings will be assessed, as well as the percentage of each one on their final mark.

   You must only fill in the "version to complete", the other sheet is just a copy. The fields to fill in correspond to the questions and the percentage attributed to each one. (0 to 20 values)

   Afterwards, they should distribute the percentage given in each question regarding the learning to be evaluated in them. If the sum of the partial percentages (in the learning) is different from the val-

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ue of the respective question, this indication will appear in line 31 in red. Whenever the percentages are distributed correctly, the green shading will remain on that line.

There are spaces for 17 questions. You can adapt the text of the questions freely, to match the nomenclature used in the evaluation documents (test and / or work).

10. In the Work and Test Assignment Grid, which is inside the "Test 1" and "Work 1" files, you will find some similarities to the Modular Assessment Grid. Again, many of the fields are automatically filled in by simply opening the respective files to which they are linked to. In order to know, in any Excel file, what links are available, just go to the "Data" tab and select the "Get external Data" option. The files that appear are those that will have to be opened so that they can be read.

    The questions are associated with the **Matrix by Skills file**, so they will be the same. Likewise, in the grid the learnings that are being evaluated in each question will be identified, these cells will be shaded, and the rest will be blank.

    To make it easier to obtain the evaluation, in each question, it is suggested to print the **Matrix by Skills** (version to be completed).

    Once again, as stated in point 6, if the sum of the partial percentages (with reference to the learning) is different from the value of the respective question, that indication will appear in line 26 in red.

    Evaluations for the "Test 1" folder will automatically appear on the **Modular Assessment Grid.**

11. Finally, let's see how you can copy the existing formulas in the Modular Assessment Grid if you have more evaluation elements. If you have more tests or works to evaluate, the procedure of reading this data from the respective files is very simple.

    First, you have to create the necessary files by copying the "Test 1" or "Work 1" files. You should then change the name of these files, for example, to "Test 2", "Test 3", etc. (for projects in the same procedure).

    In the **Modular Assessment Grid**, you should select all sheets (1 to 30) for the students, even if there are no students to evaluate. Then you should go to the test1 column (cells D11 to D26) and select those cells. You should copy and paste into one of the following free columns, for example, F11 to F26. Now you must press the "ESC" key and you will notice that only the new column is selected. Then go to the "Find and Select" tab and click on the "Replace" option. Then, in the line "Locate" should write "Test 1" (which is the name of the file that you want to change). In the "Replace by:" line, type "Test 2" (or the name given to the previously created folder). Finally, when you click "Replace All," the formula will be changed correctly, so that it can read the assessment from the new file.

RESULTS AND EVALUATION

Providing teachers with this Tool, along with the necessary training to use it, a document with simple instructions and a step-by-step peer support, we obtained good results with respect to student learning processes.

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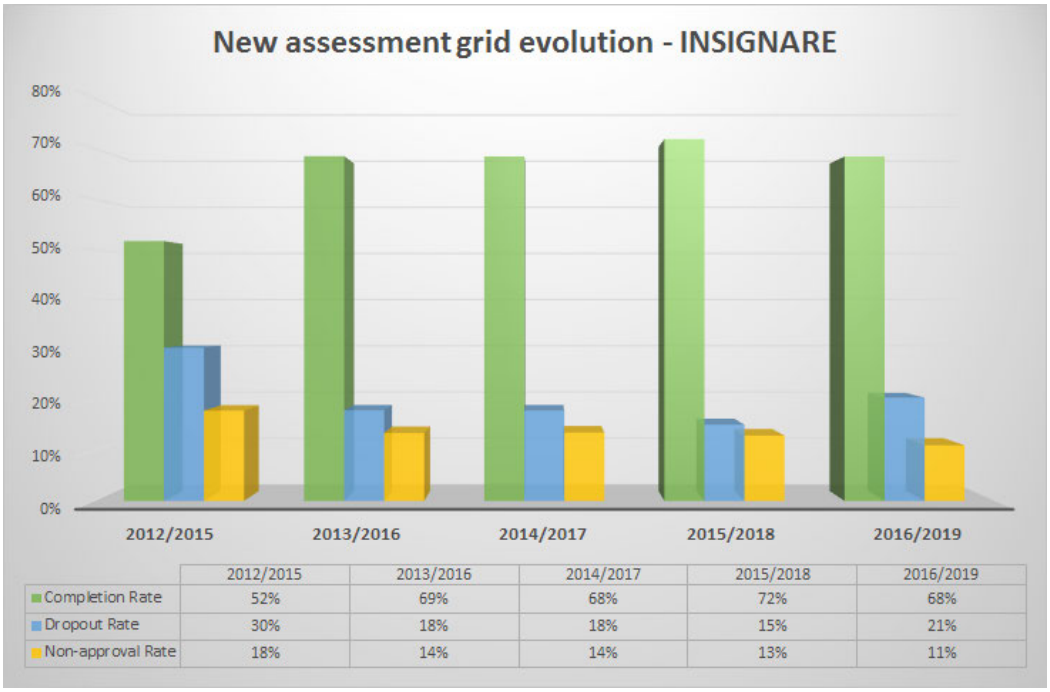

	2012/2015	2013/2016	2014/2017	2015/2018	2016/2019
Completion Rate	52%	69%	68%	72%	68%
Dropout Rate	30%	18%	18%	15%	21%
Non-approval Rate	18%	14%	14%	13%	11%

Since we started to use this tool, back in the school year 2015/2016, and with the following upgrades, the above results show us that the tool had made a significant impact during the students' 3-year formation. The completion rate is higher, and the non-approval rate is lower (students who finished the formation without certification). Our main effort is to achieve a decrease in the dropout rate, which will get us to achieve a higher completion rate.

What changes were acheived by some of our former students, who followed this process of pedagogical development?

The new teaching method applied in my last year at EPO, has shown that, in fact, concern for students is and will always be a constant for the school.

Throughout it, we, as students, were able to improve our skills in modules in which we had more difficulties, thus avoiding repeating the whole subject and, in a way, taking advantage of those in which we were stronger to compensate the weakest.

This change to the evaluation was implemented, in my opinion, in order to guarantee the total success of students, at a personal and professional level.

I think I can say that the quality and validity of the methods practiced are reflected in the high percentage of employability of the students

Joana Teixeira

Graduate in Management (2016)

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trained in this institution and in the cost (learning) / benefit (profession) of those who, with work and personal dedication, and the methods combined with competences of those who teach them, emerge successfully from it, to the labour market.

Regarding the form of assessment with the new evalution by competencies and not by the module method as a whole, for students it becomes a little easier, because when a student needs to repeat an evaluation, we only need to perform the competence or competences that have not been consolidated, thus not having to study for the skills already acquired.

This tool serves only as an example, as there is full focus present in the whole learning environment in many regards. “Whatever it takes” is an attitude that drives our teachers.

Gonçalo Bento

Graduate in Management (2017)

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EP RAUL DÓRIA – PORTUGAL

A3 Different ways of learning and teaching

GP1 Geocache Commercial Oporto - Interclass and Intercourse Project

Cecília Cruz and Laura Rocha
Pedagogical Direction

Joana Macedo
Teacher of the sociocultural area

Marina Moreira
Teacher of scientific area

Clara Lopes
Coordinator of the trade course

INTRODUCTION

The conceptual framework at the origin of vocational education, in the 90s in Portugal, is around 30 years old. It has assumed itself as an innovative foundation capable of overtaking the traditional school conception from the 19th and 20th centuries and capable of training the individual, the citizen, and the professional to live and work in the 21st century. Vocational education is oriented towards positive change, rethinking the pedagogical, organizational and evaluative practices, identifying alternatives and changes to be introduced into the VOCATIONAL SCHOOL OF THE FUTURE, given the new requirements of the 4th Industrial Revolution.

Aiming at the flexibility of the curriculum and the usage of pedagogical, organizational and evaluative innovation practices, the ERP challenged both the students and pedagogical teams of the 10th grade Professional Course for Trade Technicians (TCOM18) and the 10th grade Course Tourism Technician Professional (TTUR18) for an inter-class and interchange project. The project, ongoing since the academic year 2018/2019, is called GEOCACHE: COMMERCIAL OPORTO, and boasts traits of Project Based Learning (PBL), in which:

- true learning takes place during the project;
- teacher supervision in required;
- progress is focused on;
- students direct project paths;
- students make result impacting choices;

- the products are presented to an authentic audience;
- real-world experiences and challenges are based on.

Thus, further developing the project into the proceeding stages:

i) Identification of the problem that needs resolution;

ii) The entire class chooses the same problem and works on it after agreeing upon its local relevance;

iii) Each group specializes in one of the dimensions of the problem to be solved;

iv) Definition of resolution strategies;

v) Research (causes, people/entities involved, what is being done, what could be done concerning the 5 Ps…);

vi) Observation, conducting surveys, interviews, discussion groups, online consultation;

vii) Bibliographic research;

viii) Definition of an action plan in light of the potential 'solutions' found;

ix) Public presentation of potential solutions and results found.

DEVELOPMENT

During the organization of the 2018/2019 academic year, at the meeting of the pedagogical teams of all EPRD courses, the modules and short-term training units (UFCDs), appendices 1 and 2, were analyzed transversely, vertically and horizontally, in search of what could enhance project-based learning.

Some questions arose in regards to problems that were being listed, and allowed students to define hypothesis for answers upon brainstorming.

The TCOM18 and TTUR18 classes analyzed the 2016 "Porto de Tradição" program, in which the Municipality of Porto recognized 81 commercial establishments and entities as traditional and emblematic.

The following questions were raised: "How can the commercial side of Porto be shown to tourists? How can tourists understand the importance of commerce relating to the history of the city?"

These questions aim at promoting the commercial history of the city of Porto among domestic and international tourists.

The answer was to create a touristic itinerary for the Traditional Commerce of Porto using a Geocache app allowing tourists to reveal the history and economic importance of each traditional store using a QRCode.

The school norms were tweaked to carry out this project, both in terms of the timetable (the two classes were together for two afternoons per week), and in terms of the learning environment (classroom, city streets, library, Alfândega do Porto, Porto City Hall, and shops).

The curricular restructuring of both courses involves: the sociocultural component, with the subtheme "Regional Identity" used as basis; the scientific integration area, with the mathematics and geometry modules; the technical area with UFCD 0372 Commerce – Evolution of Organizational Models, the module 2 of

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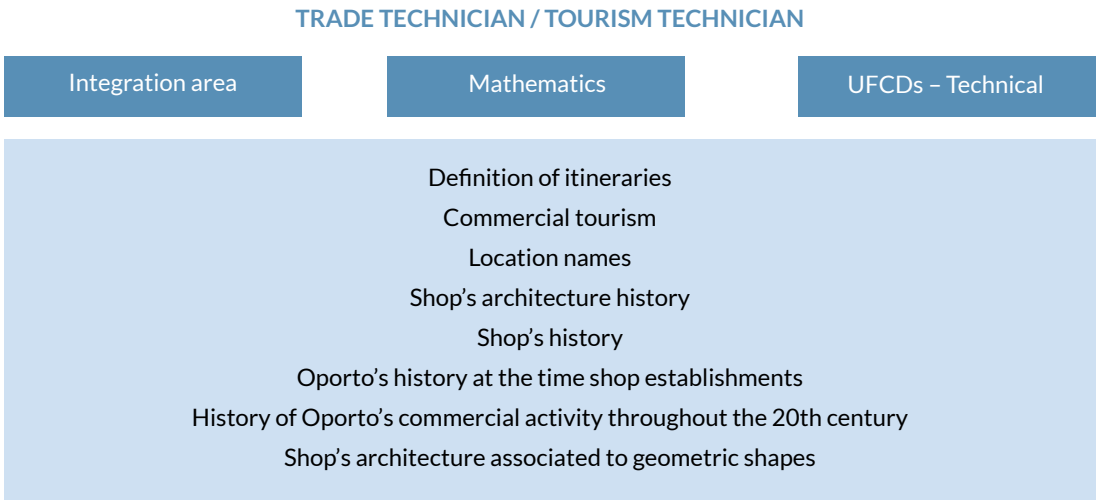
Tourism Information and Touristic Entertainment (TIAT); Interculturality is guaranteed by the Citizenship and Development component, mapped in the Curricular Development Grid of the Integration Project, in annexes 3 and 4.

FIGURE 20 Curricular reconstruction



The essential learnings foreseen for the 2018/2019 school year are:

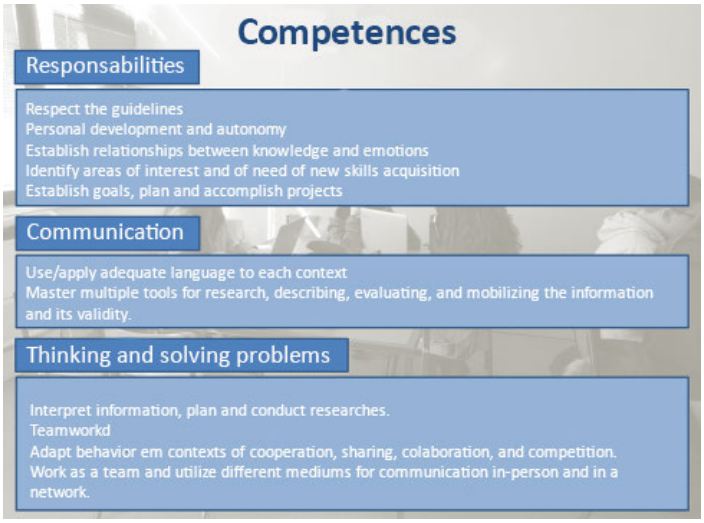
- to understand the Geocache APP;
- research and analyze the bibliographic evidence of the city history and each individual store;
- develop a photographic record, contact and interview the responsibles of each store;
- collect, treat, and interpret data in a methodological case study approach.

For the academic year of 2019/2020, the essential learnings focus on sketching tourist itineraries, characterizing the itineraries with centenary stores and stores of architectural interest, and creating the QRCode for each store.

For the projects' final year, 2020/2021, the aim is to elaborate the tourist itinerary according to the specificities of the Geocache application, to carry out a test with national and international tourists to assess the degree of satisfaction, to fulfill the authorization procedures with the entity that manages the Geocache application, and to offer and present the final product to the Commerce dept. of the Porto City Council.

The skills of the student's profile leaving the threshold of compulsory education set to be developed in this Project, which are displayed in figure 21.

FIGURE 21 Competences to be developed as per the PA



For the development of this project, institutional partnerships were established together with the Porto City Council, Porto Commercial Association, Porto Merchants Association, and the owners of each store considered as Traditional and Emblematic according to the regulations approved by the Municipal Assembly.

The instruments used for the evaluation of all research, recording and reflection activities, archived on Drive Office365 under the name GEOCACHE, are:

- student's e-portfolios;
- student's observation grids;
- interviews;
- peer feedback;
- student assignment check sheets.

The product expected to come out of this project at the end of 2020/2021 school year is represented in figure 22.

FIGURE 22 Prototype – Commercial Oporto

RESULTS

In the first year of the project, the two respective classes were challenged with three work proposals, which resulted in the following aims:

i) Getting to understand the Geocache app from a user's perspective;

ii) To select the stores considered as traditional and emblematic for inclusion in the project;

iii) To request authorization from store managers for photographing and audiovisual recording;

iv) To schedule interviews;

v) To conduct interviews.

For the second year of the project, in 2019/2020, considering that the students from the TCOM18 class will have work-related training during the first term, with the students from TTUR18 following on the second term, the work proposals have been divided into three phases:

Phase 1 - TTUR18 class on the 1st term - List the stores according to the characteristics of centenary and traditional stores of architectural interest, and define tourist itineraries;

Phase 2 - TCOM18 class on the 2nd term - Treat the footage collected in the interviews and build a QRCode with relevant information from each store;

Phase 3 - TTUR18 e TTUR19 classes on the 3rd term – Build a website with historical and economic information from each building/store from the itinerary.

OneDrive 365
User: geocache@rauldoria.pt
Password: 12345

EVALUATION

The intermediate balance of this project is very positive for the students, teachers involved, and store owners. The project was developed by students integrating and developing their professional profile. It boosted the collaborative work between teachers and involved shop owners, giving more visibility to traditional commerce through tourism. It is expected that, in the 2020/2021 school year, public presentation of the project leads to the strengthening of the school's relationship with the environment, validating the quality of training, and technical, professional, personal, social, and emotional skills, thus nurturing future opportunities.

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Modules / Subjects	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Portuguese																		
???	33	34	33	33	34	33	40	40	40									
French (novice)	Vinvre en français	Organisier le quotidien	Choisir un espace de vie	Cherche du travail	Etre au courant	Profite de la vie												
???	36	36	36	36	36	36												
French (continuation)	Parcours personnels	Parcours profissionaels	Autor d'un film	Médias et societé	Communication et globalisation	Autor d'une que'vre integrale	Recherche et avenir	Ethique et qualité de vie	Autor d'un project									
???	27	24	24	24	24	24	24	24	24									
Integration	Person and culture/ Regional identity/ A global challenge: Sustainable development	Communication and the construction of an individual / Integration within the European space / Culture or globalization of cultures?	The construction of democracy / Work, its evolution and status in the West / The role of international organizations.	Family structure and social dynamic / European citizenship / From the multiplicity of knowledge to science	Social construction / The development of new attitudes at work and employment: the entrepreneurship / From the world economies to the global economy.	Man-nature: a sustainable relationship? / Regional imbalances / The ends and the means: what ethics for human life?												
???	36	36	36	36	36	36												
TIC	Spreadsheets	Database management	Webpage's creation															
???	33	33	33															
Physical Ed.	JDC1 – Football	GIN1 – Gymnastics	OAFD1 – Badminton	Dance 2 – Social dances	Fitness 1	Physical activity / Health context 1	JDC2 - Volleyball	GIN2 – Gymnastics	OAFD2 – Track and field	Dance 2 – Latin dances	Fitness 2	Physical activity / Health context 2	JDC3 - Volleyball	GIN3 – Acrobatic gymnastics	Dance 3 – Latin dances	Nature exploration activity	Fitness 3	Physical activity / Health context 3
???	12	10	10	4	4	4	11	11	8	11	8	5	5	10	10	8	12	6
Math	Statistics (A3)	Probabilities (AT)	Geometry (A1)															
???	27	30	36															
Geography	Portugal's general picture: Topography	Portugal's general picture: Climate	Portugal's general picture: Water	Portugal: The population	Portugal: The urban areas	Portugal: The rural areas	Portugal: People and assets mobility	Current tourism										
???	33	33	33	24	18	18	18	21										
History of culture and arts	Culture of the *Ágora*	Culture and the senate	Culture of monasteries	Culture of cathedrals	Culture of palaces	Culture of stages	Culture of ball rooms	Culture of train stations	Culture of cinema	Culture of the virtual space								
???	18	18	18	18	24	18	18	24	21	21								
Communicating in English	Ourselves and the world around us	Jobs of tourism	Touristic information / hosting	Gastronomy and catering	Tourism and hospitality	Tourism mode / touristic destinations	New technologies of information and tourism	Communication in tourism	Touristic promotion									
???	21	21	21	21	21	21	18	18	18									
Tourism information and touristic entertainment	Concepts and fundamentals of tourism	Touristic demand and motivations	Touristic organization and hosting	Potential of touristic destinations	Tourism: local and regional patrimony	Touristic information techniques	Itineraries and touristic destinations	Entertainment in tourism	Marketing in tourism	Touristic legislation	Touristic destination's quality	Touristic destination's entertainment	Information technologies applied to tourism					
???	33	21	24	30	33	24	36	36	36	36	24	33	33					
Communication techniques in touristic hosting	Communication in interpersonal relationships	Communication and image within organizations	Service and communication	Public relations in tourism	Administrative procedures at the reception	Hosting and customer service techniques	Quality in touristic information services											
???	36	36	30	36	36	36	30											
Technical operations in touristic enterprises	Touristic enterprises – types	The organization of the tourism industry	Travel agencies and transportation	Technical operations in travel agencies	Structure and organization of hosting units	Hosting and service within touristic enterprises	Technical operations of reception within touristic enterprises	Global systems of distribution	Sports and tourism entertainment companies	Fundamentals of organization and event planning	Technical operations within sports and tourism entertainment companies	Territorial and business marketing						
???	24	24	36	36	24	24	36	36	33	30	30	25						

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Modules / Subjects	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Portuguese																		
???	33	34	33	33	34	33	40	40	40									
French (continuation)	Parcours personnels	Parcours profissionaels	Autor d'un film	Médias et societé	Communication et globalisation	Autor d'une que'vre integrale	Recherche et avenir	Ethique et qualité de vie	Autor d'un project									
???	27	24	24	24	24	24	27	24	24									
French (novice)	Vinvre en français	Organisier le quotidien	Choisir un espace de vie	Cherche du travail	Etre au courant	Profite de la vie												
???	36	36	36	36	36	36												
Integration	Person and culture/ Regional identity/ A global challenge: Sustainable development	Communication and the construction of an individual / Integration within the European space / Culture or globalization of cultures?	The construction of democracy / Work, its evolution and status in the West / The role of international organizations.	Family structure and social dynamic / European citizenship / From the multiplicity of knowledge to science	Social construction / The development of new attitudes at work and employment: the entrepreneurship / From the world economies to the global economy.	Man-nature: a sustainable relationship? / Regional imbalances / The ends and the means: what ethics for human life?												
???	36	36	36	36	36	36												
TIC	Spreadsheets	Database management	Webpagescreation															
???	33	33	33															
Physical Ed.	JDC1 – Football	GIN1 – Gymnastics	OAFD1 – Badminton	Dance 2 – Social dances	Fitness 1	Physical activity / Health context 1	JDC2 - Volleyball	GIN2 – Gymnastics	OAFD2 – Track and field	Dance 2 – Latin dances	Fitness 2	Physical activity / Health context 2	JDC3 - Volleyball	GIN3 – Acrobatic gymnastics	Dance 3 – Latin dances	Nature exploration activity	Fitness 3	Physical activity / Health context 3
???	12	10	10	4	4	4	11	11	8	11	8	5	5	10	10	8	12	6
Math	Geometry	Polynomial functions	Statistics	Periodic functions	Rational functions	Rate of change	Probabilities	Discrete models	Growth functions	Optimization								
???	36	36	27	36	36	27	21	27	27	27								
Economy	The economy and the economic problem	Economic agents and activities	Goods and services, and productive factors markets	Currency and financing of economic activity	The state and the economic activity	The interdependencies of current economies	Growth, development and fluctuation of economic activities	The Portuguese economy today										
???	18	33	24	24	24	24	27	24										
UFCDs	0372 – Commerce – Evolution and organizational models	0373 – Commercial Enterprise – Operations and work organization	3839 – Commercial documentation and correspondence circuits	0363 – Tools and software applied to the commercial activities	0369 – English – Stock management	0362 – Software applied to the commercial activities	0348 – Merchandising techniques	7852 – Entrepreneur potential and profile – Diagnostic / development	0355 – Customer loyalty	0358 – English – After-sales customer service								
???	25	50	25	50	50	50	50	25	25	50								
UFCDs	0350 – Interpersonal communication – Assertive communication	0361 – Organization and maintenance of archives	7842 – Service Techniques	0353 – Phone support service	0397 - Customer service and after-sales service	7843 – Sales and negotiation techniques												
???	50	25	50	25	25	50												
UFCDs	0368 – Control and storage of goods	7851 – Provisioning, logistics, and stock management	0349 – Environment, safety, and health – basic concepts	3836 – Marketing – main variables	0364 – Commercial marketing – Concepts and fundamentals	0367 – Advertising and promotion	0357 – Complaints, handling and forwarding	0366 – Marketing plan										
???	50	50	25	25	25	50	50	50										
UFCDs	0354 – English - Service	0371 – English - Sales																
???	50	50																

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ANNEX 3

TCOM18 INTEGRATION PROJECT'S CURRICULAR DEVELOPMENT GRID

Course	Trade Technician	**Year**	1st	**School Year**	2018 - 2019
Job opportunities	The trade technician is a level IV QNQ professional who sells products and services in commercial establishments, with the purpose of satisfying customers. **Professional competences:** Study and research the products and/or services of the company, characterize the type of customers and gather information regarding competition and the market itself. Assist and advise the customers in order to gain their loyalty while satisfying their needs.				
Contextualization / Situation					
Create a tourist itinerary of the Traditional Commerce of Porto using a Geocache APP that allows, through a QRCode, to make Historical and economic importance of each traditional store known to Tourists using this tool.					
Designation of the integrated project	"Geocache: Commercial Oporto"	**Duration**	24 hours	**Initial date**	January 1st, 2019	**Final date**	March 30th, 2019
Projects general objectives					
Projects global objectives (at the end of the project, the students should be able to): (I) Domain: Cognitive and procedural • Understand the characteristics of centenary shops with architectonic interest; • Recognize the importance of commerce in Oporto's economy; • Utilize the information as a work tool; • Practice language skills using English and French idioms; • Recognize best practices and tourism information techniques (II) Domain: Attitudes and values • Be proficient at teamwork; • Be creative; • Be a problem solver; • Demonstrate autonomy; • Master public communication					

Subject / Module	Contents	Learning objectives / competences	Learning activities	Learning resources	Learning evaluation
Integration (module 1 subtheme – Regional Identity)	• Reflection Texts	• Understanding the symbolic value of literary imagery such as metaphors; • Understand the expression of feelings and judgments of the poetic area in situations and objects; • Assiduity and punctuality, good behavior, participation and meeting deadlines.	• Reading and analysis of the "Porto de Tradição" program from 2016; • Exposition of concepts and ideas; • Critical development of the theme: group debate; (24h)	• Module's manual; • Work guide for the Geocache app experience.	• Peer evaluation / Formative evaluation: registered in a specific grid taking into account the domains of attitudes and values, aswell as cognitive and procedural. • Self-assessment by students • The learning assessment carried out in this project will have a weight of 35% in the evaluation of module 1

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Subject / Module	Theme	Learning objectives / competences	Learning activities / time	Learning resources	Learning evaluation
Math (module 3 – Geometry)	• Solving flat and spatial geometry problems	• Solve flat and spatial geometry problems, composition and decomposition of three-dimensional figures and its connection with the History of Geometry. • Attendance and punctuality, active and constructive participation, cooperation, overcoming obstacles and meeting deadlines.	• To appreciate the role of mathematics in the development of other sciences and its contribution to the understanding and resolution of the problems of humanity through the ages, exhibition of MC. ESCHER. • Solve problems, model activities or develop projects that mobilize the acquired knowledge or encourage new learning. • Recognize on the façades of traditional / emblematic stores the geometry of tiles. (13h)	• Exhibition guide • Façade observation guide.	• Peer evaluation / Formative evaluation: registered in a specific grid taking into account the domains of attitudes and values, aswell as cognitive and procedural. • Self-assessment by students. • The learning assessment carried out in this project will have a weight of 35% in the evaluation of module 3.
UFCD	**Contents**	**Learning objectives / competences**	**Learning activities / time**	**Learning resources**	**Learning evaluation**
UFCD 0372 Commerce – Evolution of Organizational Models	• Commerce sector – History of commerce – Characterization of the trade sector. • Relevant evolution trends. Organizational models. Organizational models of the companies within the trade sector.	• Systematize the fundamental facts of the historical evolution of the trade sector by analyzing its trends. Identify the main organizational models of commercial companies; • Attendance and punctuality, active and constructive participation, cooperation, overcoming obstacles and meeting deadlines.	• Understand the characteristics of the traditional store classification; • Understand the importance of the trade sector within the history of the City of Oporto; • Discussion regarding the materials and resources to be used; (25h)	• Work guide for the Geocacha app experience. • Façade observation guide.	• Peer evaluation / Formative evaluation: registered in a specific grid taking into account the domains of attitudes and values, and cognitive and procedural • Self-assessment by students • Systematic reflections by the student and professors in the logbook. • The assessment of the learning carried out in this project will have a weight of 100% in the evaluation of the UFCD

Integrated curricular development Assessment
• Satisfaction questionnaire from a survey made with students;
• Joint critical reflection of the teachers involved;
• Registration of Mindmaps;
• Writing an evaluation report to be included in the Pedagogical Technical Dossier;
• Swot analysis.

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ANNEX 4

TTUR18 INTEGRATION PROJECT'S CURRICULAR DEVELOPMENT GRID

Course	Tourism Technician	**Year**	1st	**School Year**	2018 - 2019
Job opportunities	The Tourism Technician is a level IV QNQ professional who performs services of information, entertainment and event organization in tourism companies; reservation in travel agencies; hosting and reception in touristic units. Professional skills: Provide tourists with information about the place where they are; Organize events, conferences and special programs for groups; Transmit (to customers) all information and documentation related to the touristic service requested; Conduct travel programs, conferences, etc.; Organize events and programs for special groups; Research various types of tourist information; Provide information and promote products and services of tourism.				
Contextualization					
Create a tourist itinerary of the Traditional Commerce of Porto using a Geocache APP that allows, through a QRCode, to outline Historical and economic importance of each traditional store known to Tourists using this tool.					
Designation of the integrated project	"Geocache: Commercial Oporto"	**Duration**	49 hours	**Initial date**	October 1st, 2019	**Final date**	May 3rd, 2019
General Project objectives					
Global Project objectives (at the end of the project, the students should be able to): (I) Domain: Cognitive and procedural • Design tourist itineraries that aim to give visibility to the centenary stores with architectural interest; • Utilize the information technologies as a work tool; Practice language skills using English and French idioms; • Recognize best practices and tourism information techniques. (II) Domain: Attitudes and values • Be proficient at teamwork; • Be creative; • Be a problem solver; • Demonstrate autonomy; • Master public communication.					

Subject / Module	Contents	Learning objectives / competences	Learning activities	Learning resources	Learning evaluation
Integration (module 1 subtheme – Regional Identity)	Reflection Texts	• Understanding the symbolic value of literary imagery such as metaphors; • Understand the expression of feelings and judgments of the poetic subject in situations and objects; • Assiduity and punctuality, behavior, participation and meeting deadlines.	• Reading and analysis of the "Porto de Tradição" program from 2016; • Exposition of concepts and ideas; • Critical development of the theme: group debate. (24h)	• Module's manual; • Work guide for the Geocache app experience.	• Peer evaluation / Formative evaluation: registered in a specific grid taking into account the domains of attitudes and values, and cognitive and procedural; • Self-assessment by students; • The learning assessment in this project will have a weight of 35% in the evaluation of module 1.

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Subject / Module	Theme	Learning objectives / competences	Learning activities / time	Learning resources	Learning evaluation
Tourism information and touristic entertainment (module 2 – Demand and Touristic motivations)	• The touristic demand. Notions and types of demand. • Determinants of tourist demand. Structural determinants. Conjectural determnants. • Dimension and characteristics of tourist demand. Behavioral characteristics of the consumer.	• Relate the concepts of need, motivation and expectation. • Understand tourist motivations regarding the demand of the city of Oporto. • Understand the different motivations in tourism. • Understand the impacts of the individual's tourist experience in structuring personal and social motivations for tourism. • Attendance and punctuality, active and constructive participation, cooperation, overcoming obstacles and meeting deadlines.	• Understand the importance of the trade sector for the tourism in the City of Oporto; • Understand the tourist's motivations upon choosing Oporto. • Discussion of regarding materials and resources to be used; (25h)	• Module's manual; • Cunha, Licínio, Economia e Política do Turismo. Lisboa: McGraw-Hill, 1997 • Cunha, Licínio, Introdução ao Turismo, Lisboa: Verbo, 2003. • Cunha, Licínio, Perspectivas e Tendências do Turismo. Lisboa: Edições Universitárias Lusófonas, s.d.	• Peer evaluation / Formative evaluation: registered in a specific grid taking into account the domains of attitudes and values, and cognitive and procedural; • Self-assessment by students; • Systematic reflections by the students and professors in the logbook; • The learning assessment in this project will have a weight of 100% in the evaluation of the UFCD.

Assessment of integrated curricular development (project)
• Satisfaction questionnaire from a survey made with students; • Joint critical reflection of the teachers involved; • Registration of Mindmaps; • Writing an evaluation report to be included in the Pedagogical Technical Dossier. • Swot analysis.

DISCIPLINA / MÓDULO	CONTEÚDOS	OBJETIVOS DE APRENDIZAGEM/ COMPETÊNCIAS	ATIVIDADES DE APRENDIZAGEM / TEMPO	RECURSOS DE APRENDIZAGEM	AVALIAÇÃO DA APRENDIZAGEM
Integração (módulo 1 Subtema - Identidade Regional)	- Textos de reflexão	- Compreender o valor simbólico e de imagens literárias como a metáfora, - Entender a expressão de sentimentos e juízos do sujeito poético perante situações e objetos. - Assiduidade e pontualidade, comportamento, participação e cumprimento de prazos.	- Leitura e análise do programa "Porto de Tradição" de 2016 - Exposição de conceito e ideias; - Desenvolvimento crítico do tema: debate em grupo; (24h)	- Manual do módulo; - Guia de trabalho para a experiência da APP Geocache	- Heteroavaliação/ Avaliação formativa: registada em grelha específica tendo em conta os domínios das atitudes e valores, cognitivo e procedimental. - Autoavaliação feita pelos alunos. A avaliação das aprendizagens realizadas neste projeto vai ter a ponderação de 35% na avaliação do módulo 1.

DISCIPLINA / MÓDULO	CONTEÚDOS	OBJETIVOS DE APRENDIZAGENS ESSÊNCIAIS/ COMPETÊNCIAS	ATIVIDADES DE APRENDIZAGEM / TEMPO	RECURSOS DE APRENDIZAGEM	AVALIAÇÃO DA APRENDIZAGEM
Turismo Informação e Animação Turística (módulo 2 - Procura e Motivações Turísticas)	- A Procura Turística Noção e Tipos de Procura Turística - Determinantes da Procura Turística Determinantes Estruturais Determinantes Conjunturais - Dimensão e Características da Procura Turística Características comportamentais do consumidor	- Relacionar os conceitos de necessidade, motivação e expectativa, - Compreender a relação entre necessidades humanas e motivações para o turismo. - Tipificar e compreender as diferentes motivações em turismo. - Compreender os impactos" da experiência turística" do indivíduo na estruturação das motivações pessoais e sociais para o turismo. - Assiduidade e pontualidade, comportamento, participação ativa e construtiva, cooperação, superação de obstáculos e cumprimento de prazos.	- Perceber a importância do setor de comércio no turismo da cidade do Porto - Perceber as motivações dos turistas na procura da cidade da cidade do Porto. - Discussão sobre os materiais e recursos a utilizar (25h)	-- Manuel do Módulo - Cunha, Licínio, Economia e Política do Turismo. Lisboa: McGraw-Hill, 1997 - Cunha, Licínio, Introdução ao Turismo. Lisboa: Verbo, 2003 - Cunha, Licínio, Perspetivas e Tendências do Turismo. Lisboa: Edições Universitárias Lusófonas, s.d.	- Heteroavaliação/ Avaliação formativa: registada em grelha específica tendo em conta os domínios das atitudes e valores, cognitivo e procedimental; - Autoavaliação feita pelos alunos. - Reflexões sistemáticas pelo aluno e pelo professor no diário de bordo. A avaliação das aprendizagens realizadas neste projeto vai ter a ponderação de 100% na avaliação da UFCD.

AVALIAÇÃO DO DESENVOLVIMENTO CURRICULAR INTEGRADO (PROJETO)
- Questionário por inquérito de satisfação feito aos alunos; - Reflexão crítica conjunta dos professores envolvidos; - Registo dos Mindmaps; - Construção do Cenário; Redação do relatório de avaliação para constar no Dossiê Técnico Pedagógico. - Análise Swot.

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GP2 "The family of our time" – Citizenship and Development Project

Clara Lopes
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INTRODUCTION

With Problem Based Learning (PBL), the responsibility for learning is transferred from the teacher to the student. The student stops being a passive element, sitting in a room taking notes during the class, to becoming the main generator of knowledge when actively seeking the information he needs to solve any given problem. Therefore, the teaching, or in a more correct term, the student's learning, is guided by the problems that he's presented with and that he has to solve autonomously. The role of the teacher in this system becomes, fundamentally, that of an advisor of the students' work.

In the PBL learning process, students are faced with a problem-situation (Why did the number of babies, children of an unknown mother increase by 20%?) - Having to solve it.

The method has relevant advantages for learning, including the following:

- Sparks motivation;
- Promotes the learning of new areas of knowledge;
- Stimulates creativity;
- Boosts critical thinking;
- Encourages analysis and decision-making skills;
- Develops teamwork and stress management skills and competences;
- Works with higher-lever order skills such as: analysis, judgment, justification, prediction of results and argumentative capacity.

Within the Integration discipline - Module 4 Theme 1 - Family Structure and Social Dynamics, in interdisciplinary articulation with the subjects of mathematics, English and marketing; we developed, in PBL, the following problem-situation: "Why is it that in 2019, the number of babies, children of an unknown mother, increased by 20%?"

The answer to this crucial question will raise several inquiries related to the evolution of the simple concept of family, its modification over the years, and how people deal with this transformation.

The interdisciplinary work developed, allows the student's development of skills and knowledge, with his own insights, previous ideas, and an articulated and differentiated approach as a starting point. It's a journey that culminates in a presentation and discussion among the school community. From a PBL methodology standpoint, moments of formal and informal learning are provided in line with an objective: we approached curriculum content and essential understandings of the four subjects from a real situation and developed, in parallel, transversal skills.

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The target audience of the Family project – is the Technical Trade Course class of 2018, consisting of 21 students.

When implementing PBL, it was important for teachers to explore the curriculum, plan articulated activities, frame the problem, analyze the problem (what they know / need to know to solve it), mobilize specific knowledge, strategies and resources, implement activities of articulation with the environment and with all the teachers involved, access, evaluate and use given information, monitor and evaluate the impact of the activities on the students' learning and capacity development; prepare the process of active class participation in the proposed activities, in collaborative projects and in sharing ideas within the school community.

DEVELOPMENT

The subjects and modules/UFCDs (Unidades de Formação de Curta Duração – Short Term Training Units) involved in this project belong to the Socio-Cultural Component with the Integration Area (Module 2, theme 2.1 Family Structure and Social Dynamics) and English subject (UFCD 0371- English language); the Scientific Component involves Mathematics (module 6 – Rate of Variation); and the Technical Component involves Marketing (UFCD 0367 - Advertising and Promotion).

The profile of students leaving compulsory education and the professional profile of Trade Technician were taken into account in preparing and defining this project, namely: it is the level IV QNQ professional who sells products and services in commercial establishments, aiming at customer satisfaction.

Research the company's products and services, characterize the type of customers and gather information about the competition and the market in general. Assist and advise clients towards gaining their loyalty and fullfilling satisfaction of their needs.

These activities were developed for 18 hours and project accomplishments are shown in figures 23, 24, 25 and 26:

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FIGURE 23 Activities to be carried out within the Integration Area.

INTEGRATION AREA SUBJECT **MODULE 2 - 2.1 - Family Structure and Social Dynamics** **Activity 1** Brainstorm regarding the concept of family **Activity 2** Presentation of the problem-situation - "Why did the number of babies, children of an unknown mother, increase by 20% in 2019?" Debate. **Activity 3** Search for news and videos on the theme	
Objectives	i) Domain: Cognitive and Procedural: • Present the Family project – PBL; • Reflect on the problem-situation - **"Why did the number of babies, children of an unknown mother, increase by 20% in 2019?"?**; • Responding to problem-situations with news and videos from real life cases. ii) Domain: Attitudes and Values: • Know how to work in a team; • Be creative; • Know how to solve problems; • Demonstrate autonomy; • Know how to communicate in public.

Articulated Learning			
Integration	**English**	**Mathematics**	**Marketing**
Understanding the concept of family	Identify family types	Collect and organize statistical data on demographic indicators	Search for advertising related to the notion of family

Strategy / methodology	
Will be know within the first class how everyone describes family? **Brainstorming about the notion of family.** **Keyword tracking on class-room board and paper.** **The problem situation is presented below:** **"Why is it that in 2019, the number of babies, children of an unknown mother, increased by 20%?** 	• Activity to be carried out on the first day of school: • Presentation of the project and the problem-situation, problem analysis and listing of previous ideas about the theme; • Decision making on the problem to be solved and formulation of hypotheses; • Organization of students according to the problem they intend to solve; • As a group, students develop work, oriented to the definition of the strategy and methodology aimed at problem resolution: What do I know? What do I need to know? What do I need to do?; • Problem solving invoking ideas already acquired, interpreting the information provided by the teacher, mobilizing knowledge, relating, analyzing, requesting help and recalling previous content; • Critical analysis of the problem's solution and presentation/systematization of problem-solving process and product; • Reading and viewing researched documentaries https://www.jn.pt/nacional/mais-de-metade-dos-bebes-sao-filhos-de-maes-solteiras-11900224.html https://catholicindc.com/2019/08/01/filhos-de-mae-incognita https://www.youtube.com/watch?v=TXQLEM6fh9A https://sicnoticias.pt/pais/2014-07-28-Mais-de-100-criancas-filhas-de-mae-incognita-desde-2011 • Comments on the documentaries and debate centered around the following idea "how is it possible to be the son of an unknown mother".
Resources	
Computers, internet, multimedia projector, prints, websites, google platform, printer, paper.	
Evaluation	
• Peer-evaluation / Formative evaluation: registered in a specific grid taking into account the domains of cognitive and procedural attitudes and values. • Self-assessment by students. The learning assessment carried out in this project will have a weight of 20% in the evaluation of module 2.	

FIGURE 24 Activities to be carried out in the English area

<table>
<tr><td colspan="4"><u>ENGLISH SUBJECT</u>

0371 – English language

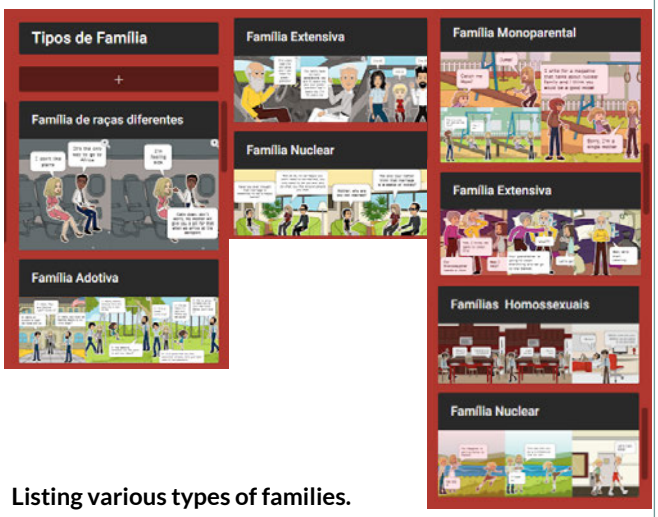
Activity 4

Define multiple family types

Activity 5

Create a comic book depicting various types of families</td></tr>
<tr><td>Objetivos</td><td colspan="3">i) Domain: Cognitive and procedural
· Recognition of all existing types;
· Understand if there's a such thing as the perfect family, or if there's only "regular families".
ii) Domain: Attitudes and Values:
· Know how to work as team;
· Be creative;
· Know how to solve problems;
· Demonstrate autonomy;
· Know how to communicate in public.</td></tr>
<tr><td colspan="4">Articulated Learning</td></tr>
<tr><td>Integration</td><td>English</td><td>Math</td><td>Marketing</td></tr>
<tr><td>Understanding the concept of family</td><td>Identify family types

Create a comic book depicting various types of families</td><td>Collect and organize statistical data on demographic indicators.</td><td>Search for advertising related to the notion of family and the concept of "family sells".</td></tr>
<tr><td colspan="4">Strategy / methodology</td></tr>
<tr><td colspan="2">First class: verifying ideas learned.

Listing various types of families.

Create a comic book depicting various types of families</td><td colspan="2">· Activities to be carried out on the first day of school:
· Presentation of the project and the problem-situation, starting point for the listing of ideas already acquired about the theme;
· Organization of students in work groups;
· As a group, students develop work oriented to the definition of the various types of family;
· Critical analysis, debate and presentation of ideas in a comics format;
· Construction of comics using the Pixton tool.</td></tr>
</table>

Resources
Computers, internet, multimedia projector, google platform, printer, paper, Pixton.
Evaluation
• Peer-evaluation / Formative evaluation: registered in a specific grid taking into account the domains of attitudes and values, cognitive and procedural. • Self-assessment by students. • The learning evaluation carried out in this project will have a weight of 10% in the evaluation of UFCD 0371.

FIGURE 25 Activities to be carried out in Mathematics

MATHEMATICS SUBJECT **Module 6 – Average Rate of Change** **Activity 6** Statistic analysis of demographic indicators, news / videos. Google forms – building a survey. Analysis and presentation of the survey's statistical results. Survey construction – Google forms – analysis of the type of current day family and the most common in our school community. **Activity 7** Padlet setup for presenting results to the school community.			
Specific Goals	i) Domain: Cognitive and Procedural • Analysis of data and statistical numbers on the theme. ii) Domain: Attitudes and Values: • Know how to work as a team; • Be creative; • Know how to solve problems; • Demonstrate autonomy; • Know how to communicate in public.		
Articulated Learning			
Integration	**English**	**Maths**	**Marketing**
Understanding the concept of family	Identify family types; Create a comic book depicting various types of families.	**Collect and organize statistical data on demographic indicators;** **Create a survey using Google Forms;** **Organize the data using Excel;** **Insert the data on padlet, using the tool Adobe Spark.**	Search for advertising related to the notion of family and the concept of "family sells".

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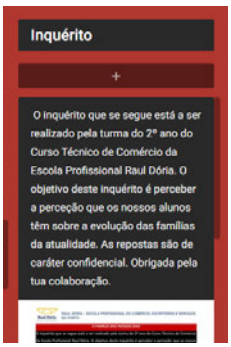
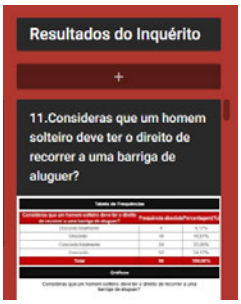
Strategy / methodology	
First class: **Building a survey.** 	• First class analysis of demographic indicator statistics, news, and videos; • Creation of working groups; • Creating a survey - Google forms.
Next task: **survey results** 	• Analysis and presentation of the survey's statistical results - Google forms - analysis of the types of current day families and most common in our school community.
Transformation of survey results into statistical data. 	• Organize the data using Excel and transform the graphs into images using Adobe Spark.
Lastly building a padlet 	• Setting up a padlet: https://padlet.com/rauldoria18/i9aoheq97pxo
Resources	
Computers, internet, websites, multimedia projector, Google Forms, Microsoft Excel, Adobe Spark, Padlet. Consolidation of mathematical knowledge in the context of problem solving.	
Evaluation	
• Peer-evaluation / Formative evaluation: registered in a specific grid taking into account the domains of attitudes and values, cognitive and procedural. • Self-assessment by students. The learning evaluation carried out in this project will have a weight of 20% in the evaluation of module 6.	

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FIGURE 26 Activities to be carried out in the Marketing subject

<table>
<tr><td colspan="4"><u>MARKETING SUBJECT</u>
0367 – Advertising and Promotion
Activity 8
Research advertising campaigns about families.
Activity 9
Activities including the school community, in the citizenship and development week:
Question students about themselves and their role as part of the various family types followed by a debate
Question: What's a family in their opinion (kid's drawing).</td></tr>
<tr><td>Specific Goals</td><td colspan="3">i) Domain: Cognitive and Procedural
• Understand the evolution of family over time.
• Reflection on what's the "perfect family".
ii) Domain: Attitudes and Values:
• Know how to work as a team
• Be creative
• Know how to solve problems
• Demonstrate autonomy
• Know how to communicate in public.</td></tr>
<tr><td colspan="4">Articulated Learnings</td></tr>
<tr><td>Integration</td><td>English</td><td>Maths</td><td>Marketing</td></tr>
<tr><td>Understanding the concept of family.</td><td>Identify family types
Create a comic book depicting various types of families</td><td>Collect and organize statistical data on demographic indicators.
Create a survey on Google forms.
Analyze and present the statistical results of the survey.
Create a padlet to present results to the school community.</td><td>Search for advertising related to the notion of family and the concept of "family sells".</td></tr>
<tr><td colspan="4">Strategy / methodology</td></tr>
<tr><td>Research advertising campaigns under the "Family" theme.</td><td colspan="2"> 
</td><td>• First class to address the subject.
• Research advertising related to the family theme.
• Reflection on how the concept of perfect famlity "sells more".</td></tr>
<tr><td colspan="4">Resources</td></tr>
<tr><td colspan="4">Computers, internet, websites, multimedia projector, google platform, paper.</td></tr>
<tr><td colspan="4">Evaluation</td></tr>
<tr><td colspan="4">• Peer-evaluation / Formative evaluation: registered in a specific grid taking into account the domains of attitudes and values, cognitive and procedural.
• Self-assessment by students.
• The learning assessment carried out in this project will have a weight of 20% in the assessment of module 0367.</td></tr>
</table>

RESULTS

The result of the work done by the students will be presented to the school community in the 2nd Citizenship Week of EP Raul Dória, according to the following program (Figure 27):

FIGURE 27 Citizenship Week project presentation program

CITIZENSHIP AND DEVELOPMENT WEEK

Presentation of the project to the school community

Activities involving the school community, during the citizenship and development week:
Questioning and Debate

Foster family:

- Would you like to be a foster family?
- If you wouldn't have parents, would you like to be part of a foster family?
- Is it mandatory for you to choose the person you would welcome?
- Would you welcome a person with drug problems?
- Would you like to welcome a temporary "brother"?

Adoption family:

- Would you like to adopt?
- Would you adopt a disabled person?
- What is your opinion on adoption?
- Would you like to have an adopted brother?

Nuclear family:

- Don't you think that the traditional (nuclear) family is in danger of extinction?
- Do you think the nuclear family is the ideal family?
- Is a family only truly constituted if there is a biological father and mother?
- Is an adopted or fostered child part of a nuclear family?

Single parent family:

- Does a single parent constitute a "true family"?
- Do you think that a child without a parent has the same "upbringing" as others?
- Do you think happiness is achieved with only one parental part?
- Could you raise a child alone?

Homosexual Family:

- Do you agree that homosexual couples can have children?
- Do you think that the children are educated differently?
- Since the parents are homosexual, do you think children might also be?
- Do you think that children born to homosexual mothers/fathers will suffer more or be made fun of?

Recomposed family:

- If your parents divorced, would you accept it?
- Would you accept if your mom or dad got married again?
- Would you accept a brother from another marriage?
- Would you like living in the same house with someone else's parent and their children?

Extended family:

- Does living with grandparents have benefits?
- Would you like to live in a house with your brothers, sisters-in-law and nephews?
- Would you like to live with your in-laws?

Family of different races:

- Would your family accept if your partner was of a different race?
- Would you accept to have a brother of different race?
- Would you agree that different races can build a family?

One last question about what they perceive as a "perfect family" to be answered in simple drawing form.

General Goals
• Make the school community aware of family evolution over time and realize that there is no family model. • Promote levels of scientific, social and cultural literacy and promote problem solving as a means to understanding reality. • Develop and provide methodologies and strategies that promote problem-solving skills. • Research, select, organize and interpret information and transform it into mobilizable knowledge. • Develop the ability to carry out activities in an autonomous, responsible and creative way. • Develop the capacity for work self-regulation, evaluating and controlling the processes in a logic of accomplishing tasks. • Participate in activities, respecting the rules and guidelines and adopting ways of acting, living and working according to the context.
General strategies / methodologies
• Survey of students' interests. • Choice of theme. • Formulation of the problem-situation. • Project expected results. • Resources to be used (human and material). • Intervention strategies / methodologies. • Production of assignments. • Monitoring / improvement strategies. • Evaluation centered around students' learning activities. • Project evaluation. • Presentation and Dissemination of Results.
Resources
Computers, internet, multimedia projector, prints, websites, google platform, paper.

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Evidence indicates that active participation in learning is more productive than the passive transfer of information from teacher to student, and that active learning increases retention and recall. PBL emphasizes active student-centered learning. Students are challenged to problematize, research, reflect, give meaning, and understand what is transmitted as they develop strategies to solve specific problems within a relevant context. Discussion of problem-situation in small groups promotes the connection of ideas and concepts, and favors cooperation instead of competition between students. Exploration of the students' previous knowledge, formulation of questions defined according to what they need to know, and the active construction of meaning through dialogue and reflection promotes long-term retention of newly acquired information. Expanding knowledge requires students to be able to ask well-thought-out questions, retrieve improved information, and use assessment skills.

ASSESSMENT

In the family project, evaluation will consider the observation of the interaction between teaching/learning process, where interactions, relationships, and cooperation between students and the various subjects lead to flexible learning paths and rhythm managed by the students. The creator (teacher) of the problem-situation points out the greater significance in students' cognitive considerations and boosts the taste for school, the study of the contents and the program of each discipline, always adapted to reality. Moreover, the teacher helps students develop, in the medium/long term, essential life skills such as the understanding of reality, which allows them to comprehend and understand the usefulness of not only the subjects addressed in the classroom but also their own formation as human beings. Ultimately, the school should be seen as more than an institution. It should be regarded as a place that offers pleasant moments of learning and socialization, which are fundamental in human development.

Crossover is the motto of this project. It is fostered across different levels and, above all, in multiple directions through the creation of collaborative work dynamics between teachers and students. This allows the students themselves to reflect and act together on the teaching dynamics, forcing the commitment of each individual for the learning of all.

The student evaluation aims to improve learning, to include and not to exclude. Throughout the evaluation process, the teacher's role is that of an observer/advisor. He must be attentive to the way students solve problems, ask questions, provide clues, suggestions, and record comments and behaviors.

Working on this project allows the teaching staff to make their curriculum more flexible - not all (students) follow the same curriculum and not everyone goes through the same learning process; what matters is taking each and every student as far as possible in their development process. A methodical observation of the student's performance in accomplishing the skills expected in each activity is constituted.

Consult project evidence
using QRcode

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GP3 Schools 4.0 and the Social Distancy

I. TESTIMONIES OF D@T

II. LIFE BEFORE AND AFTER COVID 19

Joana Macedo
Sociocultural discipline teacher - History and culture of the Arts

Clara Lopes
Coordinator of the professional trade course

Marina Moreira
Scientific discipline Teacher - Integration Area

Life is really unpredictable, what is certain today tomorrow is no longer and we ended up realizing that we do not control anything.

The digital era in schools had already started, but from one day to the another the World was "forced" to face a new reality.

We all excel and surprise ourselves with what we have been able to do, to innovate, to keep our students active and motivated.

In fact, everything continued, but at a distance, being part of the 4.0 schools.

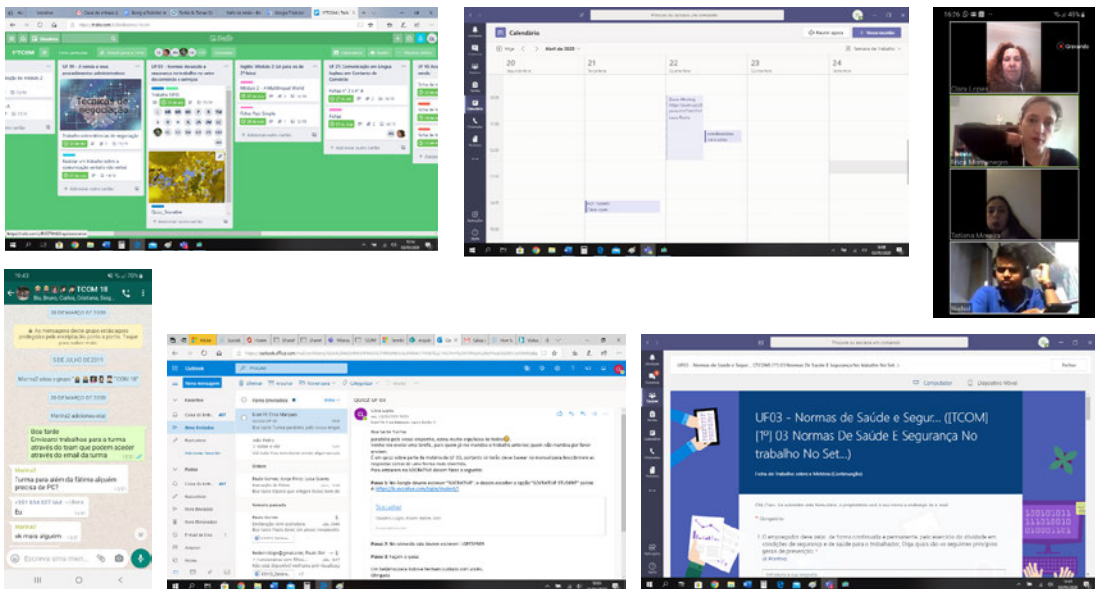
Our school has adapted, creating platforms such as Teams for teachers and students, where we continue classes, tasks, professional aptitude assessments and work context training in simulated practice. Our students are more autonomous, learning to use new tools and truly incorporating digital teaching.

My experience with teleworking has been a challenge in which I have made an effort to innovate with more motivating and interesting tools for my students.

In order to achieve these goals, I have used tools such as zooms, Team, Forms, Socrative, Trello, email, WhatsApp, among others, in which I have managed to have an almost daily contact with the students and follow up actively the work I intend to be done.

Personally, it has been a very interesting and great constant challenge.

FIGURE 28 Use of different apps in the teaching / learning process



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Our reality will never be the same and despite the fact we are facing a great challenge, positive lessons will be extracted resulting in the improvement of our planet and our behavior as human beings.

In my opinion schools 4.0 are now, more than ever, a priority and a necessity for the entire world.

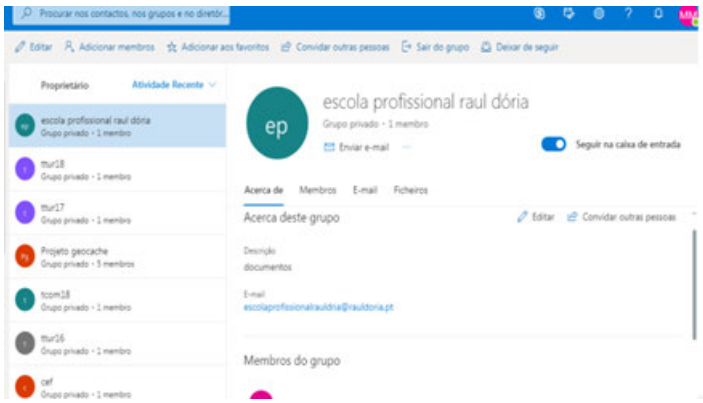
Being a 4.0 school will have a whole new meaning....

Humanization in the technology era ...

despite being distant, we remain united...

The current situation in the world is of great uncertainty in relation to the future... we live in times of anguish and fear of an unknown forthcoming! What was once seen as a beneficial situation - being citizens of the world nowadays restricts us physically, to a very limited geographical space, but much wider emotional boundaries.

FIGURE 29 Office 365 platform used by the school



This novelty brings us new opportunities, possibilities of re-inventing ourselves, in order to be more creative, innovative and even somewhat entrepreneurial, in the way we promote our individuality and our networks.

The creation of bonds between students and educators benefits the school universe and contributes to the harmony of the construction process of the Human Being – in a personal, social and productive level.

It also strengthens the bonds between teachers and educators ... there is greater awareness of school dynamics, through intense and improved exchange of messages and sharing of information, leading to greater closeness and a more complex integration of school subjects.

Isolation needs to be countered among our students, colleagues, teachers, employees, and every involved member of the school space! I miss everything that I spent my life complaining about! Antagonisms of life!

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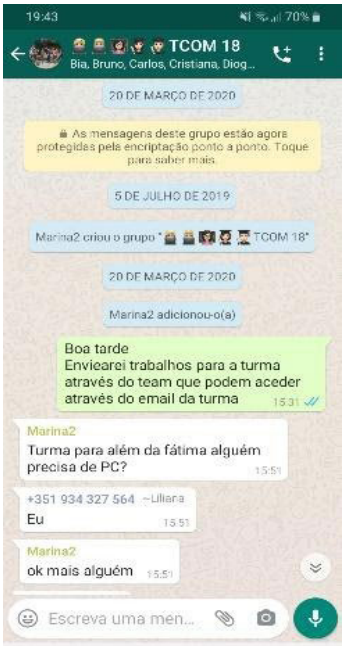
FIGURE 30 Group on whatsApp of the TCOM 18 class



With regard to teachers and educative class leaders (O.E.T.), digital platforms have been our best friends ... now we understand the wonders that our students talked about when asked about to these tools. They have proven to be spaces for creation, innovation, adapting, inventing... providing building blocks to recreate ourselves as professionals and citizens. This technological revolution has long been discussed, and should happen gradually, but at the moment everything is forced to a rapid application. It is a process we are only even starting to discover, the true wonders of this new era / technological generation.

We ended up connecting more deeply with our students every second we indulged in this new era of technological tools! We have surprisingly witnessed an attitude of greater responsibility, autonomy and independence from the students.

FIGURE 31 Office 365 - platform used by the school - WORKING TEAMS

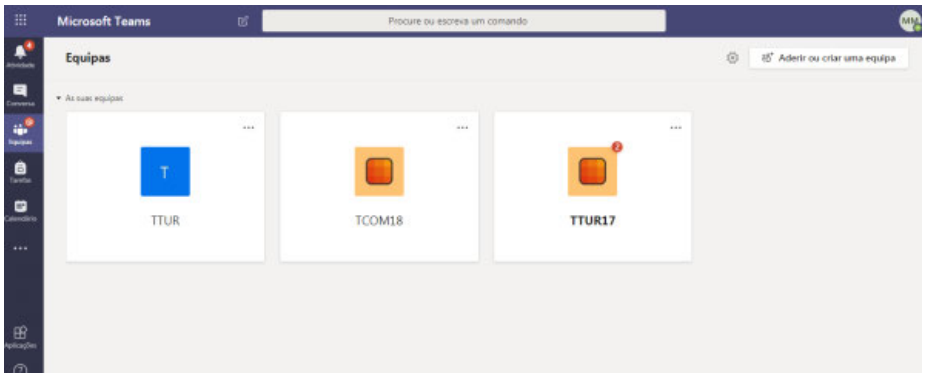


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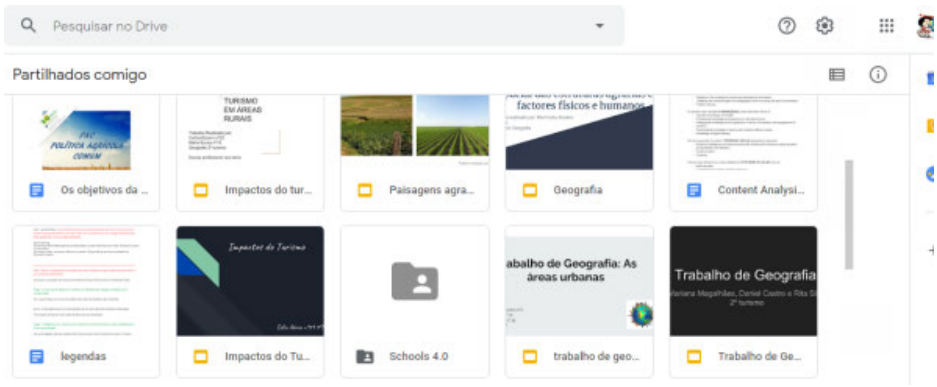
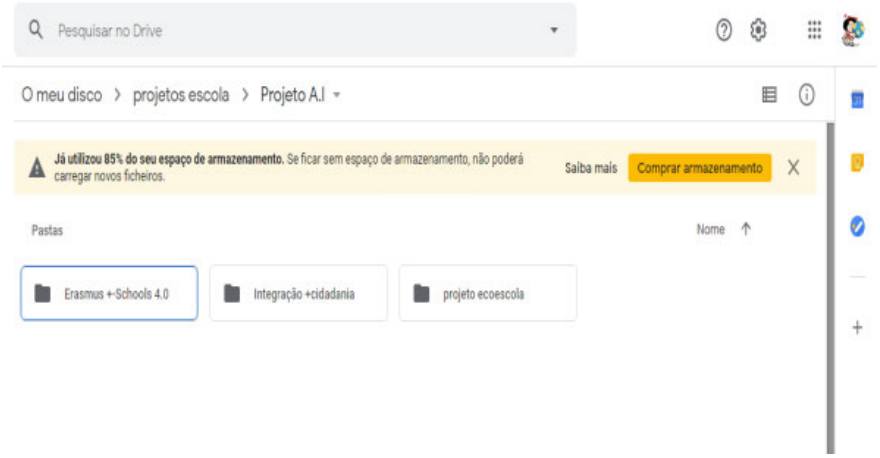
FIGURE 32 Sharing work using google drive



We believe that students, being intuitively technological beings, enjoy these teaching systems.

FIGURE 33 Sharing works using google drive – class work / school projects



Students presented teachers with very positive feedback, sharing that “this way we spend less time commuting, and can focus greatly on school performance”.

What worries the school institution is the lack of responses from some students. Part of the universe of our school community has difficulties in goal focusing, organizing their work, managing their time and producing without guidance outside of the school space.

In view of this immediate and sudden scenario of school-student separation, the school made available portable computers for students who did not have this equipment in their homes.

This way we tried to overcome obstacles and provide working conditions, so that students are on equal ground and not penalized, within the current context in which they live.

The communication platforms I have used, with the educational community, are: WhatsApp, Ofice365 -Outlook, Teams, GoogleDrive, Gmail, Google and Padlet.

Technologies humanized people, because they allowed students and parents to have time between them and to rethink ways and practices of life, unhealthy for the Human Being and the environment.

Building a new reality from scratch: time zero!

"The art of teaching is the art of assisting discovery"

Mark Van Doren

This has been a real-life changing challenge, adapting ourselves in such short notice to being entirely connected via online with our students. Throughout time, we have been developing tools and ways of communication that could equivalate to presential classes.

I think that most students, inclusively, are well adapted to this reality and are autonomous and able to work much more happily in this system. Furthermore, there are lots of tools to be used, and it is quite fun to learn how to use them and understand the new logics they present in regards to education.

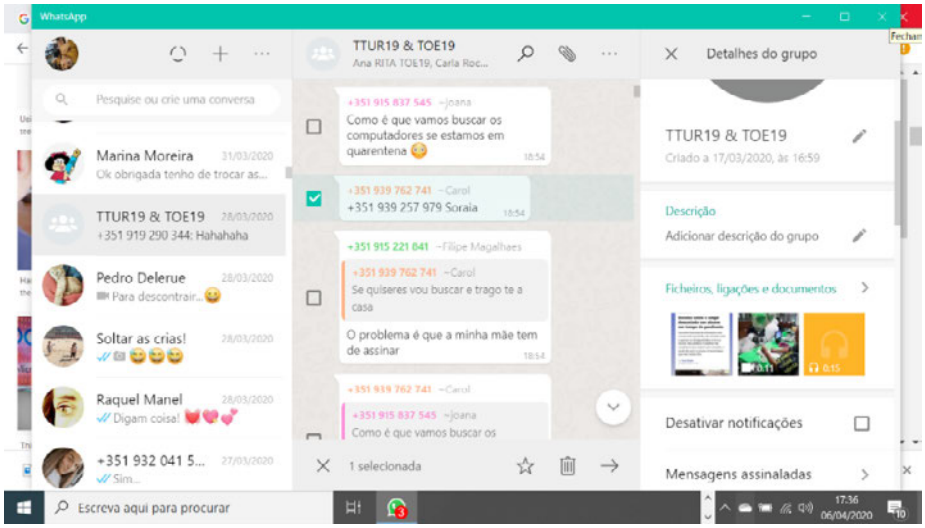
I have also realized our students are very cooperative amongst their peers.

Getting in touch

I believe the most important goal in these past weeks has been to help students get by this quarantine, giving them a sense of hope and presence; schools have not gone away, we as teachers are here to support them. And, in this sense, a more sensible aspect of education has been developing ways to connect to students, giving them a sense of normality and a sense of purpose.

With this in mind I went out of my way in order to stay in touch with students. I implemented a simple tool - a Whatsapp Group, so that we could exchange messages and clear doubts.

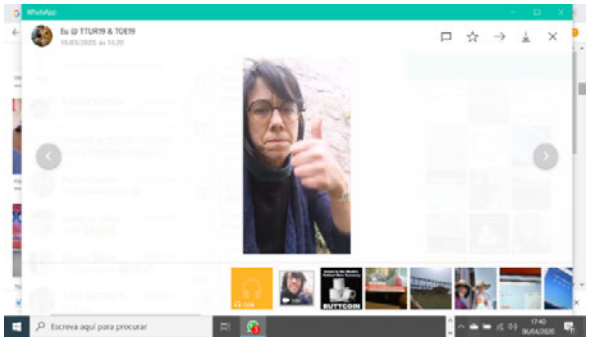
FIGURE 34 First week of quarantine: Print screen from a conversation with my students about the computers that the school lent them



I have exchanged videos and messages regarding school and school work, but also sanitary indications, trying to guide them through any doubts.

I sent them Links, PDF's; and made some videos.

FIGURA 35 Whatsapp Vídeo



Here you can see a video I sent them, when I was isolated at home with my 3-year-old. Because I was in contact with sick people with Covid-19, I decided to go into quarantine alone, so my husband was sure to be ok if I got sick.

WhatsApp Video 2020-03-19 at 16.20.02.mp4

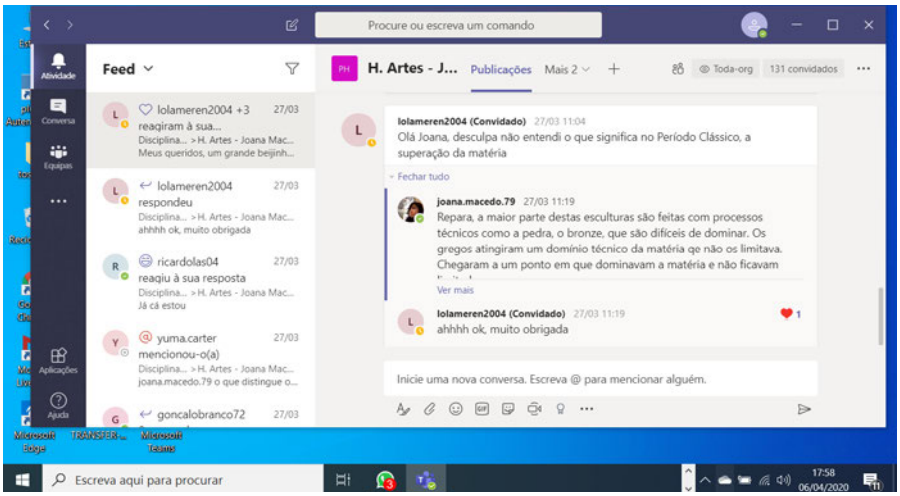
Students who don't have computers are actively a big concern, and together with the school we are trying to give our members the best possible conditions.

Getting school work done: Collaborative apps

In Raul Dória it was easy to get things done; the school already had used Microsoft tools in the past, and we were ready to start working. All students have already been given access to their School Class Emails. This proved to be a great way for teachers to get in touch; but it was also possible to use Office Online and One Drive Cloud services, in order to share documents and assignments that can be easily evaluated.

Another good tool made available from Microsoft Suite was Teams. I used Teams to develop multiple work projects.

FIGURE 36 Print screen from Teams where you can see the name of the Subject: History of Art; and a dialogue where I am helping a student respond to a questionnaire I gave them on Greek Sculpture



It is important to understand the specificities of each tool I use. This means that I can use Teams to propose projects and make resources available for students. It is also a great "place" where they can exchange doubts and help each other.

The only thing Microsoft and Google don't have is a good video-conference APP. I have been using Zoom with colleagues and Students and it is a really good - free app. I recommend it!

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FIGURE 37 Vídeoconference

Resources to study from

Finally, I wanted to let you know some of the resources I am making available to students. This is especially important for those who don't have books at home, which is the reality for most Raul Dória students.

I have been using free resources, made by Education companies that adapted when they thought about students forced out of their schools and confined to their homes.

FIGURE 38 A Book made available by one of the main educational editors in Portugal from the subject of Integration Area

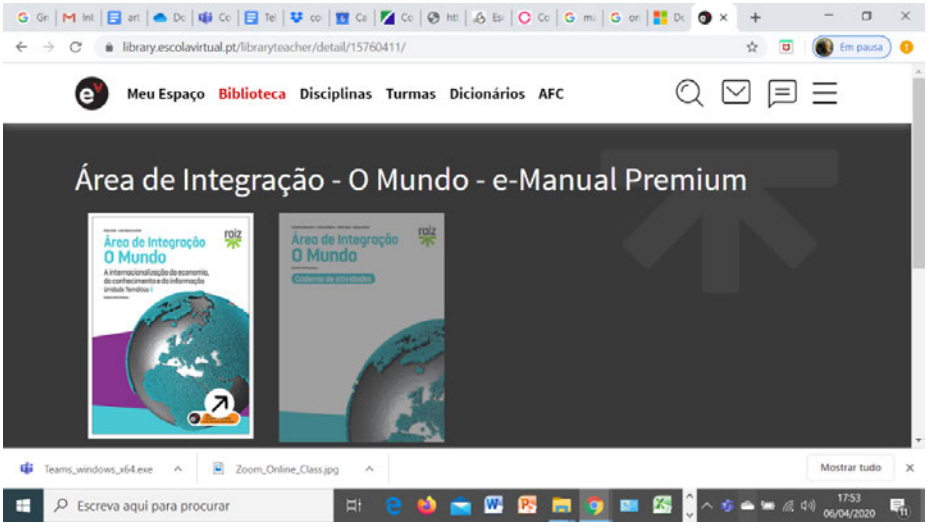

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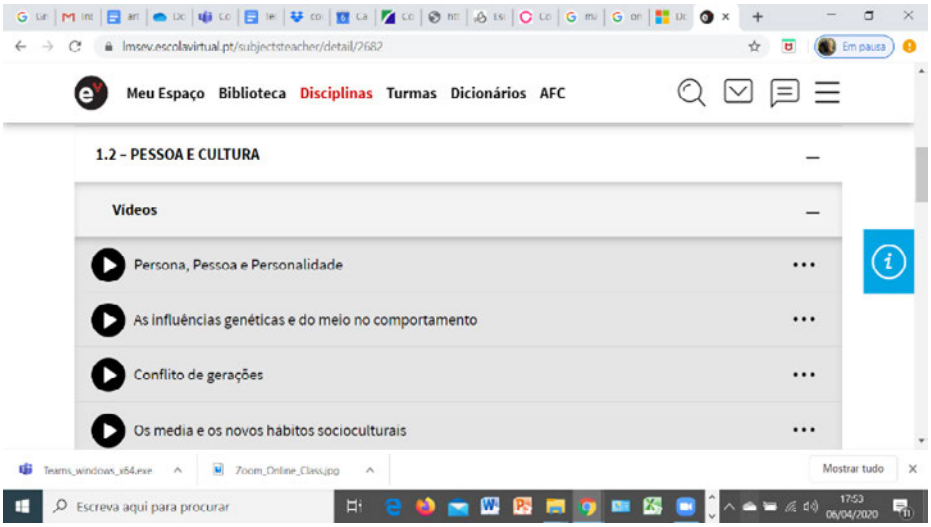
FIGURE 39 Video resources made available by one of the main educational projects in Portugal for the subject of History



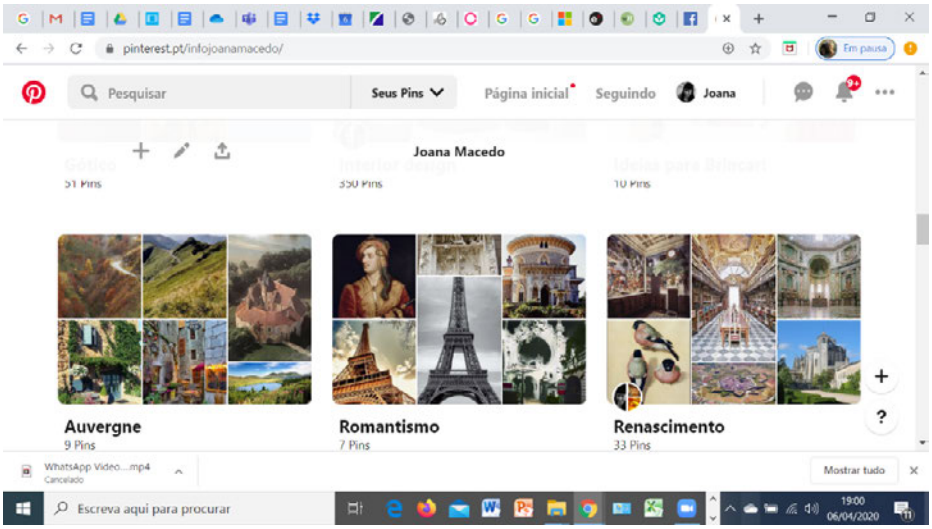
I have mainly been using Escola Virtual by Porto Editora, which has good ideas and resources ready to be used, namely manuals in PDF format from which they can study.

Another good Resource is Khan Academy, they have very informative lectures, however I need to translate it first since most of the content is English.

FIGURE 40 Khan Academy main page

Obviously other good resources are blogs; Youtube; Wikipedia and others, but the APP that I use to organize everything and find interesting for my students is Pinterest: it allows users to do Thematic Boards, with pretty much anything you find interesting, from Music, to Pictures, videos and links that students share at free will.

FIGURE 41 Albums in Pinterest to share with my students



I wish everyone the best of luck in the future,
and together we will fight this unfortunate period.

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EPRM - ESCOLA PROFISSIONAL DE RIO MAIOR, PORTUGAL

A4 Different Perspectives of work-based learning/work-based training

GP1 From Practice to Innovation in work-based training: Reflections around student's perspective

João Colaço
Escola Profissional de Rio Maior
Senior

João União
Escola Profissional de Rio Maior
Director

INTRODUCTION

"To see what is in front of one's nose needs a constant struggle"

G. Orwell

Professional training is understood as a "training practice offered to a young person before entering the labour market, carried out and structured in a systematic way within the framework of education and training system" (Cabrito 1996; 28).

Vocational schools contribute to the expansion and clarification of a wide range of offers that aim to provide, simultaneously, an opportunity in two perspectives: integration into working life and updating studies. Young people find in professional schools an alternative, because they guarantee the formal recognition, resulting from the diploma.

European guidelines show the need for post-school vocational education programs, and mechanisms for competitiveness and innovation that accredit a standard of excellence in technical management training, but also certification and recognition, the inclusion of preparation modules in compulsory and post-compulsory education, mechanisms of information and professional guidance with incentives to geographic mobility and specific programs for those who do not complete compulsory education. Vocational training thus seems to materialize in its multiplicity when learning is provided in the two eminently formative spaces: the school and the company.

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Although the advantages of cooperation between the two are affirmed as essential to ensure the acquisition of skills that are compatible with the personal and social development of young people.

In Portugal, professional technical training came at a particularly difficult time for the Educational System and its development during the 1980s was marked by a socioeconomic context of investment crisis, low workforce qualification (employed and to be employed), pressure from educational companies and above-average fertility with a large contingent of young people.

This project highlights the values of training in the context of work (internship) and identifies practices around work-based learning on the new context of Economy 4.0.

DEVELOPMENT

After two decades of training in the workplace, with the integration of results from transnational projects, our school has developed a strategy to accommodate principles and values in students.

The current internship model is based of two objectives:

i) to promote student motivation at the initial stage of training, reducing problems around its role and the professional profile of the course.

ii) to promote an effective connection between students and the professional landscape, especially at the end of the course, reinforcing the extension of the internship, strengthening the relations between the school, the student and the company, and strengthening the opportunities for personal and professional integration.

Currently, EPRM maintains its internship as follows:

TABLE 1 Practical work-based training Internship distribution on EPRM

Total amount		720 Hours [100%]						
YEAR 1 – **23 %**			YEAR 2 – **33%**			YEAR 3 – **44** %		
TRIM 1	TRIM 2	TRIM 3	TRIM 1	TRIM 2	TRIM 3	TRIM 1	TRIM 2	TRIM 3
12%	86%			100%				100 %
3 days	4 weeks			7 weeks				9 weeks

The integration in the SIVE 4.0 project allowed not only to contact with innovation and induced practices, but also made clear the needs to follow the change allowed by a new paradigm that emerges from the concept of Economy 4.0, with special focus on the technological component.

This is one of the multiple problematic and challenging aspects that the project faced, right after the emergence of a pandemic situation caused by Sars-Cov-2, a phenomenon that allows profound changes in training.

The circumstances that led to this resulted in a change of habits. Below we highlight some of the main aspects that provide substantial improvements in the current resources of training in the workplace:

i) A first proposal, essentially aimed at strengthening the technological component in the workplace;

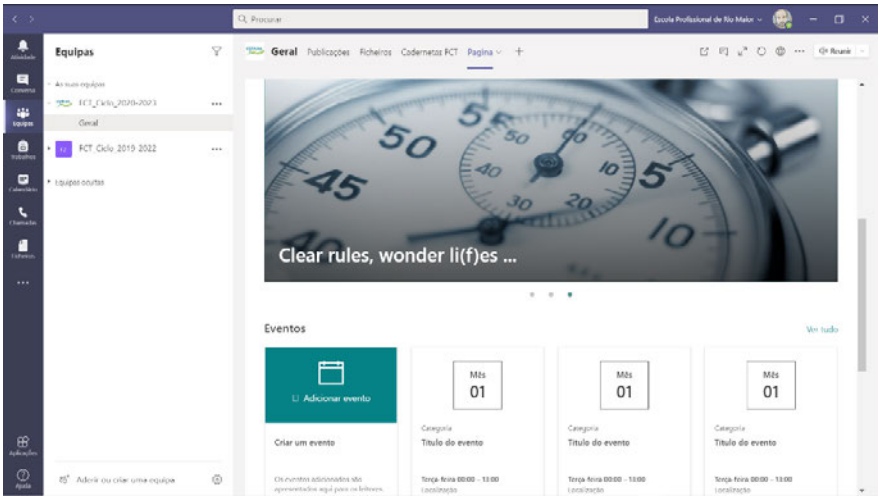
ii) A proposal oriented for the production of a training portfolio, using digital tools;

iii) Professional practices with reference to essential content from the technical and technological curriculum.

Some of the tools have recently shown great flexibility in regards to the world of training, it became evident that Office 365 package, developed by Microsoft, could be very useful in the tasks that are usually performed in the context of internships.

Subsequently, with the emergence of the Teams application, it was possible to aggregate a set of tasks that were dispersed by different tools and thus create, in the same space, a complete range of instruments that support the preparation, development and evaluation of internships, in following ways:

FIGURE 42 Global perspective available on TEAMS platform



a) firstly, work teams and resource centres are created to integrate all the tasks that constitute the internship.

b) this platform gathers information regarding formative planning and the necessary documentation for available host entities, together with the documentation concerning each student; thus, in addition to consolidating the internship process, the student may use several communication and information storage tools.

c) In addition to these aspects, it is possible to offer students the possibility of registering and evaluating both, performed practices, and developed tasks, using their personal instruments, namely mobile phone, tablet, or personal computer.

d) Accessing these platforms, either by sharing a specific link, or through a QR Code is possible and of great versatility.

FIGURA 43 QRC acess code

FIGURE 44 Interface for activities report, supported by the student

e) Although this is not a specific function of the 365 platform, remaining objectives can be carried out on other platforms, with free access and an intuitive environment.

The use of the TEAMS platform currently allows monitoring of internships with new forms of communication, collecting information and data produced by students and host entities, facilitating school monitoring and evaluation.

The challenge that arises at this point is related to the inherent technical skills of the various interlocutors and the consolidation of tools and work instruments including their alignment with the existing quality management systems.

ON-THE-JOB TRAINING PORTFOLIO: THE PRODUCTION OF A DIGITAL FORMATIVE PORTFOLIO

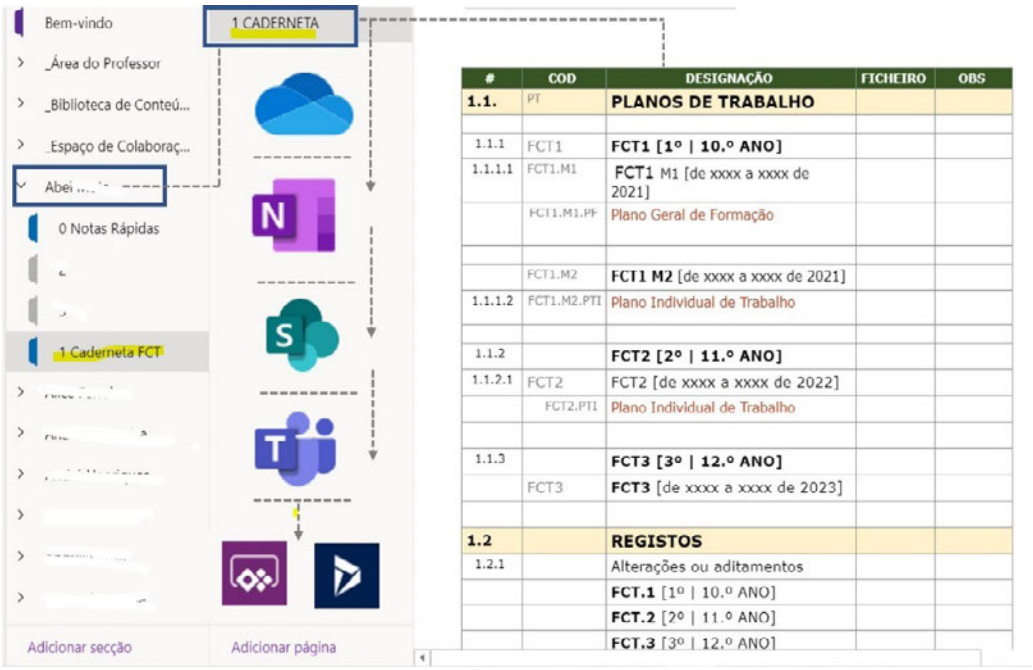
The use of a reflective portfolio, associated with individual training paths, emerged as result of the possibilities created by the increasing use of digital platforms, currently composing itself as an integral part of the legislation to which schools are bound. This situation also stems from the commitments that shape the new paradigm of vocational education and training that has been implemented over the past two years.

Thus, EPRM began the search of a platform that could host all the information collected along the training course, the planning, discussion and evaluation documents of the multiple activities carried out in the various curricular components, with special emphasis on the contents that are part of the student's notebook, a process fed by several participants, whose centralization and sharing assumes a determining role as evidence of the training cycles, along with the possibility of selective introduction of moments of self-assessment and reintegration of improvements, based on reflection of practices.

The need to keep this information accessible, without increasing its weight and size, taking into account the existing resources, led to the choice of the **Classnote** application (Onenote), which proved to be very useful.

Starting from the fact that we are facing tools with a high intuitive potential, a base matrix was created and it starts with the storage of materials in the cloud, from where links are then created for the different documents or forms.

FIGURE 45 Classnote platform, integrated with other Office 365 tools



#	COD	DESIGNAÇÃO	FICHEIRO	OBS
1.1.	PT	**PLANOS DE TRABALHO**		
1.1.1	FCT1	**FCT1 [1º | 10.º ANO]**		
1.1.1.1	FCT1.M1	**FCT1** M1 [de xxxx a xxxx de 2021]		
	FCT1.M1.PF	Plano Geral de Formação		
	FCT1.M2	**FCT1 M2** [de xxxx a xxxx de 2021]		
1.1.1.2	FCT1.M2.PTI	Plano Individual de Trabalho		
1.1.2		**FCT2 [2º | 11.º ANO]**		
1.1.2.1	FCT2	FCT2 [de xxxx a xxxx de 2022]		
	FCT2.PTI	Plano Individual de Trabalho		
1.1.3		**FCT3 [3º | 12.º ANO]**		
	FCT3	**FCT3** [de xxxx a xxxx de 2023]		
1.2		**REGISTOS**		
1.2.1		Alterações ou aditamentos		
		FCT.1 [1º | 10.º ANO]		
		FCT.2 [2º | 11.º ANO]		
		FCT.3 [3º | 12.º ANO]		

Information can be worked on in multiple ways, from the most traditional ones that involve writing and building simple presentations, to integrating image, sound, feeding web pages and individual blogs.

The usefulness of these tools presupposes an open use, based on a collective sharing space (SharePoint), from where all the information that is transmitted along the formative path emanates, and where all the documents for analysis will be available.

This relationship must assume, as a basic principle, that the work is developed according to objectives that are consolidated in the form of learning results, personal and professional skills, and training experiences subject to critical analysis.

So far, this platform has allowed – from a multifaceted Notepad – to strengthen the digitization process, brought people and information closer together, enriched access and sharing modalities, assuming transparency as an essential element in training and reflection as a determining factor for adjusting quality and alignment with transnational tools, which will be decisive for the future of vocational education and training.

Finally, and taking into account that the need for permanent consultation is a requirement of all the information systems we work with, the use of the Classnote platform is also considered an ultimate portability

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tool, being accessible anywhere, from any device, allowing the creation of consolidated and accessible responses in a timely manner, presenting true evidence of the work done.

This tool makes it possible to integrate in a very simple way the differences between schools and the changes they are subject to, taking into account discursive differences, strategic actions and any decisions to which they are statutory bound. Also, in this case, the use of other types of platforms, with the same objective, and free access, are readily available.

Simulation ON[2] FCT: training with essential contents from the technical and technological curriculum

In the final phase of carrying out the SIVE 4.0 project and after the first signs of emergency caused by the Sars-Cov2 virus, the EPRM faced the need to find answers to the difficulties encountered in carrying out internships in a real work context.

Facing a new reality and imposing the needs to develop strategies that would ensure effective answers for the training of students, especially in the last year, at the end of the training cycle we started by closely following the guidelines issued by the Portuguese State, reflected on traditional practices, with the options falling on a set of simulated practices, endowing the training component in the work context with elements already in use, for example, in the construction and consolidation of professional aptitude projects.

The experimental phase was closely monitored by the pedagogical leaders and an attempt was made to adjust the timetable according to the contents worked independently by the students. As this is a totally new process, using virtual contact and distance training as a resource, the challenge was placed on the ways of experiencing practical work, especially on issues of autonomy and accountability, which in this case were more than ever on the students' side.

In this sense, the elaboration of follow-up sheets and the discovery of cyclical and frequent contacts between the tutor and students, takes the training in work context to a domain that is not only different, but also endowed with some weakness.

Bearing in mind that practical training lives mainly from contact with reality, a situation contrary to any type of simulation, the problems encountered were understood as work tools, which students use to mobilize learning results transformed into skills that allow the search of technical and technologically adjusted solutions to the context in which they operate.

The simulation of practices thus contains elements that are still unknown to, and that have been worked on overtime, leading to a multiplication of monitoring and supervision tools, especially because we are fully aware that the pressure of time and task is not immediately apprehended by its stakeholders nor is it easily evident as a practical context in training.

This is a path for which we are available to learn, as is the case with the other speakers, who may see here a new opportunity to build training activities, practical and close to work environments, using new means and platforms where communication and information technology are - increasingly - clearly determining.

2 On [the] Net

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CONCLUSION

In the understanding of the host entities, the internship is, above all, a good time for learning and a way to complement the theoretical training offered by the school, through its adaptation to the reality that emanates from situations and work contexts.

In this area, and in relation to the critical points identified:

i) the weaknesses regarding the duration is highlighted, given that the internship time is considered "short", with difficult return on the investment;

ii) the rigidity in the temporal distribution, with little adjusted options and little flexibility in the distribution of the internship periods (always at the same time; mismatch in relation to some areas of work) and

iii) the experiences of (de) contextualization, with the offer of outdated activities both in the school context and in the business world.

According to the testimonies obtained from students who have already completed their training in the workplace, and with regard to their strengths, aspects related to interpersonal relationships (dealing with other people, tolerating difference) stand out, adopting new perspectives towards others, through the knowledge that results from direct contact with reality, with the dilemmas and challenges that students face.

The consolidation of part of the knowledge acquired at school and the contact with the characteristics of the world of work, namely in the most immediate aspects (punctuality, integration in the company, internal functioning, among others), are elements valued by the students who finish this formative cycle.

With regard to critical aspects, or weaknesses, the most evident trend relates to the duration of the internships (a short time) and for the characteristics intrinsic to some welcoming places, related to their reality, climate and organizational culture, namely: mistrust on the part of human resources towards the integration of the trainee, indifference and neglect of their proposals, attitudes and performance levels, the lack of responsibility towards the objectives and scope of the training proposals and the low levels of organization of some of entities, whose mode of operation sometimes contributes to reducing the levels of commitment and motivation of students.

Parallel to these aspects, significant references were also pointed out regarding the type of tasks (when lack of adjustment to the scope of the course is present) and the interpersonal relationship during the internship period (difficulties in relationship and communication with colleagues, poor reception, etc.).

Hence, from the assessment made by students, it is possible for us to characterize the internship as a moment of practical training, with a strong focus on the creation of relational skills (dealing with others, perceiving how they are and how they behave in the work context), technical skills (learning how and why it is done) and professional skills (knowing how the world of work works, what aspects are valued, ...).

When asked about the most important aspects of the internship, and away from the dilemmas and natural subjectivities of those who evaluate (where you see a glass half full, there are always those who think of it as being half empty), students reinforce above all the role of the internship as an opportunity of personal and professional growth and maturation, not only for what they observe ("in contact with the world of work"), but also for what they acquire ("being more responsible"; "acquiring new knowledge").

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At the end of this training cycle, we were also interested in knowing what, in fact, the students learned during the two internship moments and, as a result, what proposals they can share with colleagues who are now starting a new path, aiming at signaling of ideas and proposals that can be understood as a contribution to the improvement of the functioning of our internships.

Regarding significant learning, students mentioned three aspects that deserve to be highlighted:

i) they learned how to relate to others and work in a team";

ii) they learned how the world of work and organizations works" and

iii) "they learned to be more responsible".

In this manner, the internship clearly favours the promotion of socio-technical skills, which are increasingly present in the way they restructure their behaviours, attitudes, and values as future workers and as citizens. Basically, it reinforces the traditional idea that the main result of the internship is, in addition to the adequacy of knowledge obtained in schools, the production of skills that facilitates access to labour and employment. This brings us back to the concept of employability as a central denominator in this field.

From the reflection of the elements obtained, it is possible to identify a valuing notion and a pragmatic conception of training, with little emphasis on the articulations between learning at school and in the company, the framework of the tutor and trainee relationship, the interaction between school and host entities and the adaptation of the objectives to the expectations of the school and the company, without forgetting the phenomena associated with non-qualifying entities and the difficulties in student adaptation.

There is an instrumental view of training; The model identifies, on the part of the trainers, a model centred on the strategies to be applied according to the interests and motivations of the students, assuming a training design based on problem solving, signalling aspects that point to a type of associative training, aimed at innovation, with an essential schooling tendency.

For his part, the entrepreneur defends a model focused on results, on the product, giving great importance to the final courses of training, focused essentially on specialization and employment (with completion of the school path). It points to a more participatory relationship between the school and the company, defending aspects that are part of a type of juxtaposed training / association of components.

The interaction between learning and training is valued, along with learning in the workplace. There is strong support by the internship tutor, despite the low reflection on the lessons learned. When classes contribute to a good performance of internship activities, students identify little articulation between what they learn in a school situation and what they apply in their work situation.

The process of contextualizing formal learning in the development of an activity in the internship was not always triggered, and most individuals feel prepared for the position they perform and consider the activities developed during the internship as promoters of skills for the activities they currently perform.

DISCUSSION AND ANALYSIS

In terms of global analysis, there is a difficulty in articulating the school situation and the work situation and the "representatives" of the institutions defend an "idealized" model of articulation between the different perspectives of alternation.

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We can affirm that we are facing a reproductive typological mixed approach, with practical teachings and advanced theoretical knowledge, initially oriented towards a relatively limited number of well-defined activities. For the purpose of analysis, the Course Director argues in favour of an interactive model, updated and consistent with the Nordic Model, recommended within the scope of the school's educational project.

The opinions of the "representatives" polarize the interests of the institutions they represent (school and company), assuming an almost social and professional identity approach. The typology of the training model developed at the school complies with the spirit of the law, thus allowing the maintenance of favourable conditions for the participation of the social partners.

Nevertheless, it presents aspects that may constitute a rhetorical posture in face of reality: it mobilizes, at the level of discourse (educational project), aspects that fall within the scope of the interactive pedagogical model, while at the level of practices, aspects related essentially to a schooling stance, of production / reproduction of supply and demand for labour work are identified as determinant.

TESTIMONIALS

Beatriz Ferreira
Student in the Communication and Marketing course

As a student at the Professional School of Rio Maior, in the Technical Course of Communication Marketing, Public Relations and Advertising, I've found great internship moments which I had the opportunity to get benefits from it.

In addition to applying skills acquired in the classroom, it was very important to be able to distinguish practice study and schoolwork, very different concepts, and in order to become stronger we must unify all these aspects.

In the internships we ended up realizing what the world of work really is, what tools are needed and the ones we still must develop, and how we must adapt to that reality.

As young people we must study to achieve a good grade at school, but in the internships that is not enough, it is necessary to know how to do, and to know how to behave, because we, as students, should be interested in the opportunities given to us and in the confidence that has been placed among us.

Although, I am now working and studying simultaneously, when I left school, I accepted a job proposal that was the culmination of these 3 course years; as I started working right away in the area related to the course, and was captivated using the course's learning tools, internships and some training courses that I had the opportunity to engage in as a student.

It is true that many of the tools that the Professional School has available to us are very important, but due to the constant changes that it undergoes, we – as workers – must always try to keep up with these changes trying to always learn more about what we really like, and that is our job.

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Fábio André

Graduated from the Professional Course of Industrial Maintenance Technician

In my opinion, the internship is probably the most important element of the professional teaching learning process, because it is responsible for the first contact with the environment that awaits students when they finish their course.

Very often, the internship is the place where students have a greater evolution of the practical component. In my opinion, students should not be able to do all the internships in the same company, because during the school year students shouls be provided with as many different experiences as possible, and with 3 different internships I think they should try at least two different companies in order not to be restricted to just one reality.

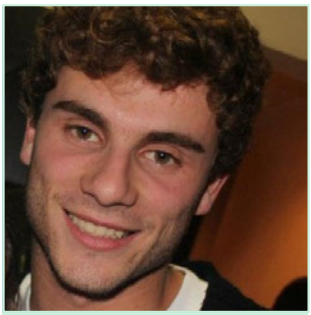
Although, after completing my professional course, I have to say that my internship was decisive in my professional life, because it made me contact the company where I work today as an engineer. I also highlight the importance it had in the development of my technical skills and ability to interpret mechanical problems.

The curricular internships are the best opportunity to apply, demonstrate and consolidate in a real work context, the techniques and knowledge acquired in the classroom.

In my case, it was my first contact with the labour market, which allowed me to develop habits, attitudes and behaviours such as teamwork, organizational skills, responsibility, among others.

The curricular internships I took (the first at the Tax Authority and the second at the Social Security Financial Management Institute), had a very positive impact on my professional life since they endowed me with extremely relevant knowledge and skills, also enabling the enrichment of my CV.

Despite having continued my studies after completing 12th grade, I must mention that the internships facilitated my integration in the job market during the degree and after its completion.



Rodrigo Ferreira

Graduated from the Professional Course of Technical Management

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Jorge Colaço

Graduated from the Professional Course of Management and Technical Programming of Computer Systems

In my opinion, curricular internships are one of the most important parts of professional courses, as we are able to apply the knowledge we acquire in a school context in the professional / work world, better understanding the techniques we have mastered or have more difficulty to execute. But more important than the "know how" is the part of personal and human development that the internships provide us with.

Now, let's see! We will have an internship / company monitor that will test us, teach, relegate tasks and demand they are fulfilled with the greatest rigor and excellence. All of this will shape our personal character and feel more adequate to deal with people and being able to work as a team with common goals to be fulfilled; we will gain professional experience and shape our way of being in the professional world, while most of these skills are impossible to replicate in a school context.

In my opinion all professional courses should have internships in the three years of training, if possible, but at least in the final two years of the course.

The internships I carried out in the last two years of the Professional Technical Course in Computer Systems Management and Programming (CTGPSI) at the School of Sports in Rio Maior, who's responsible for the computer area and my monitor were very important in my life, not only professionally, but also in personal level, because we maintained the friendship that we created during the internships and to this day we maintain contact and exchange opinions. This reflects the importance of internships in our technical and human development, as it allowed me to carry out a large proportion of the material I acquired in the course, in order to discover which area within Informatics I preferred to work or learn more about in the future (Networks / Programming) and to be able to absorb the responsibility that a job involves, assigned with problems to solve on a daily basis, and challenges of varying degrees of difficulty.

At a personal level, we constantly evolve in an internship, in which we have to adapt "who we are" to the workplace, allowing us to shape our personal characteristics, learning to communicate better with people and / or teammates.

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KBC KØGE BUSINESS COLLEGE, DENMARK

A5 Tools for tutoring sessions with students

GP1 Coaching, Tutoring and Mentoring

Inge Jakobsen
International manager and Teacher

Gitte Dyrløv
International Manager and Teacher

INTRODUCTION

For several years KBC has specialized in student tutoring and lately also career coaching to help the students both with completing their education, but also with some of the emotional and mental challenges some of our vet students face. We believe that the tutor system works well, as KBC has always had a high score in evaluations when it comes to relation between teachers/tutors and students.

Our new VET education EUX, is a combined vocational and general upper secondary education, which is also called a double degree education. This education started in 2015. The first year the focus was primarily on the academic skills, but now career learning and tutor sessions have been integrated in their twi year education.

At KBC we have tried to professionalize our tutoring sessions with the students in order to prevent early drop-out and guide them through their education right from the time they choose our school until they leave, both to identify their needs, but also to help them choosing the most appropriate career path. We often meet students, especially students who have met well-meaning teachers and staff at primary school, who do not see the point in these tutor talks, so to make the tutor talks more professional, we also emphasize questions about learning situations, career etc, so the students do not feel we waste their time.

Obviously, this method is not the solution to all the problems the VET system faces these years, but we are convinced that this may be one of the ways to address some of the problems.

When working in the VET system, it is not only the learning – didactic aspects that must be taken into account in the planning and execution of the work, but also a number of socio-economic aspects play a role. Issues for students in the VET system include; early drop-outs, lack of student applications for VET, poor

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reputation of the VET education, an increased share of vulnerable youth, a highly digitalized and sometimes restless generation Z, efficiency improvements of education (ie, schools are constantly being asked to produce learning more and more efficiently).

At KHS, we address some of these challenges through the tutoring system.

The tutor system with us is many faceted and we have categorized them as follows:

1. Tutoring through Peer to peer
2. Tutoring with the teacher as a permanent tutor
3. Student counseling
4. Work placement coordination between school and companies. LOP

We will describe parts of this system below, but our focus will be on the teacher's role as a tutor.

1. TUTORING THROUGH PEER TO PEER

Peer to peer takes place the first two weeks the students start at Køge Business College. We ask 2nd year students to apply to a panel of teachers to become a tutor for the first-year students. The students are then selected and usually we use two student tutors for each class, who together with a teacher, plan the events of this particular class when the students start. Hereby a lot of social events and get-to-know-you activities take place. When the students start, the tutors in cooperation with a teacher, see to that all in the class participate in games, have someone to eat their lunch with, can ask questions to the tutors about the school, homework, teachers, our digital platform etc.

This way, we have experienced that the students get to know each other and they have someone to greet from the second year, and who can help, if they need this.

We are in the process of enhancing the peer to peer counselling, so it is not only a social peer to peer meeting, but it will also include more vocational and academic skill support from peer to peer.

2. TUTORING WITH THE TEACHER AS A PERMANENT TUTOR

Goals:

- To increase students' goal-orientation
- To achieve greater satisfaction both for teachers and students
- To give students the opportunity to change education, not necessarily only to maintain the students at the school
- To reduce early drop-out
- To give the students the opportunity for personal development
- To give students greater opportunity to complete an education
- The students are increasingly responsible for career choices early in life which have consequences for their future

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Before the students are accepted, two tutors hold coaching sessions with the students to match expectations before the students start their education at KBC.

When the students enter KBC they are assigned a tutor. Each tutor has approximately 25 students and hold three tutor talks with each student every year. Apart from this, the students also have the opportunity to speak to a student counselor, or if the student has severe problems and are at risk of dropping out, they are assigned a mentor, who they can speak to and who may help the students get up in the morning, structure the school day etc.

In order to professionalize the tutor sessions, so the sessions are not dependent on the individual teacher's abilities, KBC has elaborated different tools so all students go through the same questions. These questions are formulated so the tutor both touches upon challenges in life, subjects at school, leisure, dreams and possible career paths.

Aim of the tutor talks:

The student is an expert in his/her own life and as a tutor you can offer your help, so the student can adapt to the transformation he/she experiences. It is the person in front of you who are sitting with the answers. As a teacher/tutor it is your job to make the student reflect on own practice and find the answers. This both demands an efficient strategy and that the student feels confident and comfortable with the tutor.

Creating change through a talk is a very special art, where the teacher must be able to listen, reflect and let the student "be the master" of his/her own experiences. This is something many teachers find difficult because everyday life is so busy and teachers want to help, guide and give pieces of good advice. But good advice can very quickly become at one's wit's end if we do not offer time to the student. The time they need themselves to reflect why changes may be necessary.

- Giving responsibility back to the owner/student
- To help make it visible that there are several realities and the student can choose. How is the world looking at me? And how would I like to be seen?
- To emphasize to the student that the VET education can be a new start and that he/she has the opportunity to change role - loser / winner strategy
- To clearly signal that this is an adult-adult dialogue
- To make the tutor visible in his/her role as tutor
- To clarify the educational goals / professional levels
- Dyslexia
- To map if the student needs extra help to achieve academic goals
- To find out if there are social problems that can stand in the way of learning

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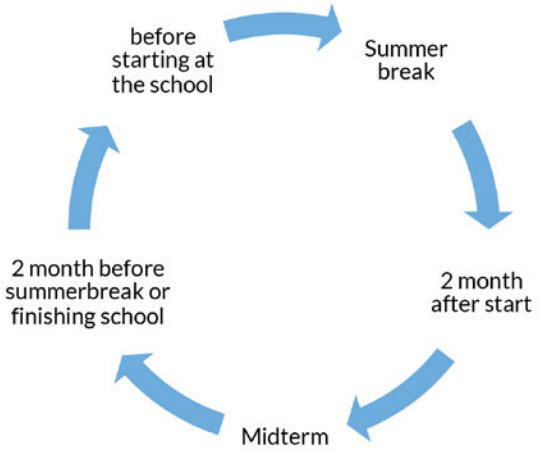
Introduction to tutor talks for the teachers

Structure of tutor talks

Our proposal is that the student is invited for the tutorial four times during a year.

1. Coaching sessions with students before they are accepted at our VET department
2. The first time it is a good idea to spend one hour with the student in order to get a good knowledge of the student's strengths, challenges, goals, career path etc. This takes place at the beginning of the first semester. The questions below can help you get to know the student
3. The second time you invite the student, it is to evaluate if the aims and goals are met or have to be revised and whether the student meets any obstacles for learning. You also discuss career paths and what to do to reach the goals. 30 minutes
4. The third and final meeting you evaluate if the student's goals were met, you help the student with ideas of how to find a job, how to make a good job application, CV. 30 minutes

FIGURE 46 The cycle of the "one to one" meetings between teacher and student during a school year



Questions for getting to know the student:

In order for the student to be open and honest, it is essential that the tutor is so too. In order to break the ice, it is a good idea to tell the students some personal stories. The below questions may be used to get acquainted with the student:

- How did you experience your time in your primary school?
- Do you have any friends at our school?
- What do you do in your leisure? Do you have an after-school job?
- Do you live with your parent/parents/siblings?
- If not, where do you live and do you have any relatives/friends who help you?
- As you start a new education with new teachers and peer students, are there any habits – either in your personality or learning habits you would like to change? Why/why not?

General questions about the school and subjects:

- Do you know our school?
- Do you know the entry requirements?
- If you do not live up to the entry requirements now, what do you have to do, so you will?
- Do you know any of the subjects the school teaches?
- Do you know what kind of work you would like to do in the future?

Questions for Learning

The questions are about spotting learning situations that take place during all life conditions: School, job, leisure and relationships. It's about exploring learning in life.

- When do you learn the most and when do you learn least? Try to explain a situation where you learn and why? Try to explain a situation where you did not learn and why? Explain how you yourself could improve your learning in situations where you feel you do not learn.
- Do you ever experience learning where you forget time and place? If not any other situations where you experience this?
- What types of tasks do you thrive best on solving?
- What do you want to learn? When and how can you learn?
- In which situations, do you think you learned anything valuable?
- If you could go around the year again, what would you do differently? - How can you do it differently in the next semester? What can you do for this to happen? - Who or what can help you with that? Give three examples.

The questions should create connections between school life and other parts of life. The focus is on leisure time as an inspiration for educational and job opportunities.

Questions for leisure

- What matters to you in your spare time? - What are your interests?
- What do you do when you have to relax?
- What makes you happy? What makes you sad?
- What are you doing when you're having fun?

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Written testimonial with Marie Galting and Annette Hall Madsen, tutors of EUX

Video
https://youtu.be/YV-pvC7HCy0

The tutor role

For many years we have had tutor sessions with the students, where the tutor is similar to a classteacher. Students always give positive feedback in the annual student surveys about the tutor system. The students have been and still are happy with the individual attention they receive during the talks. From the beginning it was difficult for the tutor to know what the focus of these talks was, but since then we have tried to systemize the talks. We have developed a material partly to develop inspirational material for the tutors and partly to set a framework. For some teachers it was not always natural to talk individually with the students about, for example, personal problems.

In the new tuto material for the EUX classes, we have in this Erasmus+ project further developed the excisting material so that it is aimed at students at EUX who have a better academic level than the VET students, but still need personal support and guidance and with more focus on career development and learning. Unfortunately, we do not have the origianally allocated time for the tutor talks. Not because we do not want to hold the talks and spend the time, but we experience a greater focus on the academic level. We still have 3 talks a year, but the time allocated is significantly lower.

The significance of the tutor role

Annette Hall Madsen says: “It is my firm belief that it is relationships that move. It is the proximity to the individual student that can make a difference in terms of thriving in their education and / or completing their education. To be seen, heard and felt special. To a certain extent, students feel seen and noticed in the class as well, but here they have to share the attention and there is a limit in the class as to what one can come to talk with their teacher / tutor about”.

Handling the tutor role

As mentioned earlier, not all tutors feel comftable about the tutor role. How the tutor perform and go through the talks is different - in the same way that it differs how teachers handle their teaching jobs. For example, some tutors find it difficult to handle student problems and are quicker to pass them on to the stuent counselor. It is fine with a student counselor, but after all, the tutors and the students share their everyday life during teaching.

One challenge of the tutor role can be that you as a tutor must manage this role at the same time as teaching and that only specific time is allocated to the tutor in connection with the talks. In the past, we had tutor lessons in our timetables - it could be, for example, 2 hours per week. Today, if a student needs to talk to his/her tutor, well, then it is taken from the teaching time.

The importance of the talks

The above also applies in connection with tutor talks. Some can have very long and intense conversations - others have no idea what to talk to students about beyond the academic skills and the activity level and then everything in between. That being said, the focus on academic achievements give us less time for the tutor talks, as students and teachers are busy finalising the curriculum. Perhaps it is therefore a natural reaction to cut the time spent on tutoring. But I think we could achieve greater activity and higher professionalism if we gave greater priority to the talks. If the students have the opportunity to "relieve their mind," then there might be less noise on the line as to participating in class.

Handling of the tutor talks

Most often it is the case that entire days are spent on student talks, but then it is all about getting the tutor talks done – sometimes only focusing on the most vulnerable students. I think that is clearly a big error. The fact that students do homework and attend classes is no guarantee that they thrive.

As mentioned, we handle the talks very differently – some stage a very controlled tutor talks and do not leave much time for students to bring problems and challenges into the talks. The tutors, who handle the talks in this way, may well tend to think that the talks are somewhat irrelevant and a little waste of time.

Others experience the talk as very rewarding for the relationship between tutor and student. So, it is very different what the student "gets" from his/her tutor. Just as there are teachers who, in their tutoring function, like to go "an extra mile" for one or more students, where others feel their only goal is to teach and not as a social educator.

Annette Hall Madsen continues: "On several occasions, I have experienced being a Danish - and social science teacher in my tutor class. This has given me and the students an experience of proximity, which has strengthened the students' ability to learn. I have had a knowledge of the students that can help me understand how to deal with the students in the teaching sessions. Students can have a behaviour that is disturbing the student himself/herself while in class, but also disturbs the class - but here I can support the student, since I have a knowledge from the tutor talks about for example the student's challenges. At the same time, the students have come to know me really well, so they feel safe. */Annette*

3. STUDENT COUNSELING

The tasks of the student counselours are many, they change during the year and according to the needs of the students, but the below roles and tasks are always relevant for the school and as a help to the students.

- The student counselors' primary role is to make a bridge between primary school and the VET education. This is very important as many primary schools do not have sufficient knowledge about the VET education and what it contains;
- They introduce themselves in all new classes and tell the students how to reach them and which topics they usually work within;
- Counseling about which student line to chose;
- Vulnerable students and allocation of funding for mentoring of students;

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- Early drop-outs;
- Student talks if student is projected to not pass the exam;
- To continue from VET to a work placement or a higher education.

Video testimonial with teacher and student counsellor Merete Nødgaard about present challenges:

Video

https://youtu.be/UXDC8AKakmY

https://drive.google.com/drive/u/0/folders/1VTou7m92VqCE64V9_SVI3G7qTgWiP2tK

4. WORK PLACEMENT COORDINATION BETWEEN EDUCATION AND COMPANIES IN THE DUAL SYSTEM

In the dual education system(EUX), part of the education must of course take place in the companies. This transition can be very difficult for students to overcome. Again, they need access to advice and guidance. In addition, they have also come so far in their education that their parents or relatives can no longer provide them with adequate guidance that is educationally relevant.

At our school, we try to address this challenge and for students to make the transition with the help of a coordinator who knows the businesses.

Throughout the students' education, the work placement coordinator has an "open door policy" and actually knows almost everyone and their educational aspirations.

Some of the coordinator's tasks are as follows:

- Visits all classes in VET and EUX department 1st year:
- 1 x Introduction visit
- 1 x study line visit 2nd year:
- CV and application, help with job portals
- Open door policy. Office placed in a quite central place of our school
- Possibility of counseling with parents and tutor

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Video testimonial with work placement coordinator Michale Duvier

Video
https://youtu.be/0gsshFuRnX0

First tutorial with student prior to enrollment

A tutor/teacher meets the student who is invited to the school at a specific date and time with or without parents.

The questions work as a frame for the conversation between the teachers and the student/parents. We want to signal to the student from the very beginning that we take this choice of education very seriously and at the same time want to support in the best way we can. You might say that this is the time where the "working-contract" between the student and the school is "signed."

Time	step	Content of tutorial
Before the student is enrolled 20 minutes	1st tutorial	Use the questions from **Questions for getting to know the student:** • How did you experience your time in your primary school? • Do you have any friends at our school? • What do you do in your leisure? Do you have an after-school job? • Do you live with your parent/parents/siblings? • If not, where do you live and do you have any relatives/friends who help you? • As you start a new education with new teachers and peer students, are there any habits – either in your personality or learning habits you would like to change? Why/why not? **General questions about the school and subjects:** • Do you know our school? • Do you know the entry requirements? • If you do not live up to the entry requirements now, what do you have to do, so you will? • Do you know any of the subjects the school teaches? • Do you know what kind of work you would like to do in the future?

It is absolutely crusial that all the informations from this conversation is passed to the tutor to be.

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The Second tutorial

Second tutorial should take place at the beginning of year.

The tutor invites the student to a tutorial at a specific date and time.

The tutor is usually a teacher who knows the student from class.

Time	step	Content of tutorial
After one month at the school 40 minutes	2nd tutorial	**Questions for getting to know the student** · How do you experience your time at our school? · Have you made any friends at our school? · What do you do in your leisure? Do you have an after-school job? · Do you live with your parent/parents/siblings? · If not, where do you live and do you have any relatives/friends who help you? · As you start a new education with new teachers and peer students, are there any habits – either in your personality or learning habits you would like to change? Why/why not?
Choose the questions relevant for the student	To explore the student's thoughts and experiences with subjects and the disciplines of the subject	**Questions for education and subjects** · Which subjects are you most interested in? Why? · Which subject/subjects do you find easiest? Why? · Do you have subjects where you think you develop a lot of skills and competences? Why do you think so? · Are there any subjects where you'd like to develop accordingly? Do you have any idea how this can happen? · What three subjects do you like best in school? - How do you thrive in class? Friends, recess, etc. · Which subjects don't you like? Why? · What strengths do you experience using in your everyday life now? · What would the perfect school day look like to you? · What subjects make sense to you? · How do they make sense?
If you have the time, you could also ask these questions to get to know the student better	The focus is on leisure time as an inspiration for educational and job opportunities.	**Questions for leisure** · What matters to you in your spare time? - What are your interests? · What do you do when you have to relax? · What makes you happy? What makes you sad? · What are you doing when you're having fun? · What differences and similarities are there between the way you are engaged in school and in leisure? · What differences and similarities are there between the way you thrive in school and in leisure? · What do you do yourself that contribute to these differences and similarities? · Have you done anything in your spare time that gave you a new understanding of yourself? That surprised you?

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The Third tutorial

Time	step	Content of tutorial
Midterm 30 minutes To talk about how the student manages in different subjects and to help them talk about learning and how they get the most out of learning. To find out if the student is on the right track. To open up alternatives or new perspectives	3rd tutorial	**Questions for Learning** • When do you learn the most and when do you learn least? Try to explain a situation where you learn and why? Try to explain a situation where you did not learn and why? Explain how you yourself could improve your learning in situations where you feel you do not learn. • Do you ever experience learning where you forget time and place? If not any other situations where you experience this? • What types of tasks do you thrive best on solving? • What do you want to learn? When and how can you learn? • In which situations, do you think you learned anything valuable? • If you could go around the year again, what would you do differently? - How can you do it differently in the next semester? What can you do for this to happen? - Who or what can help you with that? Give three examples. **Questions for Dreams** • Where are you in five years? • If you're done with a secondary education in five years, how does it feel? • If you had a magic wand, what would your world look like? • If you could do anything tomorrow, what would you do? • What's a good life for you, now and in the future? • What's important to you in your life? • What values are important to you in the future and now? Specify e.g. money, friendship, family, interests/hobby, prestige • Do you think your life will change a lot over the next few years? • In what ways? - Do you think you're going to change a lot over the next few years? Change opinions, interests and preferences? In what ways? Why? • Do you think you're going to want to change jobs many times during life? (Alternatively, have to change jobs)? • Do you want a job that lasts your whole life? Why?

The Fourth tutorial

Time	step	Content of tutorial
20 minutes	4th tutorial	**Did you reach your goal?** • Why/why not?
2 months before the student leaves the school	Status of job and education	• What kind of job would you like? • Did you start looking for a job? • Did you make any applications? • Do you need help making an application/CV? • If you do not have a job, could you think of anybody who could help you? • Do you know we have a coordinator who helps students find a job? • Do you have relatives/friends who may help you getting a job?
	Education	• If you could go around the year again, what would you do differently? - How can you do it differently the last months? What can you do for this to happen? - Who or what can help you with that? Give three examples. • Any subjects which you do not do well in? • Any subjects where you are very good? How can you use your knowledge from this subject to improve your grades in the subject you are not doing well in? • What can you do so this does not happen? • Any subjects you learned something that you might use in your future job?

DIAVIMA, Greece

1ST VOCATIONAL SCHOOL OF SERRES

A6 Developing Multiple Intelligences at VET

Chrysoula Cocarida
Electrical engineer, VET teacher

GP1 Electrical Engineers: Single-phase Transformers

INTRODUCTION

Howard Gardner, a Harvard psychology professor, published his Theory of Multiple Intelligence in his book "Frames of Mind" in 1983 (Gardner, 1983, 1987, 1997, 1999, Gardner & Hatch, 1989). Gardner recognizes 9 different intelligences and defines them as independent mental abilities that are distinguished from human basic functions.

Each person has a different "distribution map" of intelligence, and that makes him unique. Also – very important – our intelligence, or rather our intelligences are not firmly rooted, but rather in constant development – (Gardner & Davis, 2013, Gardner, 1995, 1999).

The 9 intelligences are presented below (Gardner, 1983, 1987, 1997, 1999):

Linguistic intelligence: the ability to use language, orally or in writing.

Logical / mathematical intelligence: the ability to handle numbers, quantities, and functions that require appeal to abstract thinking.

Music / rhythmic intelligence: the ability to listen to music and distinguish tones, rhythms and musical patterns.

Visual / spacial intelligence: the ability to represent space in our mind.

Physical / kinesthetic intelligence: the ability to use our whole body or parts of it to solve a problem, or to create and express ideas and emotions.

Intrapersonal intelligence: the ability to know and understand ourselves, our goals, our tendencies, our talents and our weaknesses.

Interpersonal intelligence: the ability to understand others.

Naturalistic intelligence: the ability to recognize, classify, and use elements of the natural environment.

Existential/emotional intelligence is "the capacity to locate oneself with respect to the furthest reaches of the cosmos—the infinite and the infinitesimal—and the related capacity to locate oneself with respect to such existential features of the human condition as the significance of life, the meaning of death, the ultimate fate of the physical and the psychological worlds, and such profound experiences as love of another person or total immersion in a work of art" (Gardner, 1999, p. 60).

The introduction of ICT (Informatics & Communication Technologies) in the educational process, offers tools to expand and enrich daily educational practice in Vocational Education, modernizing teaching methods to enhance the necessary knowledge, attitudes and skills to be mastered and assimilated. Vocational students grasp large volumes of information due to the rapid technological developments in every professional direction of their specialties.

The purpose of the Technical Education teacher is not just to get his students to master the curriculum through a static and outdated learning process. With the integration of ICT, it offers them high quality, exciting learning experiences, through which they learn how to learn, experiment, discover, act on their own, collaboratively. Interacting students with a variety of technologies and digital tools, build a multi-sensory approach to knowledge, cultivates creative and critical thinking, solves didactic-learning problems, stimulates active participation and utilization of any means of communication and activates – enhances their intelligence.

This improvement of the quality of the educational project in Vocational Schools, results in the improvement student performance and is redeemed with their successful absorption from the labor market and the enrichment of our society with excellent specialized technicians and responsible active citizens.

MODULE

Electric Machines, 12 hours. Third year of Vocational School

TEACHING CHAPTER

Operation of Single-phase Transformers.

Duration: 4 hours

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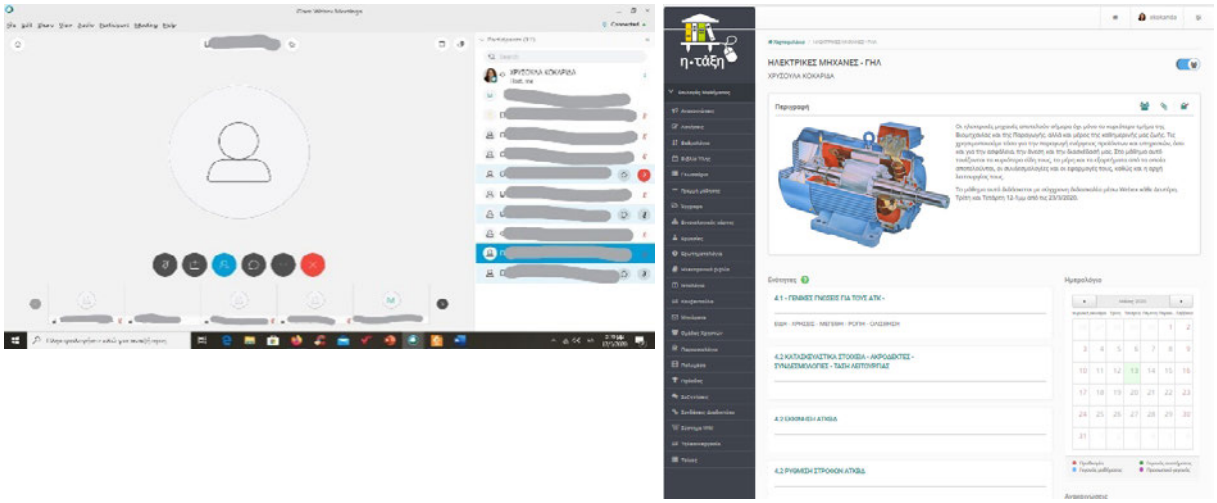
TEACHING SCHEDULE

Preparation
• **Teaching strategy**: Gagne's Theory of 9 Stages with Guided Discovery and Exploratory Learning (Gagné, 1967, Gagné, 1987). All the entry points proposed by Gardner (1993, 1999) were also used. In particular: narrational entry, logical/quantitative, foundational, aesthetic, experiential/ hands on entry and social entry (Gardner, 1987, 1999). • **Intelligences**: Linguistic, logical-mathematical, spatial, intrapersonal and interpersonal. • **Teaching techniques**: short lecture with simultaneous presentation, mapping concepts, brain-storming, discussion, questions and answers, exercise resolution and group work. • **Digital tools:** smartphones, e-class (asynchronous education), Webex (modern education) and the existing interactive digital structures of the Ministry of Education, Interactive School Books (E-Books) and Digital Educational Material (photodentro). E-class is a platform where students and teachers can communicate, collaborate, discuss, plan, ponder, share links, documents, vid-eos and photos. Creators can also post and remove posts, assignments, manage their class and lessons.

FIGURE 47 Webex class – e -class



Stage 1: Attention Focus.

I am showing a short video using webex that deconstructs a single-phase M / S via a link from Youtube, to arouse students' interest and focus their attention. At the same time, students can comment and discuss. Activation-enhancement of spatial, linguistic, interpersonal intelligence.

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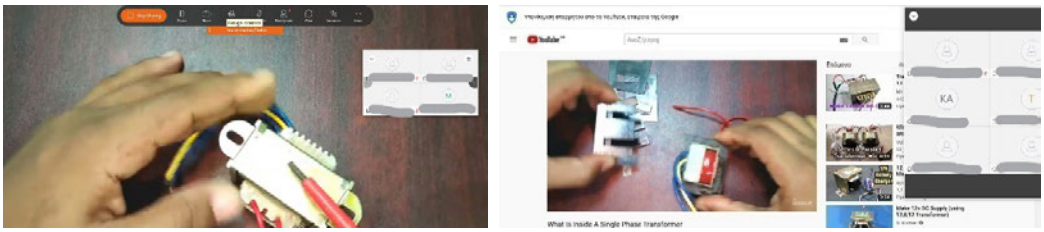
FIGURE 48 A short video using webex, where a single-phase transformer is dismantled via a Youtube link



Stage 2: Objectives

Objectives	1st & 2nd teaching hours	3rd & 4rth teaching hour
KNOWLEDGE	Use and enhance verbal, spatial, logical-mathematical intelligence in order to: • Be able to name the parts that make up a simple single-phase transformer. • distinguish the differences between the 3 types of transformers. • formulate the definition of the transformer transport relationship.	To formulate the definition of the transport relationship of M / S.
SKILLS	Use and enhance verbal, spatial, intrapersonal, interpersonal, logical-mathematical intelligence in order to develop the skills listed below: • collaboration, teamwork, communication, decision making and critical thinking • use of Web 2.0 tools and technology in general for educational activities • Explain the principle of operation of a simple single-phase transformer. • To conclude what exactly happens with voltage V, current I and power P in each of the transformers. • explain the two operating modes of the transformer. Solve computational exercises for the transformer transport relationship for both operating modes.	Explain the two operating modes of the M / S. Solve exercises for calculating the M / S transport relationship for both operating modes.

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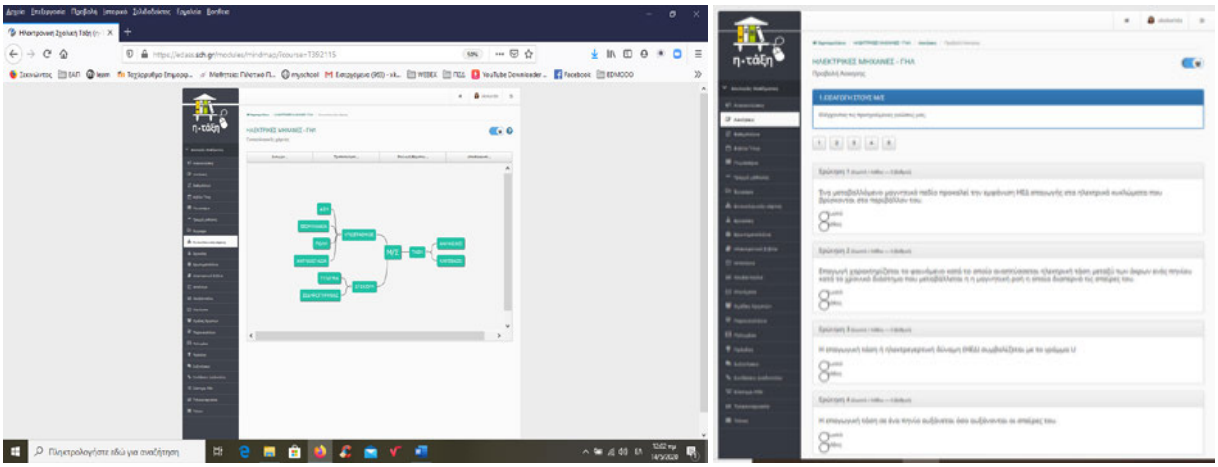
ATTITUDES	To appreciate their intelligence and to be motivated for their further development through learning functions. Also use and enhance verbal, intrapersonal, interpersonal, logical-mathematical intelligence in order to: • accept themselves and others and work together in groups towards implementing activities. • appreciate the value of their feedback and self-assessment. • accept the evaluation conducted by the teacher. • justify the changes in the cross section of the secondary coil, depending on the transformer they have chosen. Realize the relationship of the spiral numbers and their windings with the voltage we get from the transformer.	Collaborate in groups to implement the activity. To have a positive attitude towards the elaboration of their goals. Appreciate the value of their feedback and self-assessment. Accept the evaluation conducted by the teacher. Realize the relationship of the spiral numbers and their windings with the voltage we get from the M / S.

Stage 3: Withdrawal of prior knowledge

Trying to recall previous experiences and knowledge, I asked my students to compose a concept map for the theory of a "transformer". I find that previous knowledge from courses that had been taught in previous years are prerequisites and I challenge the students to recall them with a short Test of YES/NO. Spatial perception, linguistic, intrapersonal and interpersonal intelligences are being cultured.

FIGURE 49 Application in e-class: a concept map for the theory of a "transformer" and a short Test



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Stage 4: Material Presentation

I am sharing on webex a short PowerPoint presentation, where I connect the previous knowledge with the introduction of new one, specifically the sections that make up the M / S and its operating principles using the e-books from the Ministry of Education.

Photodentro is employed to present a dynamic visual representation of the operation of an ideal single-phase M / Smezowebex. Through this interactive activity that involves the use of buttons which dynamically shift the simulation from one type of M / S to another, students explore and find out in a experiential way the function and characteristics of the three types of M / S. In this workshop, students work individually and in small groups.

A video from YouTube is shared on webex to introduce the concept of M / S transfer relationship in a more visual perspective.

Then, a short Power point presentation is shared on webex, showing the two functional circumstances of a Transformer with its corresponding types of transfer relationship using the e-books from the Ministry of Education.

Activation-enhancement of spatial, logical, mathematical, linguistic, interpersonal and intrapersonal intelligences are attained.

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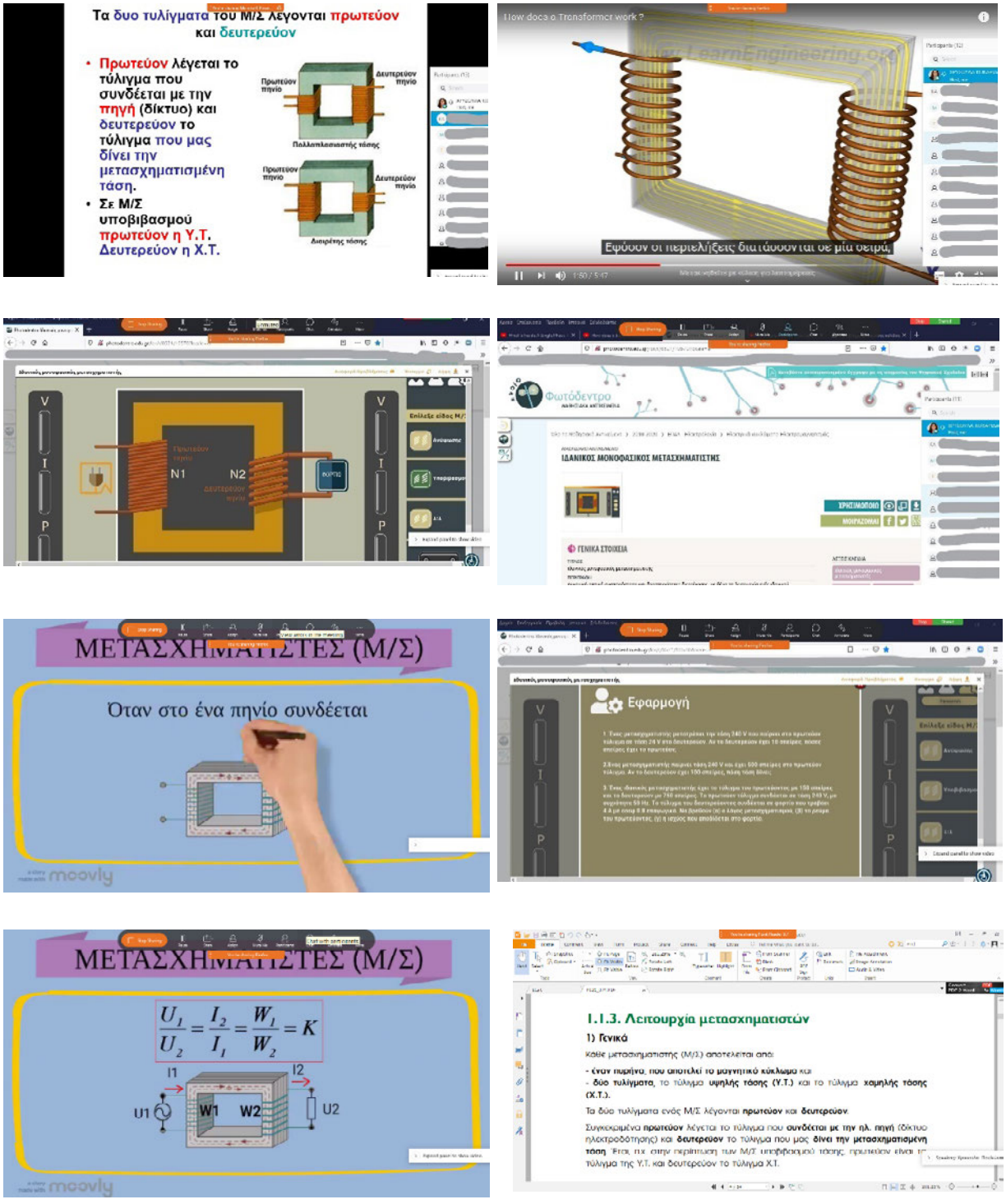
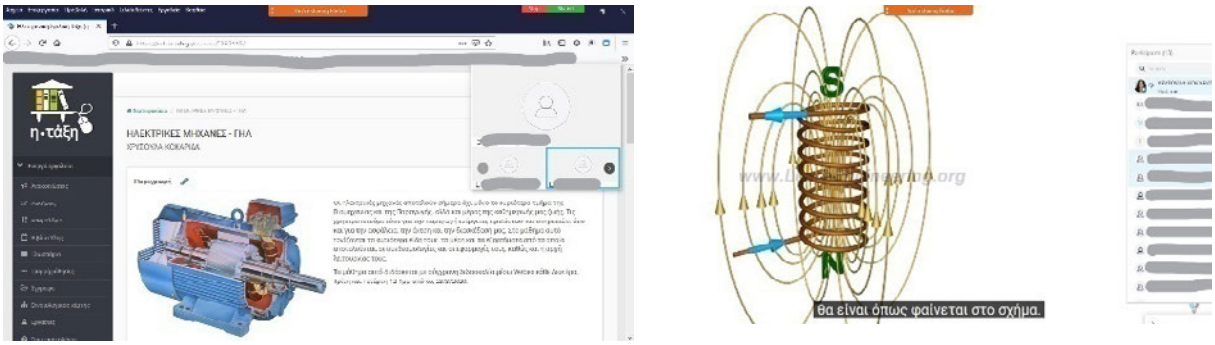
FIGURE 50 Presentation-power point file via webex of the sections that make up the transformer, its operating principle and the transformer transfer relationship using: e-books from the Ministry of Education, Photodentro, and Youtube video



Stage 5: Support

There is constant provision of support to students by answering questions and inquiries during synchronous education, as well as after the educational material is presented. I also provide clarification and guidance on group activities, not only orally, but also in writing via e-class by uploading clarification instructions and announcements, with personalized support through the “messages” option. Furthermore, I encourage them to consult the theoretical elements contained in the visual representation we shared in Photodentro via webex.

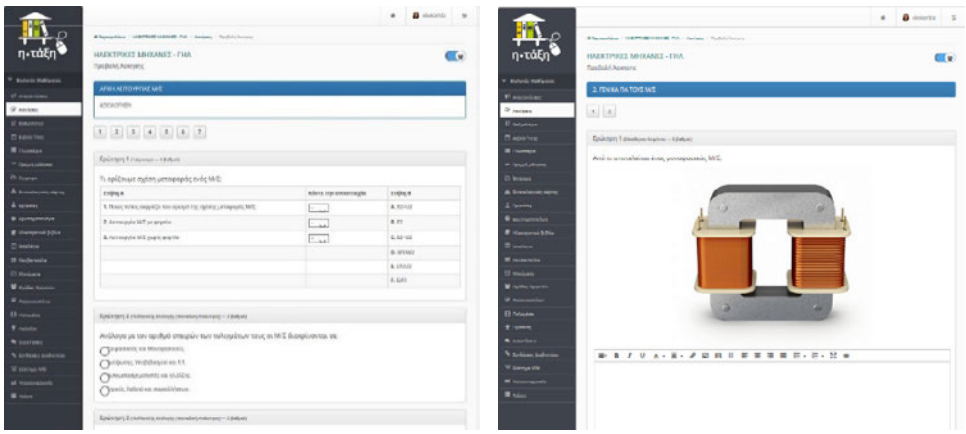
FIGURE 51 Answering questions and inquiries regarding the visual representation built in Photodentro via webex



Stage 6: Student action

I give students the opportunity to implement new knowledge applications individually and in small groups, giving them research and application activities.

FIGURE 52 Research and application activities at Photodentro and practice exercises



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Stage 7: Feedback from the Teacher

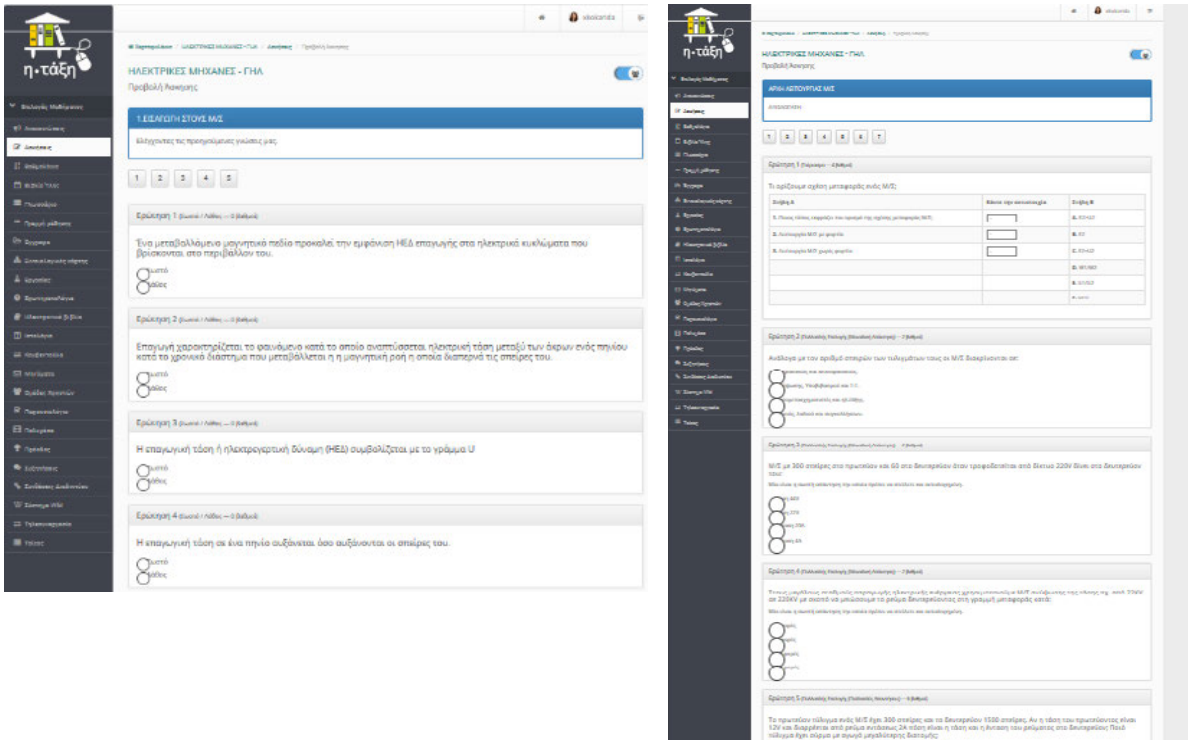
I give the students positive feedback on the results of their actions refraining from disapproving comments. I reward correct results and praise their effort regardless of the outcome. These comments are written through the “messages” tab or orally via webex.

AFTER THE EDUCATIONAL ACTIVITY

Stage 8: Evaluation

I assess whether students have achieved the educational goals with multiple choice tests, matching, and short-answer questions. Missunderstood material is explained and every original and successful solution is rewarded.

FIGURE 53 Educational goals with multiple choice tests, matching, and short-answer questions



Stage 9: Maintaining Knowledge

The most complex and demanding exercises are uploaded for the students to solve so that they can apply newly obtained knowledge.

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VOCATIONAL HIGH SCHOOL OF RHODES' PARADISI

GP2 Poverty in the world – a teaching strategy and practice

Panagiotis Chatziplis
Economist (M.Ed.),
Principal of ParadisiRodos Vocational Education School

TEACHING STRATEGY

Identity

The teaching entitled "Poverty in the world" lasts three (3) teaching hours concerning the course "Political Education" of the 1st grade of the Vocational High School (Textbook: Political Education, ITYE DIOFANTOS Publications, Athens, 2019) and is addressed to students aged 15-16 years old.

Brief description

This educational approach to the problem of "poverty", was addressed to high school students, who are pursuing the "Political Education" course. It lasts three teaching hours and requires the use of an interactive whiteboard. It utilizes the internet as well as a range of tools, such as: padlet, GooglePresentations, video, glogster (digital collage), wordart, mindmup or CmapTools.

Its purpose is to help students become familiar with and understand the concepts of poverty, inequality etc. It combines the advantages of educational use and utilization of ICT (Education 4.0) and is based on H. Gardner's Multiple Intelligence theory. It also helps to promote the understanding of different worlds (physical, biological, human beings, art, self), in order to increase literacy, learn basic facts, etc. These are perceived as a means and not as an end in itself. Various skills are cultured and used as tools for understanding important questions, issues and problems (Gardner, 1999).

This specific teaching strategy is divided into four phases: motivation, implementation, presentation, evaluation. In all four phases, teaching follows didactic approaches consistent with the theory of multiple intelligences (Gardner, 1993, 1999; Gardner & Hatch, 1989). These approaches aim at a deeper understanding of the subjects using the intelligence which the students have developed, while at the same time, helping to enhance their other types of intelligences which develop the overall profile of their intelligence. We would like to point out that the use of new technologies helps in the multiple representations of the subject.

Aim and objectives

The aim of the course is "the student to acquire social, economic and political education, to understand and experience the interconnection of Society - Economy - Political Institutions and Law, to understand basic institutions for the organization and functioning of society, economy and state and to develop political consciousness and critical thinking, to actively participate in local, national, European and global social, political and economic becoming as a free and responsible citizen".

The teaching objectives of the scenario can be classified into three axes:

- **To gain knowledge**

  Use and enhance of verbal, logical-mathematical intelligence in order to:

  - Understand the concept of poverty and distinguish its types;
  - Report and describe the causes of poverty on the planet;
  - List the consequences of poverty and how to deal with it.

- **To acquire skills and competences**

  Use and develop verbal, intrapersonal, interpersonal, logical-mathematical intelligence in order to develop skills:

  - Collaboration, teamwork, communication, decision making and critical thinking;
  - Use of Web 2.0 tools and technology in general for educational activities;
  - Searching, collecting, organizing, connecting, interpreting and presenting information from the internet.

- **Adopt behaviors**

  To appreciate their intelligences and to be motivated for their further development through learning activities. Also use and enhance verbal, intrapersonal, interpersonal, logical-mathematical intelligence in order to:

  - Wonder about the causes and consequences of poverty on the planet;
  - Adopt behaviors to tackle poverty.

DETAILED PRESENTATION OF THE TEACHING STRATEGY

Theoretical Framework

It is proposed to apply teaching approaches compatible with the theory of multiple intelligences. These approaches aim to gain a deeper understanding of the subject matter, utilizing the various intelligences that students have developed and contribute to the enhancement of their other types of intelligence. The ultimate goal is the overall development of the students' intelligence profile (Gardner, 1993, 1999˙Gardner & Hatch, 1989). There are different ways of approaching the subject. Initially, the intelligences, which are most appropriate for students to understand the content of the lesson, are noted. For example, for logical-mathematical intelligence, drawings, analogies, etc. can be used, for kinesthetics we can ask the

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students to express themselves with their bodies, for intrapersonal intelligence to describe personal values, etc. Our students, through these points, can discover the variety of ways to think and learn about any topic and choose which entry point they prefer over the rest (Gardner, 1991). Gardner suggests five different ways, in order to approach and teach a subject to the classroom with five entrances (narrative, logical / quantitative, aesthetic, basic, experiential). The students differ as to which entry is appropriate for each one of them and which routes are most comfortable to follow. After acknowledging these five entry points, the teacher can introduce new material that can be used by many students. The students then explore other entry points and, thus, have the opportunity to develop multiple perspectives, as an antidote to stereotypical thinking.

In addition, the use of web 2.0 tools in the educational process offers many advantages. Due to the abundance of tools, there are many options available for the teacher, with low requirements in know-how and a very user-friendly interface. These tools are designed to be suitable for collaborative learning processes. As a result, the student-student and teacher-student interaction is strengthened, as well as active participation and teamwork. In addition, the use of new technologies contributes to the multiple representations of the subject. Finally, with the production of material by the students themselves, skills of analysis, composition and evaluation are very well developed.

One of the global problems facing all states is poverty

The purpose of teaching is to clarify the concept of poverty, and to make students aware of its types, to identify its effects and ways to combat it, through a series of activities aimed at adopting critical thinking and behavior on the subject. They also aim to develop students' multiple intelligences, namely: Verbal, Mathematical, Visual, Intrapersonal and Interpersonal Intelligence. In addition, the use of the Internet for research, as well as the use of programs to create collages, bulletin boards, word clouds and conceptual boards, helps to process and consolidate information, causing interest in students. All teaching hours take place in the new technology room.

Material and ICT applications

An essential tool is the interactive whiteboard, both for the plenary and for the group presentations. In addition, various tools of web 2.0 are used, such as Padlet, GooglePresentations, Glogster (digital collage), Wordart (word cloud), Mindmup or CmapTools, blogs and 9 worksheets with activities were additionally used for teaching purposes.

Teaching methodology

Teaching will follow the following phases: motivation, implementation, presentation, evaluation.

***Motivation* (30 min)**

The teacher writes the word "Poverty" on the interactive whiteboard. Students are then asked to deal with a case study entitled "The Little Red Hen".

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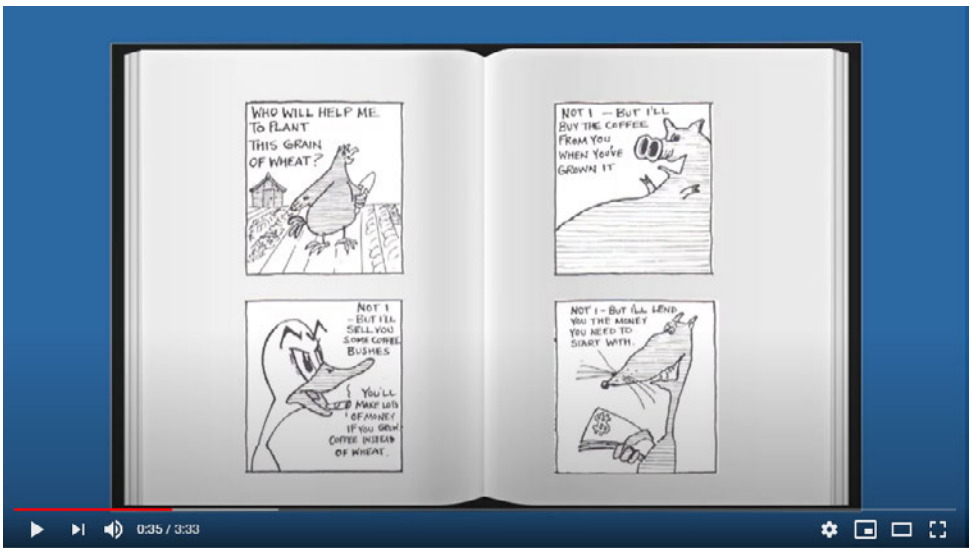
FIGURE 54 Case study: The Little Red Hen



Then they watch this video as a stimulus and introduction to the issue of poverty. Students are asked to express their views (10 min), while the dialogue will help enhance the overall interaction and create motivation. In this way, students learn through narratives and descriptions or through problem solving and, thus, verbal intelligence is enhanced.

The teacher shows the video (duration 2.04 min) "Poverty in Greece".

FIGURE 55 Poverty in Greece

Then he provokes a first discussion of impressions - feelings (10 min) and asks students to complete the 1st Worksheet (8 min) located on the padlet (Enhancing interpersonal and intrapersonal intelligence).

FIGURE 56 Worksheets

***Implementation* (85 min)**

The following is a summary presentation (4 min) in the interactive whiteboard to present to the students the two types of poverty, but also its causes and consequences, as they emerged through the 1st activity and the dialogue that followed.

FIGURE 57 Worldwide poverty

The teacher then displays the following images (3 min) on the interactive whiteboard and asks students to complete the 2nd Worksheet (10 min) (group work of 3–4 people).

FIGURE 58 Different ways of living

After completing the activity, discussion - suggestions by the students follow in order to deal with the poverty issue (10 min).

Then, the video "Doctors Without Borders treat children" (duration 4.55 min) is shown, which refers to the action of the organization "Doctors Without Borders". Students on the occasion of this video, are asked to fill in (3 min for questions - answers) the 3rd worksheet (15 min) (group work of 3 - 4 people). Later on, discussion, presentation of the results and composition of opinions are formed (15 min).

FIGURE 59 Doctors Without Borders treat children

Finally, for the implementation of the fourth activity, the students are divided into five groups. Each group undertakes to carry out a different activity (Worksheets 4.1, 4.2, 4.3, 4.4,4.5) (Enhancing verbal, interpersonal, mathematical, intrapersonal intelligence) (20 min).

Presentation (20 min)

In the presentation phase, students are asked to share the result of their work, presenting it in the interactive whiteboard while exchanging views with the other groups.

Evaluation

The teacher assigns homework related to a case study, as shown below in Worksheet 5.

The teaching evaluation will take place through a GoogleForms questionnaire and or other applications. The questionnaire is divided into two sections.

In the "Self-Assessment" section, students will have the opportunity to confirm the knowledge they acquired, answering the questions of a test located at https://cutt.ly/4yRrk5o.

In the next section "Assessment of teaching" students will be able to express their opinion on the effectiveness of the activities carried out, completing the questionnaire available at https://cutt.ly/3yRewWI

Through observation and recording of his observations, the teacher can also evaluate factors such as organization, communication, group operation, personal participation, utilization of available time, identification and use of appropriate material based on the sources given, composition of documented texts and presentation skills (https://cutt.ly/pyReG0s).

GP 3 Vocational Education Teacher´s training worksheet on multiple intelligences

DIAVIMA, Katerina Aravantinou-Fatorou

PhD, MRes, MEd

Neurobiologist, Adult Educator, Secondary School Teacher

Introduction

The purpose of this training seminar is for teachers to understand Gardner's theory of multiple intelligence with the aim of applying it into their teaching. In 1983, Howard Gardner, a Harvard psychology professor, published his Theory of Multiple Intelligence in his book "Frames of Mind". Gardner recognizes 8 different intelligences and defines them as independent mental abilities that are distinguished from basic human functions. Also, Howard Gardner has written about the possibility of a ninth intelligence – the existential (Gardner, 1995, 1999) but in this training seminar it won't be addressed.

For the purpose of the seminar, three (3) worksheets have been developed, which gradually introduced teachers to this theory. The worksheets were used for the training of 20 teachers, who are working on

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Vocational Education. The training seminar lasted five hours.

When teachers complete the suggested activities, they are expected to:

- understand, accept and appreciate the theory of multiple intelligences;
- describe the nine types of intelligence;
- explain the basic points of the theory of multiple intelligences.

Multiple intelligence theory in adult education is applicable in two areas. At first, it concerns programs aimed at trainees mastering the theory of multiple intelligences and the second concerns the teaching of adults on any subject using multiple intelligence approaches. Moreover, according to Armstrong (1993) when adults learn to see their lives through the multi-intelligence model, they can discover and develop hidden abilities. In this sense, self-development programs add value to courses related to the interests of the trainees.

What can adult educators / teachers who want to educate / train themselves in the theory of multiple intelligences do? Some suggestions, as outlined by Gardner (1999) himself, include:

1. To be informed about the theory of multiple intelligence. Those interested in Gardner books can look for other books on a variety of theoretical and practical approaches to multiple intelligence, videos, etc.
2. To form multi-intelligence groups. These groups can meet once or twice a week to discuss issues related to multiple intelligences, sharing experiences, referring specific applications, etc.
3. Organize visits to schools, where teachers apply multiple intelligence theory. Interactions with teachers, parents and students could provide many new ideas.
4. To participate in workshops, conferences, seminars, teleconferences, where ideas for the promotion of multiple intelligence are promoted.
5. To know their students well. To deal with the learning peculiarities of each student.
6. Do not hesitate to experiment by teaching according to the theory of multiple intelligences. It is important to be flexible in one's first efforts and then, as the case may be, to either continue or change course and rethink one's work (Gardner 1999: 145-146).

Now, we will present a teacher training program in the theory of multiple intelligences. The program includes activities distributed in three worksheets.

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WORKSHEET 1

Howard Gardner's theory of multiple intelligences

Introduction-Some suggestions for the teachers

What can teachers, who want to apply the theory of multiple intelligences, do? Some suggestions include:

1. To be informed about the theory of multiple intelligences. In addition to Gardner's books, those interested can look for other books on a variety of theoretical and practical approaches to multiple intelligences as well as video, etc.
2. To form "multiple intelligence" groups. These groups may meet once or twice a week to discuss issues related to multiple intelligences, sharing experiences, referring specific applications, and so on.
3. Organize visits to schools where teachers apply multiple intelligences. Interactions with teachers, parents and students could give many new ideas.
4. Participate in workshops, conferences, seminars, teleconferences, where ideas for the promotion of multiple intelligences are displayed.
5. Get to know their students well, to deal with the learning peculiarities of each student. It can be difficult to identify which intelligences are present in the classroom. Working together with the students and observing them will help you understand them better. For example, at the beginning of every year with a new classroom you can play "to know us better" games or share a survey on a web platform, such as kahoot, quizziz, google forms etc.
6. Do not hesitate to experiment by teaching according to the theory of multiple intelligences. It is important to be flexible in your first efforts and then, depending on the case, either to continue or change course and reconsider your work (Gardner 1999: 145-146). You can add activities such as writing scripts, making videos, physically simulating a scientific process, illustrating a project, going on field trips etc.
7. Differentiate your teaching methods. As traditional classrooms tend to focus on linguistic and logical-mathematical types of intelligence, you can include, for example, debate to teach logic, use of online lab simulators for scientific courses etc.
8. Use art to engage your students. Putting together puzzles, painting, sculpting, making collages, writing poems, performing tasks that involve hand-eye coordination as a personal task or in groups will help students make positive relationships with the other classmates, develop their communication and collaboration skills and soothing a friend when they're feeling down.

<u>Activities</u>

- You can study Gardner's theory, exploring the nine different types multiple intelligences via searching bibliography.
- Now that you are aware of the multiple intelligence theory, can you explain where it could apply in the apprenticeship system?
- What educational goals do you think the theory of multiple intelligences "serves" according to the basic points of this theory?

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WORKSHEET 2

Short Curriculums of famous people

Activities

- Read carefully the following short biographies
- For all individuals, try to distinguish and explain which intelligence / intelligences they have according to Gardner's theory.
- When you finished your reading, complete the table below:

	Logical	Kinesthetic	Spatial	Linguistic	Musical	Intraper-sonal	Interper-sonal	Natural-istic
John Lennon								
Charlie Chaplin								
Socrates								
Salvador Dali								
Ernest Miller Hemingway								
Leonardo da Vinci								
Martin Luther King								
Charles Robert Darwin								

Short biographies of famous people

John Lennon

John Winston Lennon was born on October 9, 1940, in Liverpool, Merseyside, England, during a German air raid in World War II. When he was four years old, Lennon's parents separated. Julia, his mother, taught Lennon how to play the banjo and the piano and purchased his first guitar. As a boy and young adult, he enjoyed drawing. Lennon's school master thought that he could go to an art school for college, since he did not get good grades but had an artistic talent. Lennon met Paul McCartney at a church fete on July 6, 1957. He soon invited McCartney to join the group, and the two eventually formed one of the most successful songwriting partnerships in musical history. Soon the Beatles were born and their first single, "Love Me Do," was released in October 1962 and peaked on the British charts. The Beatles were many things at the same time: they were the most famous celebrities of their era and the best songwriters of their age. The Beatles not only changed the way music was being made, they forever changed music. The band was greatly recognized and worshipped worldwide and lasted united until 1970. Only one year later, "Imagine" was released, the most commercially successful and critically acclaimed of all Lennon's post-Beatles efforts. Lennon's musical, societal and political impact still remains vivid.

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Charlie Chaplin

Charles Spencer Chaplin was born on April 16th, 1889 in London, England. His parents were both artists. His father was a versatile vocalist and actor and his mother was an actress and singer, who gained a reputation for her work in the light opera field. Before the age of ten, Charlie's father died and the following illness of his mother made it necessary for Charlie and his brother to work to support themselves. Charlie joined a juvenile group called "The Eight Lancashire Lads" and rapidly was recognized as an outstanding tap dancer. He was only twelve when he got his first chance to act in a legitimate stage show and appeared as "Billy" the page boy, in support of first H. A. Saintsbury and then William Gillette in different productions of "Sherlock Holmes". In parallel, Charlie started a career as a comedian in variety show, which eventually took him to the United States in 1910 as a featured player with the Fred Karno Repertoire Company. Then his career went as high as possible. "A woman in Paris", "The God rush", "The circus", "City lights, ""the great Dictator" are only some of his masterpieces. Chaplin's resourcefulness extended to writing, music and sports. He was the author of at least four books, "My Trip Abroad", "A Comedian Sees the World", "My Autobiography", "My Life in Pictures" as well as all of his scripts. An accomplished musician, though self-taught, he played a variety of instruments with equal skill and facility (playing violin and cello left-handed). He was also a composer, having written and published many songs, among them: "Sing a Song"; "With You Dear in Bombay"; and "There's Always One You Can't Forget", "Smile", "Eternally", "You are My Song", as well as the soundtracks for all his films. Charles Chaplin was one of the rare comedians who were the author, actor, director and soundtrack composer of his plays as well.

Socrates

Socrates was born in 470 BCE, in Athens, Greece and died in 399 BCE. He was a Greek philosopher whose way of life, character, and thought exerted an enormous influence on ancient and modern philosophy. We are aware of his work through his conversations in Plato and Xenophon scripts. He is described in these works as a man of great insight, integrity, self-mastery, and argumentative skill. At age 70, he was brought to trial on the charge of impiety and sentenced to death by poisoning by a jury of Athenians. The "Apology of Socrates", written by Plato, presents the speech Socrates gave at his trial in response to the accusations made against him. Its powerful advocacy of the examined life and its criticism on Athenian democracy have made it one of the central documents of Western thought and culture. "Socratic method" has now come into general usage as a name for any educational strategy that involves cross-examination of students by their teacher. The conflict between Socrates and Athenian democracy shaped the thought of 20th-century political philosophers such as Leo Strauss, Hannah Arendt, and Karl Popper. The tradition of self-reflection and care of the self initiated by Socrates fascinated Michel Foucault in his later writings. Analytic philosophy, an intellectual tradition that traces its origins to the work of Gottlob Frege, G.E. Moore, and Bertrand Russell in the late 19th and early 20th century, uses, as one of its fundamental tools, a process called "conceptual analysis," a form of non-empirical inquiry that bears some resemblance to Socrates' search for definitions. But the influence of Socrates is felt not only among philosophers and others inside the academy. He remains, for all of us, a challenge to satisfaction and a model of integrity.

Salvador Dali

Dali was born in 1904 in Figueres, a small town near Barcelona, to a prosperous middle-class family. From a very young age, Dali found much inspiration in the surrounding Catalan environments of his childhood and many of its landscapes will be used in his paintings. His father and his mother cultivated his early inter-

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est in art. He had his first drawing lessons at age 10 and in his late teens was enrolled at the Madrid School of Fine Arts, where he experimented with Impressionist and Pointillist styles. When he was 16 years old, Dali lost his mother. Three years later, his father hosted a solo exhibition of the young artist's charcoal drawings in the family home. In 1922 Dali enrolled at the Special Painting, Sculpture and Engraving School of San Fernando in Madrid. His provocative persona and his experimentations on different styles are characterizing his early years. He became close to, a group of leading artistic personalities that included filmmaker Luis Buñuel and poet Federico García Lorca, as well as Le Corbusier, Einstein, Calder and Stravinsky. He visited Pablo Picasso in his studio founding inspiration in Cubism and he became greatly interested in Futurist attempts to recreate motion and show objects from simultaneous, multiple angles. Meanwhile, he began studying the psychoanalytic concepts of Freud as well as metaphysical painters like Giorgio de Chirico and Surrealists like Joan Miró, and consequently began using psychoanalytic methods of mining the subconscious to generate imagery. Dalí was highly productive, expanding his practice beyond the visual arts into a wide array of other creative interests, as jewelry, clothing, furniture, sets for plays and ballets, and even display windows for retail stores. Besides exploring different artistic mediums, Dalí also started using optical illusions, negative space, visual puns, and *trompe l'oeil* in his work. On January 23, 1989, Dalí died of heart failure while listening to his favorite record, *Tristan and Isolde*. He is buried beneath the museum that he built in Figueres. Dalí epitomized the idea that life is the greatest form of art and he mined his with such relentless passion, purity of mission and commitment to exploring and honing his various interests and crafts, that it is impossible to ignore his groundbreaking impact on the art world.

Ernest Miller Hemingway

Hemingway was born and raised in Oak Park, Illinois, a suburb of Chicago. His father, Clarence Edmonds Hemingway, was a physician, and his mother, Grace Hall Hemingway, was a musician. Both were well-educated and well-respected in their community. Like Mark Twain, Stephen Crane and others, Hemingway was a journalist before becoming a novelist. In December 1917, Hemingway responded to a Red Cross recruitment effort and signed on to be an ambulance driver in Italy ,where he was seriously wounded by mortar fire During the WWII, he was present with the troops as a journalist at the Normandy landings and the liberation of Paris. In 1921 he moved to Paris, where Hemingway met American writer and art collector Gertrude Stein, Irish novelist James Joyce, American poet Ezra Pound and other writers, as well as, influential painters such as Pablo Picasso, Joan Miró, and Juan Gris. During his first 20 months in Paris, Hemingway filed 88 stories for the *Toronto Star* newspaper. He covered the Greco-Turkish War, where he witnessed the burning of Smyrna, and wrote travel pieces such as "Tuna Fishing in Spain" and "Trout Fishing All Across Europe: Spain Has the Best, Then Germany". In 1937, Hemingway left for Spain to cover the Spanish Civil War for the North American Newspaper Alliance (NANA), despite Pauline's reluctance to have him working in a war zone. Because he began as a writer of short stories, Baker believes Hemingway learned to "get the most from the least, how to prune language, how to multiply intensities and how to tell nothing but the truth in a way that allowed for telling more than the truth." Hemingway called his style the iceberg theory: the facts float above water; the supporting structure and symbolism operate out of sight. The popularity of Hemingway's work depends on its themes of love, war, wilderness, and loss, all of which are strongly evident in the body of work. He was awarded with a Pulitzer Prize for Fiction (1953) and a Nobel Prize in Literature (1954), while several prizes have been established in his honor to recognize significant achievement in the arts and culture.

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Leonardo da Vinci

Leonardo da Vinci was a Renaissance painter, sculptor, architect, inventor, military engineer and draftsman – the epitome of a true Renaissance man. Gifted with a curious mind and a brilliant intellect, da Vinci studied the laws of science and nature, which greatly informed his work. His drawings, paintings and other works have influenced countless artists and engineers over the centuries. Da Vinci was born in a farmhouse outside the village of Anchiano in Tuscany, Italy on April 15, 1452. Young da Vinci received little formal education beyond basic reading, writing and mathematics instruction, but his artistic talents were evident from an early age. Around the age of 14, da Vinci began a lengthy apprenticeship with the noted artist Andrea del Verrocchio in Florence. He learned a wide breadth of technical skills including metalworking, leather arts, carpentry, drawing, painting and sculpting. Mona Lisa, Last Supper and the Battle of Anghiari are the three most famous paintings of his. In parallel, he was a great military mechanic and he filled dozens of notebooks with finely drawn illustrations, flying machines and scientific observations. Da Vinci died on May 2, 1519, at the age of 67, leaving behind a true legacy of a multipotent personality and work.

Martin Luther King

Martin Luther King Jr. (born Michael King Jr.; January 15, 1929 – April 4, 1968) was an American Christian minister and activist who became the most visible spokesperson and leader in the Civil Rights Movement from 1955 until his assassination in 1968. King is best known for advancing civil rights through nonviolence and civil disobedience, inspired by his Christian beliefs and the nonviolent activism of Mahatma Gandhi. His 17 minutes speech "I Have a Dream" came to be regarded as one of the finest speeches in the history of American oratory. The March, and especially King's speech, helped put civil rights at the top of the agenda of reformers in the United States and facilitated passage of the Civil Rights Act of 1964 On October 14, 1964, King won the Nobel Peace Prize for combating racial inequality through nonviolent resistance. In 1965, he helped organize the Selma to Montgomery marches. In his final years, he expanded his focus to include opposition towards poverty and the Vietnam War. Before his death, King was planning a national occupation of Washington, D.C., to be called the Poor People's Campaign, when he was assassinated on April 4 in Memphis, Tennessee. His death was followed by riots in many U.S. cities. King was awarded at least fifty honorary degrees from colleges and universities. On October 14, 1964, King became the youngest, at that time, winner of the Nobel Peace Prize, which was awarded to him for leading nonviolent resistance to racial prejudice in the U.S. In 1965, he was awarded the American Liberties Medallion by the American Jewish Committee for his «exceptional advancement of the principles of human liberty.» In his acceptance remarks, King said, «Freedom is one thing. You have it all or you are not free.»

Charles Robert Darwin

Charles Robert Darwin, (12 February 1809 – 19 April 1882), was an English naturalist, geologist and biologist, best known for his contributions to the science of evolution. Darwin's early interest in nature led him to investigate marine invertebrates. Studies at the University of Cambridge encouraged his passion for natural science. His five-year voyage on HMS Beagle established him as an eminent geologist whose observations and theories supported Charles Lyell's conception of gradual geological change, and publication of his journal of the voyage made him famous as a popular author. Puzzled by the geographical distribution of wildlife and fossils he collected on the voyage, Darwin began detailed investigations, and in 1838 conceived his theory of natural selection. Although he discussed his ideas with several naturalists, he needed time for extensive research and his geological work had priority. His proposition that all species

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of life have descended over time from common ancestors is now widely accepted, and considered a foundational concept in science. In a joint publication with Alfred Russel Wallace, he introduced his scientific theory that this branching pattern of evolution resulted from a process that he called natural selection, in which the struggle for existence has a similar effect to the artificial selection involved in selective breeding. Darwin has been described as one of the most influential figures in human history, and he was honored by burial in Westminster Abbey.

WORKSHEET 3

The multiple intelligence theory from a more personal point of view

Activities

Consider the application of Gardner's theory to yourself by answering the following questions*:

a. Which of Gartner's intelligences do you think you possess? Can you present the facts that support your opinion?
b. How does this affect the way you teach?
c. How the Multiple Intelligences Theory affect your thoughts about the future? You are welcome to share them in the padlet wall.

*Each question on this worksheet progressively led to the next, and they all relied on the participants' self-reflection and awareness. The purpose of the first question was to think, question oneself, and figure out which of the intelligences each participant held, providing examples in order to verify them for both themselves and other participants. After this process, the participants were asked to consider the way they teach from the perspective of multiple intelligence theory within the second question, and finally, the third question called upon them to take action, to reconsider their teaching methods, and to envision the future. The idea of sharing their wishes or probable fears for the future through Padlet, was intended to improve their concerns for the future and give them the opportunity to contribute, with their ideas and feelings.

Evaluation

At the end of this training seminar, the participants evaluated their training in a very positive manner, and some of their opinions are shared below:

"*This seminar helped me a lot in order to understand the intelligences I have*" (35-year-old man).

" *I had musical intelligence and I didn't know it*" (42-year-old woman).

" *I will consider my students' intelligences in my teachings*" (48-year-old woman).

"*All people don't have the same intelligences. It was a very useful program*" (51-year-old man).

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GP4 Educational Implications of Multiple Intelligences Theory

Pavlos Kokkinakis

Career Counselor, Project Manager

1. **Understanding Multiple Intelligences**

According to Howard Gardner the founder and creator of the "theory of multiple intelligences," each individual possesses and can develop more than one intelligence.

Gardner distinguishes at least eight generic types of intelligence in each individual. Lately one more (Existential Intelligence) has been added so there are nine in total.

Multiple Intelligences theory has three essential principles:

- Intelligence does not consist of a single unitary capacity that can be measured in an *IQ* score. People have a range of intelligences which work together for the maximum functioning of the individual;
- Each person has an individual intelligence profile – biological and cultural factors together with an individual's life experience result in a 'jagged' intelligence profile with some intelligences being more or less developed than others;
- Intelligence is not a static quantity – intelligence can be nurtured and developed throughout life. Weaker intelligences can be improved and strengthened: unused intelligences will decline.

These principles determine how learning, teaching and assessment should take place.

Today, as we live in an ever-changing world, the awareness and development of our multiple intelligences is more important than ever; not only in relation to the labour market but also to develop personal attributes, better understand the world we live in, and live a better life.

I want my children to understand the world, but not just because the world is fascinating and the human mind is curious. I want them to understand it so that they will be positioned to make it a better place.

Knowledge is not the same as morality, but we need to understand if we are to avoid past mistakes and move in productive directions. An important part of that understanding is knowing who we are and what we can accomplish... Ultimately, we must synthesize our conclusions in a very personal way.

Howard Gardner: https://infed.org/mobi/howard-gardner-multiple-intelligences-and-education/

The following parts of: The **educational implications of *MI theory*, *MI* and curriculum content**, **Assessment and *MI*** and the educational strategy (with examples) of ***MI* Learning Elements and Sequences** has been developed and applied in Vocational Schools in all participating countries during the "Leonardo da Vinci" Programme, "FinVoc- Pilot Project on Multiple Intelligences." (2001-2003)

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The products of the project were published in the book:

Jordan, A. (Ed.). (2003). MI Resource Book for Teachers. FinVoc Pilot Project on Multiple Intelligences, EU Leonardo da Vinci

2. The educational implications of *MI theory-MI in the classroom.*

It is claimed that the most important educational implication of *MI* theory is that we all have different kinds of minds and a good teacher tries to address each learner's mind as directly and personally as possible. The more teachers can identify congenial approaches for the learner, the more likely we are to achieve educational success. We should have explicit educational goals but be willing to approach them by multiple means. Learners should know their own *MI* profile and teachers should know the *MI* profiles of their learners. This will lead to the following consequences in the classroom:

- learners need to know their own individual strengths and weaknesses so that they can build on or develop these- they can identify and use individual means of problem-solving;
- teachers must treat individual differences in intelligence positively, and in a non-discriminatory way and learners must be supported more effectively;
- learners must search for personal meaning in order to understand what is being presented to them;
- teachers must teach for meaning through techniques that foster understanding, for example by stressing active learning, relevance, association, learning in peer groups;
- various approaches to learning should be chosen in order to reach more learners and the teacher can prepare tasks so that the learner can improve less-developed skills or intelligences, or alternately the teacher can prepare tasks so that every learner can work according to her/his individual strengths;
- team and project work can be more effective when learners with different strengths work together;
- In addition, the learner can choose extracurricular activities according to his/her *MI* profile.

For *Howard Gardner* therefore, the most fundamental aspect of an *MI* approach to education must be the **personalisation** of learning. Since each learner has a different intelligence profile with different combinations of strengths and weaknesses, the needs of that learner are therefore unique.

Furthermore, these different 'jagged intelligence profiles' need to be openly acknowledged and discussed in any learning situation. Each individual can then take responsibility for their own learning, through understanding their strengths and weaknesses. This self-discovery is of particular relevance to learners who are often held back by low self-esteem and feelings of failure arising from earlier life experiences which were often cultural or gender-based.

For instance, many learners express anger, shame and resentment about their experiences within the educational system. Those who are weak in the linguistic and mathematical intelligences were frequently punished and ridiculed in the past. Other learners express regret that their individual strengths were not recognised nor rewarded. Such happenings have been called 'paralysing experiences', that is, events or reactions that cause people to 'shut down' intelligences. Such reactions can be clearly heard in the life stories of many learners.

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School and college practices such as 'streaming' or grouping together learners of similar abilities send strong messages to individuals in relations the worth of individual strengths.

Similarly in vocational subject provision leading directly to employment, important messages are sent out about appropriate areas of strength for particular groups. For example, women are often seen as less capable in the logical and mathematical spheres and are offered programmes of skill development in more traditional fields such as hairdressing or home economics, rather than looking for opportunities to develop their logical intelligence. Similarly, vocational education for boys is more likely to provide technical subject options, as opposed to language or customer service courses.

Rather than acting as an equalizing force, vocational education through its practices often creates and highlights gender and cultural differences within society. This description does of course ignore key factors such as motivation, but it is interesting to note that when present, personal, family experience or role models in particular vocations, women may well opt for non-traditional vocational areas such as Construction Studies.

The *MI* approach provides an alternative method of teaching. It provides opportunities for events or reactions that give students a spark to ignite strengths in their intelligence. Thus, within the *MI* framework the learner can see him/herself as of equal status with other learners and can recognize areas of weakness in the knowledge, which can be worked on and improved. Furthermore, learners can identify areas of strength from within their own intelligence profile which can help in this process. Finally, learners can evaluate their performance in an objective manner, acknowledging their struggle without feelings of shame or inadequacy.

3. *MI-Multiple Intelligences* and curriculum content

If knowing something is knowing its significance, then **understanding** rather than memorizing must be the central aim of education. Education for understanding is according to *Gardner*, the *"application of knowledge, concepts etc. in new situations for which that knowledge is appropriate"*. Understanding therefore is a matter of "*being able to do a variety of thought-demanding things with a topic – like explaining, finding evidence and examples, generalizing, applying, analogizing and representing the topic in a new way"*. This transferability of knowledge is 'intelligence in action'. So, knowledge is only valid when it is applied and valued in the world outside the classroom. What is taught in school only matters to the point in which it *"yields something that can be used once students leave school."* Mere coverage of content is according to *Gardner*, the enemy of understanding. Within the *MI* model, content should be selected by theme. Considerable time should be spent in choosing topics that explore key concepts and raise essential questions that are relevant to the needs of society and the learner. Such topics are generally capable of being approached from various 'entry points', and help guarantee understanding by the learner.

The **personalization** of education also has implications for the teacher involved. The jagged intelligence profile of learners demands that teaching must connect to a range of intelligence strengths in students if understanding is to be achieved. Teaching for understanding demands that subject matter is presented in a number of forms which allow learners to access the particular topic. *Gardner* argues against the notion that there is only one way to learn how to read, only one way to learn how to compute, only one way to learn about biology. Such contentions are nonsense, but on the other hand it is equally nonsensical to say that everything should be taught in seven or eight different ways. That is not the point of *MI* theory. The point is to realise that any topic of importance, from any subject, can be taught in more than one way. There are things people need to know, and educators have to be extraordinarily imaginative and persistent to help students better understand these concepts. *Howard Gardner* suggests four 'entry points' which can broadly map on to the individual intelligences:

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- **The narrational** entry point, based on the linguistic intelligence might use a story or case study to present a particular topic;
- **The logical-quantitative** entry point is more likely to select a graph or a numerical /formulaic representation relevant to the subject;
- **A foundational entry point** uses a more philosophical approach and questions basic principles, relationships and underlying reasons within a given area of investigation;
- **The experiential approach or** hands-on-method, deals directly with materials associated with the topic.

Within these four approaches, learners should be able to recognise areas of interest or strength, and thus help maximise their understanding and knowledge of the topic in hands. The use of distinct entry points allows the teacher to operate as a 'student-curriculum broker' helping to match student and material as closely as possible to enhance understanding and meaning.

4. Assessment and *MI- Multiple Intelligences*

A key issue within education today is the purpose and nature of assessment, and the need for more flexible and progressive structures of assessment has been highlighted in many educational systems and countries.

Our present systems of learner assessment rely heavily on pen and paper, and generally consist of formal, product-based examinations, since we tend to test what is easy to test, and ignore what is difficult. An over-emphasis on these traditional types of assessment is not acceptable to the *MI* practitioner since these traditional methods focus on a very limited number of intelligences, and do not reflect the conditions of relevance for everyday life and work. They also encourage rote learning and repetition without understanding. Furthermore, these tests are largely used for the selection, grading, and accreditation of learners, largely ignoring other important reasons for assessment and testing such as diagnosis and guidance. Finally, these traditional tests disregard the opportunity to see assessment itself as a valuable form of learning in terms of feedback and reward.

The central place of understanding allocated to learning within *MI* suggests that if assessment forms part of the learning process it should be informal, continuous, rather than product-based. It should be personal to the learner, who should be involved from the outset in the negotiation of topics and the identification of understanding goals. Feedback from testing should be available to the learner who should be given opportunities for reflection throughout the process. In addition, performance-based assessment procedures encourage a variety of techniques which allow for individual intelligence profiles, and testing techniques which reflect the entry points which formed the basis of instruction. Vehicles for authentic assessment are:

- written and oral reports;
- practicals, project work, fieldwork;
- portfolios, profiles, personal records, diaries / logs, work placement ratings / reports, skills reports, self and peer appraisal;
- performance-based examinations, exhibitions.

The challenge to all those involved in vocational education is to have such methods accepted and identified as valid forms of assessment. Testing based on linguistic and logical intelligences, or those which stress rote learning may be included within the available assessment possibilities, but should not constitute the whole of any assessment strategy.

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The assessment of learning needs to reflect the nature of the individual learner and the needs of society. Only in this way can it be meaningfuland relevant.

5. Creating *MI- Multiple Intelligences* Learning Elements and Sequences

The following consists an educational strategy and the proposed tools to implement MI Theory in the classroom

This is a tabular model in which learning elements can be added to address one intelligence at a time, in a given topic. This creates a resource of learning elements that the teacher can select when making decisions about more coherent learning sequences.

Once you are aware that your students may have a number of different preferences to learning, and once you have decided that the Multiple Intelligence approach will be an appropriate method in order to reach more students, this must necessarily have an impact on your lesson preparation.

We propose that you can do this if you start by forgetting thinking about lessons as a whole, but instead think of smaller elements that could be part of the lessons or part of the whole learning sequence.

We strongly believe the model described below provides the possibility of gathering good ideas irrespective of what the final learning sequences will be like. The model must be regarded as a resource paper where you have a number of good ideas or elements that you may use in your lessons according to your purpose and/or according to the MI-profiles you may have in your learning group. The resource paper can be used again and again if you are teaching the same topic, and new elements can be added all the time – thus you can use the same table of learning elements, but still create individual and different learning sequences.

This very simple model, can help teachers create learning elements that address all 8 multiple intelligences.

First of all, it is important to decide upon the topic – it can be wide and comprehensive or short and concise.

The target group and learning outcomes must also be stated.

Then the idea is that you consider the various intelligences one by one and fill in elements that could be characteristic as activities that address this particular intelligence. For planning the activities in each learning element, you could use any teaching strategies known to you (or to your students!) and tools (videos, interactive games and exercises, education platforms and apps (e.g Padlet, Socrative). When you have identified all intelligence types you have a table of learning elements that you can use in planning your learning sequences.

If you want to address one or two particular intelligence types you can pick learning elements vertically in those specific intelligences – if you want to challenge more or all intelligences then you pick your learning elements horizontally through the table.

After the table some examples are given.

TOPIC	TARGET GROUP	LEARNING GOALS	Logical	Kinesthetic	Spatial	Linguistic	Musical	Intrapersonal	Interpersonal	Naturalistic

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TOPIC	TARGET GROUP	LEARNING GOALS	Logical	Kinesthetic	Spatial	Linguistic	Musical	Intrapersonal	Interpersonal	Naturalistic
Customer Service **'The delicious** **meal'**	16+ year old VET Catering students	To behave in a service-minded manner To know the elements of the 'delicious portion' To satisfy the customer	Measures the ingredients Calculates prices taking into consideration the costs and market situation Calculates nutritional values Creates new / alternative recipes to satisfy different dietetic needs	Decorates the plate, makes it appealing to the customer Tastes, smells and handles the food Constructs a picture/poster of a model plate in order to "standardize" the portions	Draws up working schedules for the kitchen and the service personnel Ensures that the serving facilities are available, tables set, the dining room neat, airy, clean and suitably decorated	Describes to the customer the ingredients and cooking methods as well as the nutritional values and any dietary restrictions Can do the above in Finnish and some other foreign language	Considers musical environment i.e. that music is neutral and appropriate to the dining situation Listens to rhythms and sounds of work	Reflects on the importance of the 'delicious meal', in a service situation where the customer feels satisfied Takes pride in tasks accomplished Aware of own feelings in this situation	A team worker, -helps others Talks to customers: greets them, smiles, welcomes and makes them feel important	Considers the origin of the ingredients and environmental consequences Uses organic food from local farmers when possible according to price. Recycles and takes any legislation into account Considers environmentally-sound alternatives Does not use any disposables Avoids artificial additives Considers cooking methods Ensures that the packing material is reasonable and environmentally-sound

Table for MI - Multiple Intelligence learning elements

Example 2

MODEL OF LEARNING ELEMENTS BASED ON MI THEORY

Subject: Basic Electronics for Car Mechanics

Contact classes – 2 h

Laboratory classes – 2 h

TOPIC	**Ohm's Law**
TARGET GROUP	1st year students who have completed the pre-requisite of 9 years of compulsory education
LEARNING OBJECTIVES	• To acquire the concept of Ohm's Law • To understand the relationship of physical values in the formula for Ohm's Law • To apply the Ohm's Law formula in the calculation of quantities of direct current (DC) circuit
LOGICAL	• Knowledge of the physical notations and the way these are related in Ohm's Law • Understanding the significance of the Law for Physics and Electronics • Knowledge of the physical units of measurement and how they are related • Understanding the short circuit and its consequences • Understanding the physical dangers of short circuits
KINESTHETIC	• Making connections in the direct current (DC) circuit and reading values from measuring devices
SPATIAL	• Drawing a diagram of an electrical circuit including the given elements
LINGUISTIC	• Acquisition of knowledge in oral and written form • Reporting on the results of practical tasks
MUSICAL	• Use of background music in the workshop/ lab. where possible
INTRAPERSONAL	• Focused on the task at hand, accepting information, showing accuracy and attentiveness, making necessary notes and following the teacher's working instructions
INTERPERSONAL	• Team working in laboratory
NATURALISTIC	• Understanding the nature of lightening and its scientific explanation

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EFVET – EUROPEAN FORUM OF TECHNICAL AND VOCATIONAL EDUCATION AND TRAINNING, BELGIUM

EfVET is a unique European-wide professional association created by and for providers of technical and vocational education and training (TVET) in all European countries. Its mission is to champion and enrich technical and vocacional education and training through transnational cooperation and build a pan-European network of institutions that could lead European VET policies.

EFVET's mission is to publicize the project through its partner institutions throughout Europe.

For this purpose, a specific portfolio was created for the project where stages and actions implemented in the countries of the partner schools were archived.

https://www.efvet.org/portfolio-items/schools-4-0/

ISSUE 1 https://www.efvet.org/wp-content/uploads/2018/11/EWS_template.pdf

ISSUE 2 https://www.efvet.org/wp-content/uploads/2020/04/Newsletter_Schools-4.0_Issue-2.pdf

ISSUE 3 https://www.efvet.org/wp-content/uploads/2020/12/Newsletter_Schools-4.0_Issue-3.pdf

Newsletters

EFVET also published the SCHOOLS 4.0 project in Newsletters listed below:

https://www.efvet.org/2019/05/28/schools-4-0-innovation-in-vocational-education/

https://www.efvet.org/2020/05/22/schools-4-0-online-project-meeting-and-e-book-progresses/

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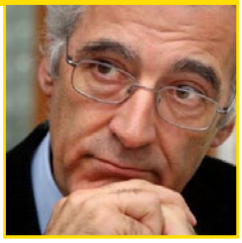
2. Life stories of VET reference persons

Professional and personal narratives of students and others stakeholders

Joaquim Azevedo

Member of the National Council of Education



Member of the National Council of Education. Direct Protagonist of policy provision, Professional Education, in Portugal, especially between the years of 1988 and 1994, having held leading positions in the Ministry of Education, as Office Director of Artistic and Professional Technological Education (GETAP) and Secretary of State for Basic and Secondary Education. He is currently a Full Professor at the Faculty of Education and Psychology, at the Catholic University of Portugal - Católica Porto.

"I have closely followed the development of vocational education in Portugal for over thirty years (since the 1989 reform). This educational offer has represented a breath of fresh air in the Portuguese educational system, enabling the schooling and professional qualification of many thousands of young people, students who have always been distant from the general and abstract model practiced in the courses that inherit the school model of former high school teaching.

The great challenge we have faced, from the beginning until today, has been to create a model of quality vocational education, committed to supporting the harmonious development of students' competencies, which includes knowledge, skills, attitudes, and values, and is divided into several training components that follow a model of curricular development based on modular learning.

Thus, we have always tried not to commit the mistake of impoverishing the curriculum of general education in order to make it "more accessible" for students with higher "accumulated underachievement during the first 9 years of schooling". While different, every secondary level course is equivalent and allows direct access to further learning.

The real challenge has been to reconfigure the manner of managing the school curriculum, given the concrete reality of each classroom, working according to subjects as well as interdisciplinary projects, evaluating learning through tests, portfolios, and professional aptitude tests, articulating classroom teaching with on-the-job training, integrating knowledge and developing core competencies for the new, complex, and uncertain times in which we live. An ongoing unfinished mission and continuously stimulating challenge, both for students and teachers, as well as for the social partners in the community.

Joaquim Azevedo

Porto, November 13 2020"

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EPATV - Amar Terra Verde
Casais Corporation, Braga, Portugal - António Rodrigues

António Carlos Fernandes Rodrigues

Chief Executive Officer

The Casais Group was created on May 23rd, 1958, and is currently in the top 5 of the largest companies of the construction sector in Portugal. Nowadays, the Group operates in 16 countries: Portugal, Germany, Angola, Belgium, Gibraltar, Netherlands, France, Morocco, Mozambique, Brazil, Qatar, Algeria, United Kingdom, United Arab Emirates, Spain and United States, Russia, Kazakhstan, China and Cape Verde.

In 2020 it won for the fourth consecutive time the prize of best national construction company awarded by CONSTRUIR awards, having received for the second time, the SUSTAINABILITY award.

In this interview, António Rodrigues says that the differentiating competences when recruiting new employees are related to soft skills and a cultural alignment of the company's values.

When asked what should be the role of the SCHOOL in building the profile of the people they seek to recruit, he says "it is fundamental that the school understands that market needs are permanently changing". In this regard, he tells us that curricular internships are very important, as is the collaboration of teachers in participating in projects with companies, believing that this will be the best way for them to understand what is sometimes not visible to those who are outside a business. The SCHOOL|Company crossover is fundamental, but it will only be achieved with a more active participation of teachers within the company and by the company towards the school. He believes that this challenge will be easier to achieve for vocational schools because they are closer to the businesses, but it should be transversal to the whole educational system. He also makes a positive reference to the approach certain countries use to value learning through Multiple Intelligences and how these should also be more appreciated by our educational system.

Video: https://youtu.be/7tZSzwS3qBI

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DST GROUP, Braga, Portugal

Domingos da Silva Teixeira

CEO - DST Group

The DST Group was distinguished in December 2020 with another award among the 12 largest national companies at the Export & Internationalization Awards.

The DST Group has been nominated several times by EXAME magazine as one of the best companies to work for. In this company, the effective concerns towards its collaborators are visible, not only concerning their well-being, but also in the systematic betting on specific and lifelong training. The group systematically develops actions related to culture, solidarity and environmental sustainability.

Our interviewee refers the importance of a continuous learning process, "we must never stop being students, this is the Group's premise". He believes that this policy gives them an advantage over their competitors.

The cultural support given by the group emerges as the measuring rod of all conditions. "The elasticity and plasticity that people possess arise from the beauty of literacy. We graduate from universities with the technical knowledge that allows us to determine what to do and how to do it, but then we don't know why we're doing it? and how we're doing it. This answer, he says, "is given to us by philosophers, writers and poets. Culture emerges as a support for the option of growth. A commitment to society".

> *"The more cultured a worker is, the more competitive he is, even for engaging in unpredictable business. These tools of plasticity are conferred by culture."*

He believes that the school should change. The way the educational system is structured at the moment, from a very young age, students are diverted from their innate creativity. He considers that the school puts people into very rigid and standardized social norms, which is a problem. For when students come to work for companies they are a product of social normalization, heavily built around personal competition and hardly ever focused on fraternity, solidarity and teamwork.

Video: https://youtu.be/IhduIGZRDLg

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Paulo Vieira

Chef de Partie at the Maison Albar Monumental Palace (Porto)

Paulo Vieira finished his technical course in cooking/pastry, about 5 years ago, at EPATV. Since then his excellent professional path has passed through renowned kitchens, having taken him to Germany, to the IKA Olympics - the Culinary Olympics, in February 2020. Paulo is currently Chef de Partie at Maison Albar Monumental Palace (Porto) and was chosen to represent Portugal as part of the junior team at the "oldest, largest and most diverse international culinary arts competition in the world". Portugal has participated in this competition since 1992, where there are two ACPP Culinary Competition Teams: one for juniors (with young people up to 25 years old) and one for seniors (over 25 years old). Participation with age separation distinguishes the levels of demand, in a competition to show techniques, colors and cuts, innovation, flavor and presentation and that works in a "Restaurant of the Nations" modality - where the team develops a menu (under previously established criteria by the organization) and then presents itself as a Gastronomy Fair, where, amongst the visitor-testers, there are two incognito judges. Ultimately, the Portuguese team brought home the awards of: Silver Medal Restaurant and Bronze Medal IKA Buffet.

Video: https://youtu.be/j683iJONU9o

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Fátima Barros

Technical Director of the Elderly Care Unit of
Santa Casa de Misericórdia de Vila Verde

Fátima Barros is currently the Technical Director of the Santa Casa de Misericórdia de Vila Verde Nursing Home, but her birthplace was the Escola Profissional Amar Terra Verde (EPATV) where she attended the Socio-Cultural Animator Technical Course. She feels that Higher Education complements Professional Education.

Fátima Barros started as a trainee. "I studied at the Escola Profissional Amar Terra Verde, where I took the Professional Technical Course of Sociocultural Animator. I did an internship at this institution (Santa Casa de Misericórdia) and stayed on to work as a socio-cultural animator.

Meanwhile, she adds, "I realized that I could perform other functions in the Santa Casa if I took a degree in Social Work and after this course, I became responsible for the Home Support Service, as a Social Worker".

However, Fátima Barros didn't stop there and, "afterwards, I decided to study again and took a Master's degree, which allowed me to become the Technical Director of the Elderly Care Home, position I hold now".

Fátima Barros has been working at Misericórdia de Vila Verde for 19 years and remembers that her student journey was always balanced with her professional life. "I never stopped working. I studied at night and worked during the day. I encourage everyone to study, by doing the same, so that they can progress in their professional careers".

In conclusion, Fátima Barros assures that "professional courses give us a perspective of what our lives can be, what we like to do, and higher education is important to complement professional education".

Video: https://youtu.be/7z2K6jo_ETE

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insignare
ASSOCIAÇÃO DE ENSINO E FORMAÇÃO

Elisabete Marques

Technical and Pedagogical Director of the
Escola de Hotelaria de Fátima

I started vocational education in 1991, at the time in the VET Reception Course. 3 years of discovery in the hospitality sector with included practical classes and curricular internships, gave me the skills to start in the job market as a hotel receptionist. The ambition to go a little further, led me to higher education in the course and Hotel Management at the University of Algarve.

Taking over the direction in a hotel: Pousada do Conde de Ourém was a great challenge, but very rewarding not only in personal terms but also professionally, above all for the contribution to the quality of the tourism offered in my region – Ourém/Fátima.

Video: https://youtu.be/0XplkMCSLQ0

António Évora

Technical and Pedagogical Director of the Vocational School of Ourém

In 1995 I completed the 11th grade. I wanted to start working, however, I learned that the Municipality of São Filipe on the island of Fogo in Cape Verde was awarding scholarships to young people who wanted to come to Portugal in order to acquire a professional course.

I applied for the Professional Course of Management Technician, but there were no more vacancies, and I was proposed to come to Ourém to take the VET Course of Civil Construction Technician. I was accepted on September 21, 1995, and finally I arrived at EPO. A week and a half after the beginning of the school year. That was how my admission to the VET School of Ourém took place.

After completing the VET course, I continued to study and graduated in civil engineering in university. I worked for a few years in my professional sector until 2010, when I received the invitation to return to EPO, this time as a teacher.

Just like the old Portuguese saying «the good son always returns home», I accepted the challenge and it's been almost 11 years.

Video: https://youtu.be/Acd6EtdX1iQ

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Pedro Major

Financial Director of Insignare

Director in the Administrative and Financial Department of INSIGNARE, he began his academic career in a VET course in Management, the oldest course in the VET School of Ourém.

He graduated in 1994 at the VET School of Ourém, and in that same year he started working at the School as an Administrative Technician, performing his duties in all school departments with a special focus on the financial unit.

In 1996 he joined the team of LANOL, a temporary employment agency, where he worked in the human resources department.

At the same time, he is a partner in a catering company organizing events throughout the municipality of Ourém.

In 1999 he returned to the VET School of Ourém, where he took over the Finance Department as an Assistant Director.

In the years 2005 and 2006, accumulated functions of Financial Director with the function of Assistant Manager of the VET Hospitality School of Fátima were taken.

He attended higher education in university in the field of Electrotechnics and also in Accounting and Finance at the Polytechnic Institute of Leiria.

Video: https://youtu.be/RuLJ-ZfTeMc

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Pedro Gago

Factory Director VANGEST/3DTECH

The VANGEST Entrepreneurial Group, especially its Molds and Tools manufacturing units, have been requesting (and subsequently contracting), to EPO, the placement of students in work-based learning (namely in the Programming and CNC Machining course), for its Industrial Design and Production teams;

This institutional and operational relationship, between the VANGEST Group and EPO, started 8 years ago. Currently, VANGEST has approximately 10 (former) students on its staff. The (former) students have made their evolution consistently (through own merit), while at present times, some of them assume the roles of team leaders and internal references of professionalism, competence, and good behaviours/attitudes.

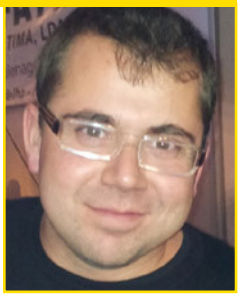
In the molds industry, which is completely globalized, the requirements and protocols of rigor and quality are mandatory. EPO students also bring with them this culture.

Undoubtedly, the profile of the specialized technician in question absolutely fits the growing and pressing needs of the industry in general and of the molds industry in particular;

The VANGEST Entrepreneurial Group recognizes the work done by EPO and its staff (like in everything, nothing happens by chance), and the challenge they face in order to reinforce their work (both quantitatively and qualitatively - the technological dynamics are constant), and we will always be available for the involvement that EPO wants to request.

Mário Henriques

CEO of Profial and Ourividro



Profial and Ourividro see EPO as a key partner when it comes to attracting new employees. In fact, when a need for recruitment arises, it is the first entity that we address. A testament to the excellent skills acquired at this school is the fact that more than half of our trainees come from EPO.

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Testimony #1

Daniel Alves Ferreira

Daniel Alves Ferreira, 32 years old, former student of the Raul Dória Professional School between 2002 and 2005 where he attended the Accounting Technician course. Today as an employee in the accounting department he tells us his professional journey.

EPRD: **Why did you choose our school?**

Daniel Ferreira: I chose the Raul Dória Professional School because it is a reference school in the city of Porto. In addition, the fact that it is a more vocationally oriented school also contributed towards my decision.

EPRD: **What memories do you still have of our school?**

Daniel Ferreira: Despite having entered the school in 2002, I still keep good memories, namely

- excellent relationship between teachers and students;
- good atmosphere among students and school staff;
- permanent concern of the classroom counselor.

EPRD: **Was the course of accounting technician your first choice? Why did you choose the accounting area?**

Daniel Ferreira: Yes, it was my first choice. As I had relatives who worked in this area, I realized that this was what I wanted to do in the future. I really liked mathematics, which is a fundamental subject in the accounting course.

EPRD: **What is the profile of an accounting technician and what are the biggest challenges?**

Daniel Ferreira: The main skills that an accounting technician must have are rigor, concentration and the keeping up to date with accounting and tax norms that are changed periodically. In the beginning, everything was a novelty for me. Since the accounting tasks are routinely done on a monthly basis, I had to adapt to the work process itself.

EPRD: **How did the course prepare you for your professional path?**

Daniel Ferreira**:** The course was very important for me. It helped me to have theoretical and practical knowledge for later application in real situations within a company.

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EPRD: **How did the opportunity to work at Raul Dória arise?**

Daniel Ferreira: A vacancy arose in the accounting department, and as I had been one of the best students in the course, I was contacted. Since I already knew the school, the staff, and the professors, I immediately accepted the invitation. In September of 2009, I started working at the school.

EPRD: **Describe our school in your student days and how do you see it now?**

Daniel Ferreira: Even though 15 years have passed, the school still has a good atmosphere, there is an excellent relationship between staff, teachers and students. The students will leave very well prepared for entering the job market.

Testimony #2

Fernando Eugénio

Fernando Eugénio is the current Iberian Director of the two Allison subsidiaries and after 20 years of professional success he says he is still looking for "that one thing I don't know quite yet".

In recent years he has had students from the Escola Profissional Raul Dória as interns in his companies, and every year he is part of the external jury of the Professional Aptitude Tests of the Commerce Technical Course of our school.

A testimony that makes us reflect, dream and aspire to be always better in everything we do.

EPRD: **We know that you are currently the CEO of Allison Portugal. Tell us about your journey up to this point. Was it something you always wanted or something that came as a consequence of your personal and professional path?**

Fernando Eugénio: The path so far was quite challenging, but rewarding at the same time; I learned that we can't take anything for granted.

When I was 24 years old, graduated, I had created 4 import/export companies of optical goods, representing many of the best-known brands at an international level. A turnover that exceeded 6 digits, a will to always do more, not for financial reasons or mere ambition, but due to an insatiable will to achieve something I couldn't explain.

I have always been "restless" in entrepreneurial terms and being very young I felt like "the king of the world", I did not notice the warning signs that were coming to me from my parents' advice or from my own experience, why? Because everything seemed easy.

We were the 2nd largest distributor in Portugal and in certain brands, one of the best in Europe.

One day I finally felt that I should listen to the signs and decided to sell 2 companies and accept an invitation from Allison to be the "General Agent" in Portugal for 3 brands that later became 24. Over the years I closed the other 2 companies and Allison Portugal was a success phenomenon both commercially and financially. I was then invited to be the Iberian Director of the 2 Allison subsidiaries.

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It was not something I had wanted, it happened and I am grateful for the recognition of what I did during 35 years.

After 20 years at Allison I'm still looking for "that one thing I don't know quite yet".

EPRD: **You have been collaborating with our school for a few years now. Initially we had some students do internships in your company. What is your opinion about their performance? What positive and negative points would you highlight?**

Fernando Eugénio: It has been a pleasure to collaborate with the School throughout these years. It all started with an invitation to be a Proof of Professional Aptitude Jury and a thought of " wasting my precious time". I couldn't have been more wrong; it has been an excellent and rewarding experience.

We had some students doing internships in my company, they were our "boys". The will to demonstrate the teachings was visible with very satisfactory results. Humbleness and willingness to learn were the qualities we wanted, we always explained to them that the world out there is a jungle and only the best win, by innovating.

We had hard-working winners, while others, thinking they "knew it all", got lost in the process. Ambition, modesty, seriousness, charisma were some of the positive points. On the other hand, lack of commitment, leaving your comfort zone, taking a negative answer for granted and excessive pride were some of the negative issues.

EPRD: **You have been part of the external jury of the PAP in the Commerce Course. The idea of the PAP's is to create a company that has an element of innovation. How do you evaluate the ideas that our students developed? Are they in line with the current job market?**

Fernando Eugénio: In order to create a new company, we want someone who is entrepreneurial, serious, innovative, crazy, and who has the famous lucky star.

Throughout these years we have been presenting very interesting PAPs and other just because "they had to be done". I think that a great number of students, despite the effort of the teaching staff, present ideas concerning hobbies that they enjoy, but that should not be transformed into companies, because they will never be profitable.

Believing is important, however realistically speaking, the future lies within technological companies, renewable energy and other enterprises based on innovative ideas that respond to the needs of the community (e.g. the current pandemic), with controlled costs and a 5-year plan.

The PAP's are often out of context and much to the fault of the students who are not "in love" with the concept, and end up on the edge of superficiality. It doesn't always have to be innovative, it has to be profitable.

In many cases I think it would be better to present a PAP about improvements to be made on an existing company, don't create, transform.

However, then we have those students who present their PAP with a very strong passion, and I would be willing to invest in them.

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EPRD: **How do you see the future of vocational schools? What is your opinion about this type of education, especially since you have monitored and evaluated our students?**

Fernando Eugénio: The existence of this type of education, despite being very important, depends a lot on support and on having an excellent teaching staff.

I see a very uncertain future because those responsible don't want to see the importance of these institutions. The "kids" who often have extreme learning difficulties, bad family environment and inherent financial difficulties, find here an excellent support for their future.

Those who want to, can and do have a development that would be very difficult in "normal" education, because the school is their safe haven and the teachers are the anchor points in a life full of turbulence. The Raul Dória School is an excellent example of selflessness, persistence, and dedication, and it certainly deserves support.

"The path is made by walking", I have seen many students who have built their road and others who have lost their way by taking shortcuts, perhaps due to lack of motivation.

Best wishes - Faculty Members of Raul Dória School

Testimony #3

Luana Gonzalez

Luana Gonzalez is a former student of the Raul Dória Professional School, having studied here for 5 years, 2 in the CEF course of Administrative Practices and 3 years in the Professional Course of Marketing Technician.

A true example of personal, academic and professional growth and maturation! Currently Luana is in Higher Education and has recently created an online commerce business.

A testimony that inspires students, teachers and our school to continue to believe in the mission of Vocational Education!

Video: https://youtu.be/gQ6TM5JhaIo

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EPRio Maior – Escola Profissional de Rio Maior, Portugal

Gonçalo Pinheiro

Graduate with a Professional Course in Electromechanics from EPRM / Manager at Parapedra Group S.A.

Video: https://youtu.be/YQ8Gyk1UqqU

Koge Business College, Denmark

Testimony #1

Tim Christensen

My life with vocational education

For more than 40 years, Tim Christensen has followed the development within the education sector closely through his work at Køge Business College In Denmark, first as a teacher and student counsellor and from 1992 as managing director. During this time, vocational training has changed considerably and new educations have appeared.

"When I started as a new teacher at Køge Business School, the norm in vocational education in Denmark in general was that the teachers went into the class and taught the syllabus while the students sat in their seats and accepted the teacher's words. Everything was very fixed – both for teachers and students," says Tim Christensen. However, this way of teaching changed.

"In the spirit of that time, we saw the great potential of giving teachers more freedom to teach students and freely let them choose the teaching styles that worked for them in order to engage the students in the daily syllabus. The realization was that learning comes in many ways – and that people acquire knowledge

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in multiple ways. The idea was that students should take more responsibility for their own education and life – and our experience was that they would be more than happy to do so. It actually released a lot of energy and good atmosphere. And if you thrive, you learn," says Tim Christensen.

Let go of the fixed schedules

"The result was that we at the vocational department broke with the past and the classes were broken down and reshuffled so that all students could follow their individual learning style and be helped by an individual tutor. Specifically, pupils had to choose which subjects they wanted to study among the courses offered to them by the teachers. No fixed classes and no schedule. Every second months, the students chose the subjects that they wanted or that they could see that they were missing in relation to being ready for exams in the individual subject," says Tim Christensen.

"The students now worked in interdisciplinary projects – and that approach looked much like the reality they would meet on the labour market after their education. Meanwhile, a new way emerged to ensure that each student was attached to a teacher or tutor after the classes were broken down. From this the new tutor system was born. This resulted in the fact that each teacher was assigned a team of students who they followed and coached according to specific needs. As a minimum, all students were assigned three individual tutoring sessions each year, where they together with their teacher, evaluated and planned every day and their educational progress. The students were given individual guidance to meet their educational goals, which the classroom teacher had previously taken care of. After graduation, the students indicated that they really felt noticed and understood. This way we demonstrated that the close contact worked and created independent and individual people. Moreover, the new system could even be controlled electronically, which facilitated the administrative workflows," says Tim Christensen.

The Køge model via Copenhagen

"Also, in relation to the Ministry of Education and the economy, major changes took place. The benefit of working goal-oriented with student retention was given back to the school in cash. By retaining students, it released resources that could be sent directly back to the school's activities for the benefit of students and teachers. This gave more room for maneuvering and the opportunity to develop new offers further and expand other offers when the money came back to the students' education and to the teachers' work. Students found that it became more fun to attend school, and the relationship they had with teachers was less rigid and formal than in the past. The teacher had become a more nuanced role model with whom you could also talk about other things other than teaching," says Tim Christensen.

"This way of teaching inspired others. Subsequently, the Ministry also worked to disseminate these ideas and tools, but in a class context. The initiative was later introduced in all vocational education in Denmark, but in a slightly different form. Unfortunately, this form of teaching was made impossible around year 2008, when the level requirements of each subject were raised, and Køge Business College had to "return" to a more well-known teaching structure with fixed classes. However, there are still plenty of traces of the creative and innovative reforms and initiatives from that time, e.g. the tutor system is still widely used and the many different forms of teaching are also here to stay.

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The best of several worlds

Since 2000, we have experienced a decline in students applying for vocational educations and the future looks less positive. More training opportunities and new educations have appeared over the years, and the vocational education has over the past 20 years suffered from image problems, and today more young people choose Upper Secondary Education. This development has now led to a shortage of vocational training students in a wide range of industries, and this creates challenges for companies.

Over the last 10 years, this development has received political attention, and we experience a new attitude: the government is changing its view regarding the so-called double educations – i.e. educations where you can both get an upper secondary education while learning a vocational subject. This can hopefully lead to more young people can practice a vocational profession and at the same time they also receive a certificate from an upper secondary education which gives them an opportunity to study further. Life is long and contains lots of choices for the benefit of the individual and society. With the new approach, we can hopefully attract more young people, who can thus excel with a good basic education while being able to do vocational subjects. This is a fantastic development, because we also need the smart hands in the future," says Tim Christensen.

Testimony #2

Mona Engberg

Education Counsellor

My interest in the concept of learning was born when I read A.S. Neill's book about the Summerhill School. It was a boarding school in Suffolk, England, established in the 1920s and the belief was that the school should be made to fit the child, rather than the other way around.

The school was run as a democratic community where everyone had an equal vote, and the philosophy was, that if the child was happy and motivated, he or she would learn in their own speed. It is said that Summerhill was the most unusual school in the world. Children were not compelled to go to class – they could stay away from lessons for as long as they wanted to. Yet, strangely enough the pupils in this school LEARNED! In fact, being deprived of lessons turned out to be a severe punishment!

All through my professional life I have tried to implement this pedagogical approach, first by being part of a group, which founded a so-called "little school" in Køge, based on the same principles, then in my various jobs at Køge Business College (teacher, counsellor, head of different departments and finally head of the international office).

There is in my mind no doubt that you must learn from each other, which means that a teacher must use differentiated learning approaches. It is also necessary to create a learning environment which will support the learning. And it is necessary to involve students in planning and implementation of the learning process.

In many countries it had also become clear that teacher training needed to focus on other learning processes than one-way communication, in order to promote learning and it seemed a very good idea to work with other countries.

At Køge Business College we have been very fortunate to start with that years ago! Actually our very first international partner was DES Ministry of Education in Portugal, represented by Luisa Orvalho. Luisa and I met in Portugal at a meeting organized by DREN and with representatives from ministries all over Europe. At that time, I was working in the Danish Ministry of Education and therefore participated as their representative. It turned out to be a very profitable meeting! being the start of a long international partnership with many international projects.

Our first project together was "the learning teacher", which focused on the above issues. The partnership involved 7 countries. From that project even more projects were developed, more countries were involved and still with a focus on learning, teacher training, future competences and entrepreneurial skills.

In all the various projects we had in mind that you must be aware of the basic assumptions on learning:

- people are different
- learning is an individual process based on individual experience
- people learn through creating human understanding – the creation of meaning
- individual understanding and experience can be challenged by relating to others and result in new learning
- awareness of language and communication
  - our language illustrates where our focus is
  - our language influences our surroundings and creates changes
  - language is used to co-ordinate meaning and to co-ordinate action
  - language creates relations or break relations
  - through our choice of language, we decide to focus on what we find most important and valuable
  - appreciating other people means showing respect and acceptance
  - focusing consciously on the positive and verbally introduce it into the future creates an appreciative future

Greg F. Rutherford – Haywood Community College – North Carolina - USA

Κέντρο Δια Βίου Μάθησης ΔΙΑΒΗΜΑ
Lifelong Learning Center DIAVIMA

Diavima – Lifelong Learning Center "Diavima", Greece

Testimony #1

Stavros Skarlos

VET student

My name is Stavros Skarlos and I live in Greece, in a village near the city of Serres, Greece. I am 19 years old, and graduated from the 1st EPAL (Upper Secondary Vocational School) of Serres and I got the Level 4 certificate in "Electrical Systems Installation and Electrical Grid Technician". Last school year I attended the Post-Secondary Year (Apprenticeship Year) in the same specialty.

I followed this specialty because since I was a very young child, I always liked to make simple electrical circuits, connect cables to sockets and lighting fixtures and generally imitate my father and my uncle. My father is an amateur (uncertified) electrician in the village who didn't finish school, and is therefore lacking certification. My uncle is a professional electrical installer, a graduate of the Lower Technical School. Being a fanatical observer of their work during my elementary school years, I became their assistant during my high school period. They took me to work with them on the days I did not go to school, because they saw how much I liked the profession of electrician and how much I wanted to be like them. In fact, they gave me my first electrician's tools.

After High School I decided to study at the 1st EPAL (Upper Secondary Vocational School) in Serres to study the specialty I loved. In this vocational school I lived 3 beautiful, creative years of study full of knowledge, skills and experiences. My teachers helped me and my classmates a lot, in order to understand and learn this specialty. The courses were equally interesting. It may seem theoretically difficult, but I never stopped trying. The laboratory classes were of tremendous importance, and very easy to me with the help of my teachers. I graduated but I did not pass the Panhellenic Examinations for University. I was disappointed at first, but that did not stop me envisioning my future.

So, after my teachers' persistent urging, I attended a Post-Secondary Year of Apprenticeship in the same specialty of Electrical Systems Installation and Electrical Grids Technician. I am happy for my choice to study in the apprenticeship class, I do not regret it and I never will, because this will upgrade my certificate to level 5 which is a little lower than that of the University, after successfully passing the next Vocational Certification exams.

With the help of my teachers, I found an employer for the apprenticeship, a company working with installations, repairs and maintenance of elevators, where I worked for almost one year (about 10 months). I worked 4 days a week and one day I had to go back the vocational school courses. The courses were very instructive and interesting, we also made training visits to various electrical companies, factories, and private employers who showed several new technologies and told us secret hints for this profession. At the

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end we were evaluated by the school and the employer to get the Certificate of Attendance, so that we have the right to take the next Certification exams.

Nevertheless, a lot was gained from the apprenticeship. At the company, my employers taught me to repair even more complex faults, to do a proper maintenance and to learn how to repair elevators, how to install automatic doors and how to program an electric elevator panel. In addition, because I was very good and hard-working, this company kept me within their framework and hired me after the end of the Apprenticeship contract. At the same time, I work as a freelancer installation electrician, in fact this year I completed my first electrical installation for an agricultural warehouse under the supervision of my father and my uncle and prepared economic and technical studies and offers for the electrical installations of two houses in my village. I plan to get my Level 5 certificate and after doing my military service, and plan to work in a big company that manufactures elevators in order to learn everything about this subject, in Greece or abroad.

Testimony #2

Meletis Theodorakakos

Electrical Engineering VET teacher

EPAL RODOPOLIS SERRES, GREECE

My name is Meletis Theodorakakos and I am an Electrical Engineering teacher at EPAL (Upper Secondary Vocational School) in Rodopolis, Greece. I teach the students of the Department of Electrical Engineering and the classes of "Electrical Systems Installations and Electrical Grid Technicians". EPAL Rodopolis at Serres has been operating since 2001 to meet the needs of vocational education of students living in the northern part of the Prefecture of Serres near the northern borderline to Bulgaria. At EPAL Rodopolis there are four sectors (Electrical Engineering, Informatics, Agriculture, Economy) and four corresponding specialties. Graduates receive the Level 4 certificate and can choose one of the following three educational and/ or professional paths

a) To take and pass Panhellenic Examinations in order to be admitted to Higher Education;

b) To find a job and enter the labour market;

c) To attend the Post-Secondary Year of Apprenticeship and have the Level 5 certificate acquired by passing the Certification exams and obtaining some work experience. The "Post-secondary year-apprenticeship class" applies the dual system of education and apprenticeship and includes: a) apprenticeship with training of 156 working days lasting about 10 months, by contracting to a company and b) Specialty courses one day a week with a total duration of 203 hours per year, which are divided into ten learning sub-fields in proportion to their length.

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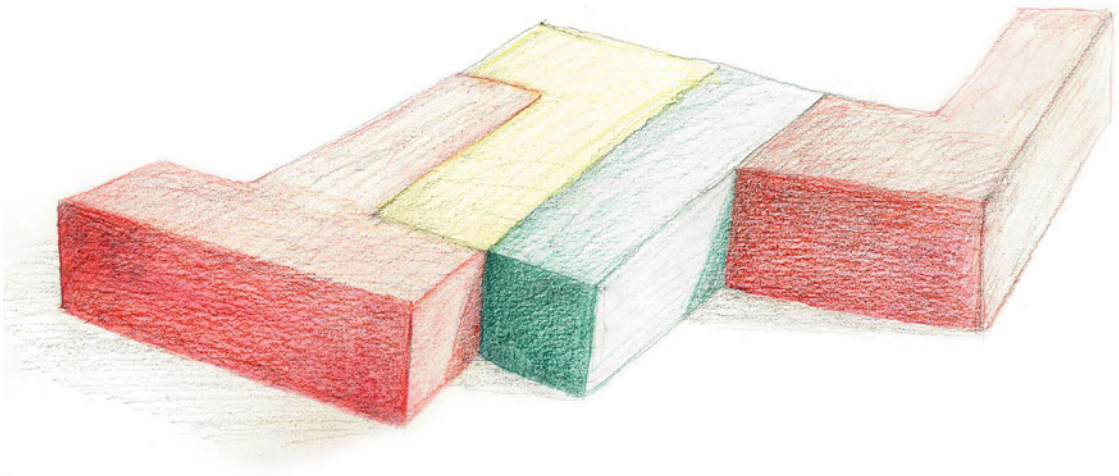
I am happy because I strongly participate in the following actions that take place in my school: 1) Me as a member of Teachers' Association of EPAL Rodopolis in collaboration with the students, in the context of its continuous effort for extroverted actions and dissemination of knowledge in the local community, decided to make available to the citizens of the Municipality of Sintiki the fully electronically managed school / municipal lending library of our school so it can be accessible by all. The library collection includes foreign and Greek literature, historical, cultural and pedagogical books, as well as dictionaries and encyclopedias. By using the link http://epal-rodop.ser.sch.gr/bibliothiki/public/ the visitor can be informed about all the books in the collection, about the available book titles and the availability of each title, as well as the probable date of return if a book is already borrowed. This way, everyone has several informational factors and can come borrow books during school days.

Furthermore, with the help of some other teachers of the Department of Agriculture and Electrical Engineering of the 2nd grade, in collaboration with our students, we jointly upgraded the mist bench that the school has in its greenhouse. We fully automated its operating systems with a Programmable Logic Controller (PLC). The mist bench is a small space, a mini-insulated greenhouse, in which we control the conditions of temperature, humidity and lighting. With PLC automation we minimized the cost of maintenance and troubleshooting, and added the ability to connect and communicate with external networks and PCs.

Also, myself and other teachers of the Department of Electrical Engineering, in collaboration with our students installed an autonomous system of photovoltaic cells for the night lighting of our school. The meteorological parameters that affect its performance and its electrical quantities are monitored and recorded via PC.

All activities and factors mentioned above prove to be of big importance nowadays. It's very important to help and encourange students in order to work together, to develop team and inquiry spirit which is essential for the 21st century. On the other hand, all these actions help me and the other teachers to communicate better with each other and with our students, as well as with the community.



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Testimony #3

Sofia Kalogridi

Instructor for Undergraduate Students and Laboratory Classes at School of Pedagogical and Technological Education

Teaching innovations, during the covid-19 pandemic, in School of Pedagogical & Technological Education (ASPETE)

My name is Sofia Kalogridi, and this year I started teaching as a lecturer at the School of Pedagogical & Technological Education (ASPETE). ASPETE is situated in Athens in a campus of approximately 200 acres, but it also organizes and operates programmes of pedagogical training, further training or training in a number of fields in other cities across the country (Thessaloniki, Patras, Ioannina, Volos, Heraklion Crete).

Nurtured with great expectations in relation to the teaching profession, ASPETE aims at ensuring and promoting excellence in all of the programmes offered by its academic departments. These promote research in the relevant subject areas, and programmes of pedagogical training, further training or vocationally oriented programme specialization. ASPETE is also committed to policies and standards that define best practices and encourage transnational cooperation.

ASPETE consists of four Departments:

- Pedagogical Department;
- Department of Electrical Engineering and Electronic Engineering Teachers;
- Department of Mechanical Engineering Teachers;
- Department of Civil Engineering Teachers.

The Degree awarded by the Technological Departments of ASPAITE qualifies students to teach in various areas of Secondary Education, while it is also a degree of professional qualification. The degree has both titles, that of teacher and that of vocational qualified professional. It is granted after studies of 10 academic semesters, which include the semester of a diploma thesis and intership.

In teaching we apply modern, active methods using working groups, projects, etc. Special emphasis is given to the Internship of postgraduate students, which includes monitoring, observation, planning of educational intervention and implementation of micro-teaching. In this context, our teaching aims to promote skills, such as:

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- Digital skills
- Collaborative learning skills
- Creative and critical thinking skills
- Learning skills
- Lifelong learning skills

In the current difficult conditions due to Covid19 face to face teaching has been suspended and the lessons take place online. As a teacher, even in these adverse conditions, I try to take advantage of all the possibilities offered by video conferencing platforms, such as Teams, so that teaching is active and interactive. I use a variety of media, e.g.: boards, power points, videos, interesting websites, etc. It is a fact that face-to-face communication cannot be replaced. However, online teaching also has some surprises stored for students, because the tools I use are closer to the ways in which they also use the internet.

It is very important that many times they also suggest sources, because they go through the internet very quickly, sources that are close to their interests and this makes them active and want to participate in the course. The resources we have at our disposal are tremendous, and many times I do not have to find them myself or print in order to share them, etc. It is also interesting that sometimes students take on the role of teacher, e.g. to solve problems with the aid of the platform or/and suggest new teaching tools, because they are more familiar with new technologies. It is also important that some working students "steal" time from their work to attend at least part of the lesson or to at least leave a good morning, a message in the chat, thus declaring their presence, something they cannot do when the lesson takes place in the classroom.

In this context I would like to mention an experience from using a tool for online learning, https://www.thinglink.com, which allows you to make teaching more interactive and collaborative. In their Educational Research Methodology course, I presented a video by the Ted Robinson Foundation entitled "Six Reasons Why Research is Cool." A discussion followed on the importance of research in the present era. The discussion was particularly interesting due to the fact that the researcher is engaged in health research, a field that is currently relevant due to Covid19.

I then asked them to upload to the https: //www.thinglink.com platform a topic / problem that they consider very important (and why) and that they would like to be involved in the research. All the topics were interesting, but what I find innovative is that this tool made it possible to gather the suggestions of 94 students, something that would not be possible in teaching a course in the amphitheater. This, in my opinion, is an innovation arising from the use of new technologies. That is, the ability to "hear" the views in the teaching of a large number of people, which can not be done in a face-to-face meeting.

The current situation has enlightened teachers faster in the field of e-learning. With adequate training, with individual and collective efforts we must know, and "embrace" the new teaching tools in order to use them in the best way for the benefit of student's learning.

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3. How did VET teachers, schools and our countries react to the Covid-19 challenge?

PORTUGAL

Following the announcement of our Ministry of Education´s decision to cease all face-to-face teaching in response to COVID-19, on the 16th of March, all schools developed and launched a dedicated E@D 'Teaching Remotely' to help teaching staff quickly shift from face-to-face to online teaching, in their teaching and professional development.

Decree-Law 14-G / 2020, of April 2 - Establishes exceptional and temporary measures in the area of education, within the scope of the COVID-19 disease pandemic/

https://dre.pt/home/-/dre/131393158/details/maximized

Example 1

Escola Profissional AMAR TERRA VERDE

ESCOLA PROFISSIONAL AMAR TERRA VERDE, Braga, Portugal

José Carlos Dias

Special Education Teacher

No one was left behind!

With the emergence of the COVID 19 pandemic and the suspension of face-to-face lessons on March 16, 2020, it was necessary to organize distance learning (E@D). In addition to the provision of digital content, digital platforms, teacher training and the creation of guiding principles for the organization of this new teaching modality, the Amar Terra Verde Professional School and myself, as a Special Education teacher, and also responsible for the Multidisciplinary Support Team for Inclusive Education (EMAEI), assumed, from the beginning, as a priority objective to ensure that all students, with special focus on students with specific needs, were in permanent contact with their teachers in order to continue their learning.

Since, in the majority of cases, these students are more vulnerable, have more difficulties in participating with quality in remote activities and their isolation could expose them to situations of vulnerability and school dropout, a detailed inquiry of these cases was immediately carried out through a telephone survey.

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In this first contact, a survey was made regarding the conditions of Internet access and the existence, or lack thereof, of technological means that the students have at their disposal to attend classes at a distance. The results of this survey showed the existence of twenty-seven students (27), six of whom did not have any computer equipment at home and no Internet access, and four of whom lived in places without access to landline or mobile Internet.

Once these constraints were detected, it was time to act in order to find solutions that would allow us to bring these students into the virtual classroom.

For students who lived in areas with Internet access, but did not have the technological means, computers or tablets with mobile Internet access were lent/offered to them and, thus, they became involved in class activities. For the cases of students who lived in areas without access to any kind of network, the solution was to make available/deliver to their homes, personally or by mail, all the study materials in a printed format. It was EMAEI that conceived and planned all this work, in a personalized and differentiated way, articulating it with all the elements of the Pedagogical Team.

This contact was made regularly during the week, in which small study manuals were delivered (by mail or personally at their homes), with a compilation of the tasks and learning activities to be carried out.

During this personal and permanent contact, the students received feedback on the tasks completed in the previous week and were oriented and clarified about the tasks and learning activities they had to develop during the following week. This procedure allowed these students with special needs to be "present" and to follow the learning at a distance, just like the rest of the classmates.

In a second phase, the priority was no longer "to develop the cognitive skills of acquisition and understanding of these students, through oral, reading, writing and logical-abstract reasoning training" and became a constant and permanent supervision and clarification of doubts that arose in the performance of learning tasks, through video calls, phone calls and the TEAMS platform.

By the end of the school year, all this effort had the best possible reward! The seven students who were in their last year of the professional course were able to defend their Professional Aptitude Test (PAP) and thus conclude their courses. The other twenty students successfully transitioned to the next school year.

In other words, no student with specific learning needs was left behind.

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Example 2

INSIGNARE, Portugal

José Pegada

Headmaster
Vocational School of Ourém (EPO - INSIGNARE)

Carina João Oliveira

CEO of INSIGNARE

Learning@Distance in Insignare Schools

INTRODUCTION

In Portugal, schools responded very rapidly, by establishing remote contact with the students. The Ministry of Education developed a support network with guidance for the preparation of online lessons, organizational matters, and making a wide range of free content available. Besides that, a support television network was created, with lessons for the main subjects from 1st grade to the 9th grade. The main goal to achieve was that no student would be left behind, despite the difficulties in Internet or computer access. Overall, it was a great effort, but it had good results.

Since March 16th, INSIGNARE schools have undergone a deep change. Adapting society to an emergency period facing the global Pandemic caused by COVID-19 has been abrupt and profound. Overnight, teachers had to adapt to an e-learning system with the same students, but under very different circumstances.

Huge challenges appeared from the very beginning namely, how to access such tools and platforms, on what conditions, which lessons, what kind of work, which tasks, all of them quickly and simultaneously. It is very difficult to plan a new learning system overnight, especially when you must assure that no one is left behind. Thus, schools organized themselves and started working so that activities would continue, even outside the classroom walls. In addition to the lessons, there was the need to continue the emotional and psychological support to families by the school's Student and Family Support Unit, so that students and their families could adapt to a whole new world.

Challenges are even bigger as far as vocational learning is concerned, and in this way more stimulating, enabling the improvement of many skills that used to be developed through other kinds of activities. The relationship between teacher and student is currently based on "trust", and the teaching strategies used in the L@D (Distance or remote learning) focus on strengthening the autonomy and responsibility of students by their own learning and less by the teacher's physical presence on this process.

However, and since we had been using *MICROSOFT TEAMS*™ platform for some time, it was not that difficult to plan and teach our remote lessons. Teachers made a great effort by providing students with all the resources they needed to accomplish their learning process.

In order to accomplish this new way of learning and teaching we developed an L@D plan (**Learning at Distance** – Distance or remote learning), with this content:

Learning @ Distance Plan
Insignare Schools

We are living a unique time in the history of mankind, a situation that is drastically affecting our daily lives. Schools have a huge challenge ahead, in order to conclude this school year. Bearing this in mind, it is the purpose of Insignare schools to establish some L@D (Learning at Distance - Distance or remote Learning) methodological guidelines, so that the action of their teachers / trainers is based on a common strategy.

Therefore, it is necessary to distinguish multiple variables in this process that can affect our action:

- Technological conditions for students' access (Internet, Computer);
- Profiles of technological skills required for L@D (Distance or remote Learning) by teachers;
- Expectations on the outcomes;
- Digital tools to use;
- Evidence regarding students' attendance and hours/lessons taught;
- Etc...

Taking this whole situation into account, it is necessary to establish some basic principles, so that the actions to be implemented can be those that best fit our reality. Therefore, the following aspects must be considered:

- The teacher- student educational relationship is based more on "trust" rather than on "control";
- The teaching strategies used in L@D (Distance or remote Learning) focus more on strengthening students' autonomy and responsibility for their own learning and less on the teacher's dependence for this process;
- It is advisable not to mirror the "time" spent in L@D (Distance or remote Learning) to the "time" spent at school, following the school timetable on a strict basis while teaching online;
- The creation of a weekly Class Plan, in which students can find learning methods and activities required, can also be a useful tool;
- The occurance of synchronous or asynchronous sessions with students reserved to clear doubts and / or answer questions, with a fixed weekly schedule, also contributes to set routines and provides students with security.

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GUIDELINES

Based on the considerations listed above, it is defined that:

- All action will be based on the *MICROSOFT TEAMS*™ Platform in use at Insignare schools;
- There will be a weekly work plan, managed by the Class Headteacher, which contains the teaching hours for each subject, the tasks / skills / learnings to be developed and the type of sessions (synchronous or asynchronous);
- Synchronous lessons must not exceed 20% of the total hours of each module;
- In this process a special emphasis should be placed on the students' autonomy and responsibility. Therefore, students must have the necessary resources that will allow them to learn autonomously, at their own pace, while guided by the teacher / trainer;
- Teachers will follow their timetable, being available in the hours allocated to each class / lesson, to clear doubts / answer questions, to help with the recovery of learnings by students showing more difficulties in the learning process, among other tasks;
- In order to overcome the difficulties of real time technological access, and based on the referred weekly planning, the accomplishment (handing) of the tasks by students will be considered to the attendance hours. This way, if in a given subject, the tasks / learnings supposed/ defined to be carried out by students are planned for 3 hours, for example, the evidence of their accomplishment will give the students 3 hours of attendance;
- Another way of ensuring students' attendance will be, whenever possible, the evidence of their presence on the *MICROSOFT TEAMS*™ platform;
- The module assessment should reflect and bear in mind the autonomous work and the responsibility shown by the students;
- Teachers / Trainers must keep evidence of all work, interactions and assessments with students;
- At the end of each week, at the conclusion of the given work plan, it will make sense to have tools that allow to assess what each student has effectively learned.

METHODOLOGIES

The following action methodologies are suggested:

- Synchronous lessons must not exceed 30 minutes, and they must always be recorded to allow later viewing;
- Still on synchronous lessons, students should be asked for the following recommendations for a better experience:
  - Turn off their microphones, in order to minimize noise and facilitate the teacher's communication;
  - Turn on the microphone only when the student wants to intervene or when requested by the teacher;
  - Use Chat to ask questions or ask to intervene;

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- Use the “show participants” option and in the teacher’s identification (in the 3 dots) select the “stick” option. This way, the teacher’s image will fill the entire screen and there will be no distractions with the cameras of the other participants;

- Diversify the resources used by the teachers:
  - Videos (own or not);
  - Slideshows;
  - Books or e-books;
  - Worksheets;
  - Virtual School Escola Virtual™ (free access);
  - Aula Digital™ (free access);
  - School support website;
  - #EstudoEmCasa™ - Secondary
  - Socrative™;
  - Kahoot™;
  - Forms;
  - Etc ...

- The work plan must be sent to the Class Headteacher at the end of the week prior to its completion, so that it can be compiled in order to avoid excessive synchronous activities or duplicate content that can be worked in an interdisciplinary way;
- At the beginning of each week, the Class Headteacher should be available for 10 to 15 minutes, in order to identify problematic situations, and to present the work plan in a very general way, which will be detailed by each teacher in his / her subject;
- At the end of each week, the Class Headteacher should question the students regarding the fulfillment of the plan, the difficulties experienced, and any other relevant issue that might have come up during the week. For both situations an example template will be available, and it can be used by the Class Headteachers;
- In terms of evidence of the teaching activity, it is defined that:
  - On a daily basis, teachers / trainers must send Form 1_Registration of Pedagogical Activities (Word) and Form 2 - Registration of teaching activities (Excel) to emails:

    Form 1 - epo1@insignare.pt and dir@insignare.pt

    Form 2 - epo1@insignare.pt and epo2@insignare.pt
  - Monthly, students should send the Form FAQ_ Attachment I - Student Attendance to their Class Headteacher.

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We asked for some feedback from the participants in this project: teachers and students: **What is it like to teach online? What has this e-learning process been like? What has changed in the relationship with the school? Would you like to maintain this e-learning system in the future?**

HERE ARE SOME ANSWERS:

Isabel Marques

Teacher at the Vocational School of Ourém

We are facing hard times. Time of voluntary solitude, undeniable recollection and social isolation that we all have to accept and respect...
The way we perceive school has also changed.... It is time for necessary innovative learning, adapted to the constraints of our current society.

As a Class Headteacher of two 10th grade classes of the Vocational School of Ourém, I consider that these last weeks of e-learning have been positive. However, it has also been a very exhausting, laborious and strenuous period, given the need to adapt our lessons to a virtual reality, completely different from face-to-face lessons. In this e-learning system, there is no real empathy with students or proximity, that is, the emotional and personal component that, in my opinion, should always be present in the act of teaching.

As for the *TEAMS*™ platform, which was the basis of the whole e-learning process, it was fairly effective, as it generally met our teaching needs, although it should never replace real lessons.

Despite these difficult times we live in, we still have hope, resilience and the conviction that we will overcome this situation the best way we can, although it might take a long time... We are brave. We are courageous. Everything will be alright!

Ana Pinho

Teacher at the Vocational School of Ourém

Dealing with change is never easy, but when there is a will to do so, adaptation occurs. This is how overnight, most EPO (VSO) teachers and students tried to perform useful work in a completely different way.
And we did it!

Suddenly our computers and mobile phones, which were already important in class, became crucial tools and are even more essential nowadays. As the Management Course Supervisor, I am quite concerned about this change and the change of plans that will affect several aspects of content and planned activities

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that need to be reorganized. However, I am proud of the way most students are being able to adapt, adjust and work around these new challenges and tasks that are now being handed to them. Resilience, creativity, initiative, research skills, problem solving and meeting deadlines are skills that are being demanded and developed.

One way or another, we're going to continue on this path. We'll make it together and we will succeed.

Sónia Pereira

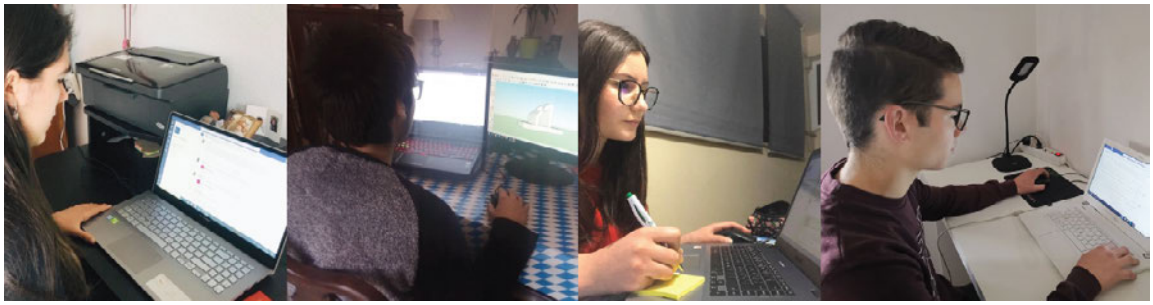
Teacher at the Vocational School of Ourém

CHALLENGING. EXHAUSTING AND UNTHINKABLE... These were the words that best helped me describe the end of this second term.

Challenging, to the extent that it was necessary to (re)think and adjust the lessons that had already been prepared /planned for a new online modality and we had to do it overnight by using some platforms and digital tools that allowed interaction in lessons. I used the knowledge I acquired in the various trainings I attended about teaching in the 21st century and the course I took as an e-trainer a few years ago, to use some digital tools that would allow me to continue the lessons and enable good communication with students.

It was definitely a challenge. An exhausting challenge, because it is more difficult to follow the working timetable, since we were able to follow the starting time, but several tasks were completed after class and already beyond working hours. As a Class Headteacher, the follow-up was more impersonal, but the feedback I had from my students was positive, since most of them considered that at first it was ''weird'' and confusing to try to perform all the tasks requested, but in the course of the second week, it was already easier.

Moreover, it was difficult for some families to manage the schedules of their children's online lessons with only one computer, while others did not have a good internet connection... Still, I think that overall, it was positive.



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Carolina Costa

10th grade - Computer Equipment Management

As a student, I think that these two weeks showed a huge effort carried out by the teachers, and as a consequence the results obtained were very positive. In these two weeks, I have solved some worksheets from the student's books, following the teachers' instructions.

I also developed some theoretical work and some written assignments involving documentaries. In this fortnight, I was able to adapt myself to a new learning process that I was not used to, which showed rewarding steps in regards to the completion of the school year. The lessons that took place through the MICROSOFT TEAMS™ platform allowed us to interact with everyone, which was very beneficial.

It was at this point, that I was able to value affection even more, the affection for the people around me: teachers, friends and above all, family. It was a reality that surprised us, affecting everything and everyone. This whole situation made us appreciate the people around us even more.

Together we are stronger!

Gabriela Oliveira

11th grade - Management student

The end of the 2nd term was different as a consequence of the situation that the country is going through. In the last two weeks, I was able to attend virtual lessons. I confess that it was not difficult for me to attend the online lessons because our school already worked with MICROSOFT TEAMS™, which allows recording lessons. It is possible to make video calls, and interaction with teachers and schoolmates is much easier through messages in the class group or in private chat, which allows several activities and involvement.

According to my experience, this online modality was very positive. My classmates and I adapted well. The performance and interest of the teachers were essential. They demonstrated creativity to continue the contents we were learning at school and stimulated students' cooperation.

I feel that this temporary method was a good option, as we were kept informed and managed to learn and understand the contents of the different subjects. I can even say that some of my colleagues are more motivated, because we all like working with technology.

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Pedro Martins

10th grade - Design student

As a student, I think this quarantine fortnight was a little busy, since there was some confusion with schedules and even problems with the platform. With all these changes and in this new online modality, the most difficult part was perhaps having Geometry lessons online. To overcome these difficulties, I had to make some changes at home, in order to get the best out of lessons. But everything is possible when we are ready for it! Is there anything to improve? There is always something to improve! But, taking the current situation into account, I think that the school has conducted a simple and effective guidance.

Will distance learning be effective? Many people wondered if it would be possible to learn remotely. Nowadays it is inevitable with all the current sanitary conditions. Regardless of the downsides, there is always a solution. It is necessary to continue working, since in vocational courses the practical component is essential. But learning is always possible, and we cannot stop. We have to admit that it hasn't been easy for anyone, because nobody was prepared for all the changes and we had little time to act.

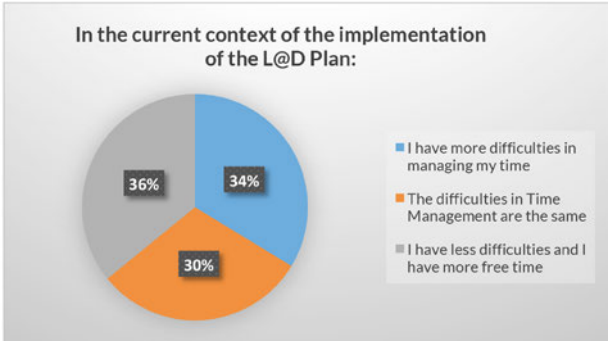
We also made a poll and asked our teachers and students some questions about their feelings concerning time management during L@D (Distance or remote learning).

The questions were:

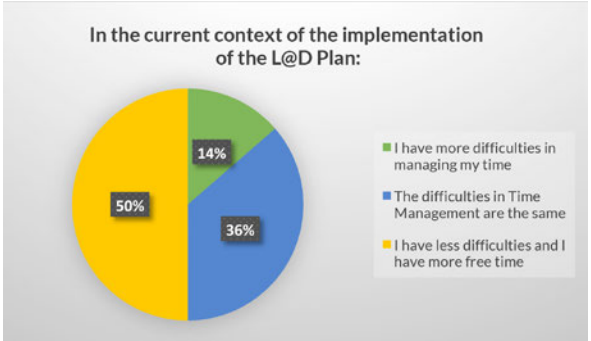
- **In the current context of the implementation of the L@D Plan**
- **What are the biggest difficulties with the L@D Plan? (Choose 2)**
- **How does "time" feel in this context?**
- **What is the level of personal satisfaction with the work done so far?**

Some charts with the results of the surveys:

Students Answers



Teachers Answers



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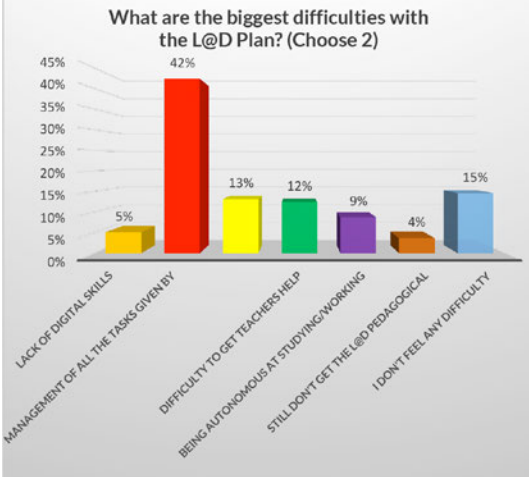
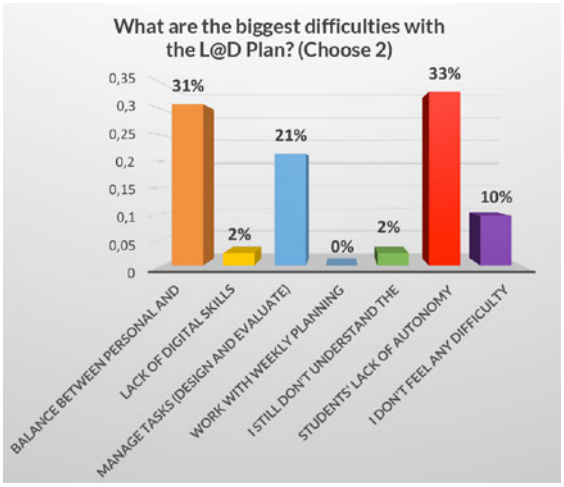
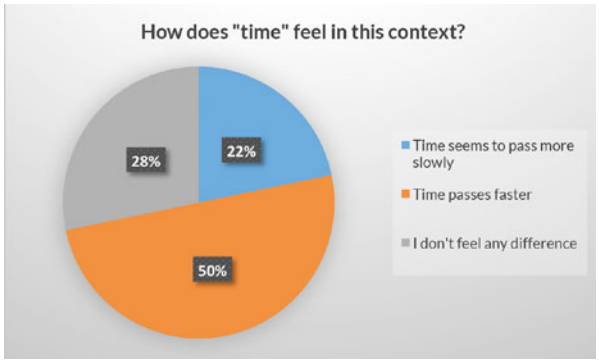
Students Answers



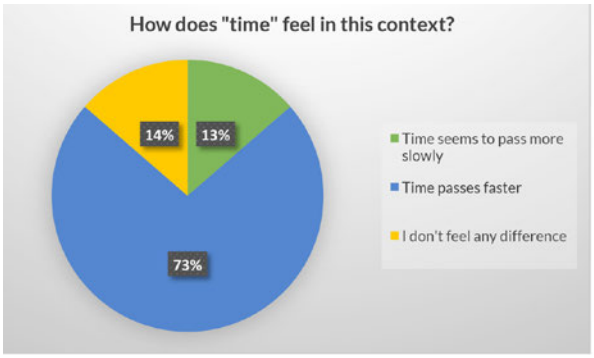
Teachers Answers



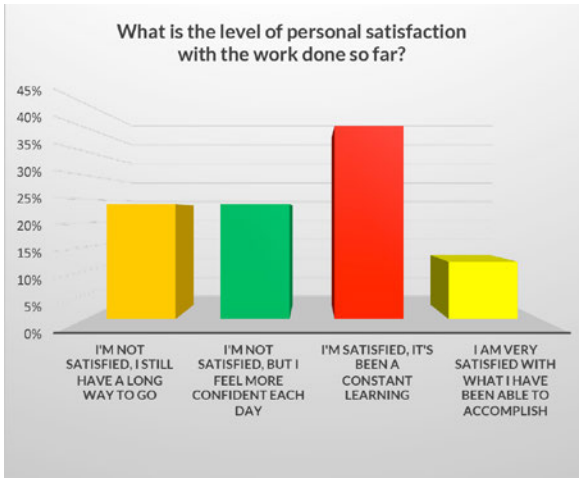
Students Answers



Teachers Answers



Students Answers



Teachers Answers

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Example 3

EP Raúl Dória, Porto, Portugal

The Raul Dória Professional School was put to the test by having to enter total confinement, where students and teachers were forced to adapt to a new challenge: distance learning with all its obstacles and opportunities in the construction of knowledge and individual growth.

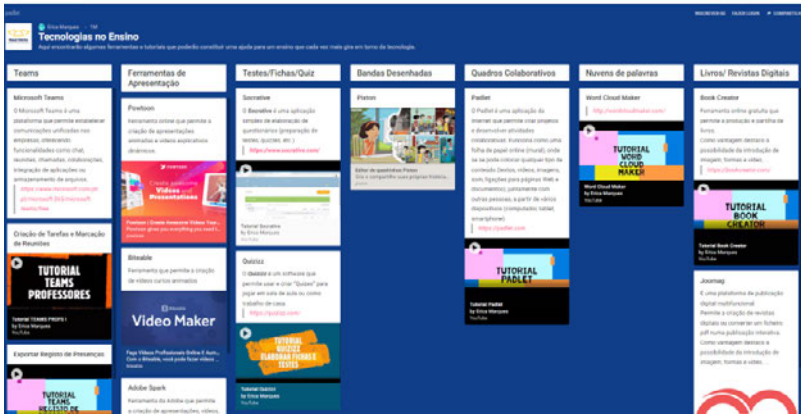
The school organized its distance learning (E@D) plan, dividing learning between synchronous classes, asynchronous classes and autonomous work. This was organized based on the following fundamental principles:

- Avoid the transposition of face-to-face teaching methodologies to E@D;
- Promote the use of appealing and mobilizing teaching methodologies;
- Promote students' involvement and autonomy;
- Promote the development of competence areas according to the students' profile by the end of their compulsory schooling.

This strategy proved to be fundamental in the students' long-term adhesion, since it allowed them to diversify the type of work, as well as to overcome the existence of a type of teaching based entirely on excessively expository synchronous classes, which is contrary to the essence of vocational education. It also put to the test an entire teaching staff that had to make an effort to adapt to a new type of teaching based on new technologies. In this sense, our math teacher started by creating small tutorials explaining some of the tools that could be used. The first tools that were introduced were Socrative and Quizizz, as these allowed the creation of quizzes, which the students adhered to easily.

Initially the synchronous classes took place using the Zoom platform. The initial meetings were exciting where the student's bond with the school was finally re-established.

Always seeking an active teaching process despite being confined, the students also went in search of digital tools, quickly putting into practice an active teaching methodology, with the pupils being the agents of their own learning process. Many platforms were used such as Zoom, Microsoft Teams, Socrative, Quizziz, Geogebra, Desmos, Video Editor, Edmodo, Pixton, One Note, among others. The tutorials initially created, were converged to a mural (link: https://padlet.com/ericamarqu/6ch2ny-4d4q2ze4t8), which is still being permanently updated.



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Following this quest for a type of teaching that increasingly appealed to the use of digital tools, innovative activities emerged that tried to bridge the gap between the students' empirical knowledge, the appropriation of new contents, and digital inclusion.

One of the first activities to be developed was entitled "The sale of the geometric product". The objective was clear! Students would have to record a video of themselves selling a geometric product of their choice that they had available in their homes. Teaching the calculation of areas and volumes and working on communication skills is not always easy and most of the times it is demotivating for the students. In this sense, students were provided with a script of the activity using the Joomag platform, because it was found that many had difficulties in opening pdf files, and, as such, Joomag responded to this obstacle.

link

(link: https://joom.ag/C1aC).

Very interesting and creative projects emerged that were later disseminated in the school's social networks, in order to give due merit to their authors.

link

Another activity that had great acceptance by the students of the Logistics Technical Course had as its theme the chess game myth, the exponential function and Coronavirus. This work proved to be fundamental in the adhesion of students to E@D, because they had the opportunity to create comics using Storyboardthat, work graphs of the exponential function using Excel and, finally, editing a video of the junction of the whole activity. Through this activity, students began to develop their autonomy and to accomplish what we all wished for... taking ownership of their own work, designing, creating and making decisions that defined the identity of the assignment, while the teacher became a mentor during the whole process. (link for the activity's script: https://joom.ag/10aC).

link

As a follow-up of the previous activity, and considering the amount of information available about Covid 19, the students felt that it might be difficult for everyone to know what the main measures for its prevention were. Therefore, it was decided that the students should create a TikTok about the preventive measures to be taken during the pandemic phase. This work was perhaps the greatest highlight of the 2nd year class of the Logistics Technical Course, since they were the ones who designed this entire activity, coordinating among themselves and taking advantage of each other's potential.

A new challenge arose with the presentation of the Professional Aptitude Tests (PAP's), which had to be presented and defended at a distance. This was one of the great moments of unity within the faculty.

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The Course Coordinators, together with the Pedagogical Direction met to outline the way in which the PAP's would be presented. In order to guide the students, each Course Coordinator had a meeting with the Mathematics teacher who ended up conducting an online workshop for each class in order to explain and present tools that would allow them to make a dynamic presentation with adequate quality. The use of Windows 10's video editor and Windows 10's Xbox application were the basis for the students to make their respective presentations.

During this journey, the Classroom Teachers were also asked to contribute towards the Invitation made by the Catholic University in the scope of the project School Life Trajectories - Covid 19. This contribution had as its main objectives:

- Illustrate lived experiences about confinement and E@D by children and young people.
- Highlight practices of consolidation/development of students' learning and skills.
- Envision alternative ways of attending school.

Overall, many of the students submitted written testimonials highlighting the support of the school and teachers during their period of confinement. It was unanimous among these testimonies that the students missed face-to-face classes and human contact, as well as acknowledging the loan of laptops by the school. In these testimonies, the first-year students emphasized one of the activities they performed in the subject of Mathematics, because it was different and challenging. The objective of this activity was to choose a product with geometric characteristics and make a video selling the chosen product. Since many students produced high quality work, every video was published daily on the school's social networks, which recognized the students' work and encouraged them to learn in a more active and creative way.

The culmination of all this work came to us through an invitation of participation in the contest "Tell us your story", under the scope of a European project entitled Mind the Gaps - Media Literacy Towards Youth Social Inclusion, which is an Erasmus + KA2 project that aims to contribute to the promotion of equal opportunities for young people in situations of social vulnerability through the development of skills in digital literacy and is coordinated by the Center for Educational Research and Intervention (CIIE) / Faculty of Psychology and Education Sciences of the University of Porto (FPCEUP), bringing together partners from Bulgaria, Spain, Norway and Turkey. The students quickly showed willingness to embrace the challenge, which resulted in great recognition for our students and our school through two honorable mentions.

The video can be found via the following link: https://rauldoria-my.sharepoint.com/:v:/g/personal/erica_marques_rauldoria_pt/EVmBcXljWiNDo6sUNzKETU0BDKCB-FWu-CLLZEvVhyHcSQ?e=HlFiGx

This journey, despite its difficulty, with little time to plan and execute, with many challenges ahead, showed us that we can always be agents of change and that it is mandatory to keep learning, because it is through

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real challenges that we are confronted with the weakness of practice and that it can always be in constant evolution. Our students proved to be capable of surprising, where it was necessary for them to plot a path and then lead the process. The challenge of this digital teaching has distanced teachers from their bubble, giving them the opportunity to evolve and provide their students with new learning activities, new resources, new challenges to develop their cognitive, social and creative skills, trying to always be at the forefront despite any setbacks.

Example 4

EP RIO MAIOR, PORTUGAL

Helena Coelho, Teacher/Trainer, teaches Portuguese and has professional experience with IEFP (Institute of Employment and Professional Training); former Archery professional athlete.

Jorge Cação, Teacher / Trainer, lectures Physical Education in public schools (several institutions) and in EPRM; International Volleyball Referee and Surf Trainer

Luciano Vitorino, Teacher, lectures Mathematics in public schools (Escola Secundária de Rio Maior); former pedagogical director of the Rio Maior Professional School; Commercial manager in the area of production and sale of mushrooms (Porto de Mós)

Bruno Vargas, Trainer, Formative experience in the areas of Tourism and Forest Resources; Course Director in the area of Environmental and Rural Tourism; manager in the area of production and sale of aromatic herbs.

Video: https://youtu.be/JjoP3hdLoKE

Example 5

KOGE BUSINESS COLLEGE, Denmark

A firm push into the digital era

How all Europe's teachers all of a sudden are dealing with new working conditions in a very difficult time. From one day till the other, a large group of teachers are producing digital learning for many students every day. The good news is that they are doing quite well.

FIGURE 1 Working from home on a daily basis

When KBC became a partner in Schools 4.0 little did we know how relevant the topic would be for school teachers all over Europe just more than a year after we signed the first Erasmus+ documents.

In January 2020, we first became aware of the Covid19 virus when we heard about people infected with this deadly virus in Wuhan, China. We saw pictures of cities, which were locked down and we could not in our wildest dreams imagine that we, two months later, would experience the same lockdown as we watched on television screens from China.

At Køge Business College the beginning of March was business as usual, we taught lessons in classes, occasionally using new technologies, we met with our colleagues in our staff room exchanging ideas, told stories about students or a lesson that went really good or bad, or private talks about more personal matters.

On March 12 our perfectly normal everyday life changed drastically. The Danish Prime Minister held a press conference where she said that all youth educations would be closed the next morning. The teachers' reaction was to go to our private group on Facebook and try to grasp what the Prime Minister had actually said. All sorts of emotions were expressed and questions like what to do now, what should we tell the students and last but not least how should we teach were expressed. Confusion arose while we all

anxiously waited for news from the management of our school. Later in the evening we were told that we should follow our ordinary timetable and teach the classes we usually taught, of course, just from home.

If you had not been a virtual wonder teacher before, you suddenly had a few days to get ready to find and test new platforms, get knowledge about new virtual tools while at the same time involve didactic methods. In this process, teachers did their outmost to find the best tools and platforms and their learning curve was steeper than the curves showing people infected with Covid19.

In the first days of virtual teaching, the platforms crashed several times as schools and educational institutions all over the country were online in the same timeslot. It was not an easy task to try to teach 30 students sitting at home, when the sound or video did not work, or the students all talked at the same time, or you could only see a few students as you cannot have 30 students in one screen etc. The teachers had humorous discussions whether we should appear online with or without make-up, combed hair, or we should just show up in our pyjamas.

The students also struggled hard the first days. They too had to install new tools that sometimes did not work. Moreover, if they had nine different teachers, and each teacher had fallen in love with a new tool, the student had to install this and dedicate time to find out how it worked and at the same time do their homework. In class they could just put up their hand and answer the questions, now they had to write long answers, upload answers to not get absence, make videos, podcast and vodcasts which were not always easy to upload.

So, what did we learn from being pushed into the virtual era in a matter of very few days? First of all, sitting at home and teaching has become more or less “a new normal” after approximately 7 days, teachers do their teaching in many different ways, some are 100 per cent virtual, others do fifty/fifty and others survive with questions, feedback and messages. Many of the students like the variation, as they think it is too much being online and virtual from 8.20- 3 pm every day. Many students and teachers miss the proximity in the class room, the social chats and having eye contact. However, the most important lesson until now is that the students who have learning difficulties/disabilities and diagnoses have a really hard time in this new digital landscape. They have a hard time doing their homework on their own, to get up in the morning, to write assignments etc. They are simply lost without the help from peer students, teachers and mentors and perhaps with no family members to help them. Many fall behind right from the beginning because some of them cannot get the help they need.

So, our prime goal of digitalisation of schools in our Erasmus+ strategic partnership suddenly became a lot more relevant than we initially had intended. The last three weeks has been a large virtual experiment. It will be interesting to see if digital tools and virtual teaching will be part of the teachers’ and students’ reality when we return to our schools, hopefully very soon.

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Example 6

Κέντρο Δια Βίου Μάθησης ΔΙΑΒΗΜΑ
Lifelong Learning Center DIAVIMA

DIAVIMA, Lifelong Learning Center, Lefalónia, Grece

Education throughout the ages. From early times to Education 4.0" Greece's educational system response in the Covid-19 era

Katerina Aravantinou - Fatorou

The first Covid-19 positive case was reported in Salonica, Greece on the 26th of February 2020 and 14 days later all Schools and universities were locked down by the government. Only five days later, on 16/3/2020, the Regional Directorates of Primary and Secondary Education informed that teachers, who teach at the 3rd grade of high school, should start working with asynchronous teaching methods using distance learning programs and the existing digital structures of the Ministry of Education immediately.

These measures included school E-Books, Digital Educational Material and Digital Teaching Scenarios. All teachers were asked **to create digital classrooms** (e-class or e-me) for the asynchronous exchange of educational material, exercises and instruction of the curriculum in the Panhellenic School Network, without proceeding to the teaching of new material, but instead to be limited to repetition of the knowledge already obtained. One week after this initiative, the teachers of all grades were asked to organize and work through e-classes. New teacher and student user accounts should be created. **The aim of the project** was to keep students and teachers in touch with the educational process without substituting in person education.

However, this unprecedented situation found educational structures, school leaders and educational communities unprepared for a number of reasons. The Panhellenic School Network did not have the technical capacity to serve such a big number of users at the same time, due to the inability of the servers to supply an increased load. Moreover, the teachers and students did not all have a user account and could not create one due to network congestion. Despite that, a lot of teachers could not implement digital classrooms. Finally, there are still technical glitches, such as difficulty and inability to upload files and lack of user-friendly menus. Nevertheless, schools showed excellent results. Support groups for live and asynchronous distance education were created, consisting of the principal as the head and a computer science teacher or a second level ICT trainer. The teachers co-designed the new online School Schedule. Furthermore, teachers updated the contact details of the students and their parents, provided them with support after contacting them and even at midnight, digital classrooms and user accounts for them and our students were set up. The teachers, also, set up groups to support and educate each other on social media, exchanging experiences and supporting each other psychologically. In addition, the teachers shaped the teaching material and prepared new alternatives, so that it would be suitable for distance learning education and, together with the students, they focused on the repetition of curriculum, the resolution of exercises and the deepening of existing knowledge. But it has to be mentioned that, unfortunately, the

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teachers in Greece were not trained for distance learning education, except for those who, on their own initiative, attended postgraduate studies or seminars. So many concerns arose, including questions such as: Was the material created suitable for distance learning education? Who evaluated it and how? What was the eligibility criteria observed? How did the teachers know that?

In order to overcome the incapacity of the school network, the Ministry of Education started sending personal links to teachers, as well as instructions for the implementation of modern teaching through the selected platform, which was **Webex**. This action triggered a new round of online teacher collaboration, communication with our students and an additional workload to start the first teleconference. Howerver, the Cisco Webex Meetings platform does not allow the teacher to divide students into groups, in order to work as a team in the preparation of activities.

The students, also, faced difficulties adapting to the new educational reality, such as not having the appropriate or modern technical equipment nor a satisfactory internet connection speed, or even a connection at all. Furthermore, those connected via their mobile phones were financially burdened while using their data, plus the fact that the mobile phones were not functional for all educational activities and most of our students did not have a PC. So, the devastating realization came as a result of this experience: M**ost students are digitally "illiterate "**. In order to overcome the connection and devices problems, the Ministry, in consultation with the mobile companies, gave the possibility of **free internet connection in applications of the school network**, and explores the possibility of sending a limited number of tablets to schools, through donations.

CONCLUSIONS

The lack of training certainly reduced the effectiveness of the whole project of modern and asynchronous education, but thanks to the teachers' hard work and self-denial, at least the contact of our students with their courses was achieved and the learning process was maintained. Although, the distance learning procedure was optional for teachers, most of them responded and, within this short period of time, lessons were implemented in the vast majority of schools, either only with asynchronous or with a combination of a modern and asynchronous model. Perhaps it is time, to integrate distance learning into our schools in order to multiply its benefits. But, of course, it presupposes, the training of teachers and, the emergence of suitable material for distance learning, tested and evaluated based on specific analytical axes and criteria.

Especially, in Vocational Schools, where half of the courses are laboratory based, distance learning can only act as an adjunct to in person education. Only in laboratories and in those that require, by nature, a personal presence (physiotherapists, hairdressers, beauticians, etc.), distance learning cannot function. On the contrary, in service specialization laboratories (economy, tourism, logistics, IT, etc.) it can work extremely well, as long as it has a specific and predetermined role. Of course, the school cannot be replaced at home, because no matter how rich the distance learning material is, it does not replace the personal contact through all our human communication expressions, but also our experiential and laboratory collaborative educational activities.

The last two months have shown that the school must now be transformed, its program changed* frontal teaching, whether conventional or online, revised* class boundaries, conventional or digital, expanded in favor of interdisciplinary activation of learning interests* the roles were alternated and of course all tenants of the educational structure were called in to participate in decision-making. We need to move

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forward with **a hybrid pedagogy**, which will concern the critical pedagogical performance in digital learning environments (socio-political and culturally differentiated). **The deification or demonization of new means must disappear.**

Example 7

EFVT – European Forum of Technical and Vocational Education and Training, Belgium

Maria João Proença

Head of Office and Programme Manager

The COVID-19 pandemic has caused an unprecedented health crisis, impacting all econominal sectors, and affecting societies all over the world. It has particularly disrupted the education and vocational training systems faced with challenges that has put to test even the most structured systems in the world, demanding from schools, trainers, staff, students, and families the greatest effort, ever seen, in order to cope effectively with this challenge.

Representing approximately 200,000 VET professionals and 2,000,000 learners, EfVET – the European Forum of Vocational Education and Training - has been following attentively the situation of Vocational Education and Training in Europe, consulting with members and participating in Policy debates and consultations with the European Commission. The purpose has been of understanding the impact of the health crisis at a local and national level, alerting for the challenges ahead of us in terms of recovery, in a period when Europe has set very ambitious goals regarding the transition to a greener economy and a digitalized Europe that will have a massive impact on the labor market and the skills that will be needed in this Green and Digital Europe, assuring that no one is left behind.

The future holds great uncertainty, in this time of recovery and transition and the role that Vocational Education and Training Systems play in this recovery and transition period is unarguable.

Nevertheless, actions are needed to support VET systems and schools. EfVET stands by the Council Recommendations on VET, highlighting that Member States, together with social partners, education and training providers, learners' representatives, business and sectoral organisations and other stakeholders should work together towards the following actions:

- providing vocational education and training providers a level of autonomy allowing them to react quickly to skills challenges, offering fast reskilling programmes and working in close partnerships with employers from both public and private sectors;
- modularising vocational education and training programmes and expanding them to higher levels of qualifications and micro-credentials;
- linking vocational education and training to forward-looking economic strategies and innovation systems, by promoting Centres of Vocational Excellence (see below);

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- embedding environmental and social sustainability into vocational education and training curricula and organisational management;
- ensuring better permeability between all sectors of education and training;
- increasing the digital readiness of vocational educations and training institutions
- increasing opportunities for mobility of learners and staff offered by the Erasmus+ programme and other funding opportunities;
- addressing gender bias and gender stereotypical choices and supporting diversity and inclusiveness;
- defining a set of indicators and objectives to enable both quantitative and qualitative monitoring of performance of vocational education and training systems.

It is now critical that Member States embrace these recommendations assuring that VET Schools are properly resourced to cope with the demands of the labor market, while recovering from the impact of the pandemic.

Testimonials from other schools that are not partners of this project

Example 8

Escola Secundária José Estevão, Aveiro, Portugal

Maria Miguel Vieira de Figueiredo
11th grade student of Science and Technology at
ESJE, José Estevão High School, Aveiro

My experience during the pandemic

In this short "testimony" I will try to describe how I have been feeling these past few months: what has changed, or rather, adapted, trying to share my personal experience as an 11th grade student in the Science and Technology Course at José Estêvão High School.

In fact, this pandemic has affected several aspects of my life, as I'm sure it has affected everyone. However, I consider myself "lucky" because it effectively only affected my emotional stability, and other areas of my life were not affected.

I remember that one of my first worries (as an anxious person) was how school would work, the evaluations, and if my school success would suffer any repercussions. In the beginning of the 3rd period, with the start of the E@D platform, I started to understand how my life as a student would function and the dynamics of having classes at home. Of course, at first everything was new and there was a phase of personal adaptation and learning to deal with restrictions - after all, my room was my classroom. From my perspective, the school did an excellent job, and my teachers were always willing to help me overcome

any underlying problems. Personally, I really liked the methodology adopted - short "general" conferences which were accompanied by more specific follow-ups. I think it was the best way, both for us students and teachers, to organize ourselves. However, I recognize that while I find that my productivity remained the same and that for me this system worked, there are students where this simply doesn't work and they are just "hiding" behind a computer. In addition, I cannot help but stress that the inequality of opportunity was evident more than ever, as not everyone has access to a computer or the Internet. I realized the importance of face-to-face classes, the importance of the teacher-student bond, of having a doubt, asking it on the spot and getting an answer right away, of being sure that others are listening to me and that there was not a problem connecting to the Internet.

So after basically two months of being "locked up" in my house, not seeing my friends and family, I felt a sense of relief. A sense of comfort knowing that I was going back to school, that my life would slowly normalize, one step at a time. I knew and know that I cannot slack off, I cannot "throw away" everything our country has managed to do so far to defeat this virus. The returning to school, on May 18, was peculiar: not being able to hug my classmates, the fact that we were all wearing masks, that the school seemed almost deserted... Now, almost a month later, I can say that I have gotten used to this new reality, to having to disinfect my hands when entering, to not having that typical " commotion" during breaks.

I think the future is still uncertain – "What will I do in September?" or "What will happen to the school?" are questions to which there is still no answer. As a popular saying goes, we have to "live one day at a time". However, I would like to state my point of view on this topic. I believe that it will not be a normal back to school but, on the contrary, it will be a very atypical start to the new school year on all levels. Certainly with the proper safety and sanitizing measures, the use of the mask and social distancing (a point that, in my opinion, young people – including me – have more difficulty in fulfilling, since physical contact is almost a "basic need"). Perhaps even with the continuity of the Distance Learning platform (although I believe that it will serve as a second means of "support", that is, face-to-face teaching will be, in my opinion, the privileged over it).

In conclusion, every day I try to do everything in my power so that the future in which everything goes back to the way it was is not so distant. And if all of us stay united and comply with all indications, it will certainly be over faster than we expect.

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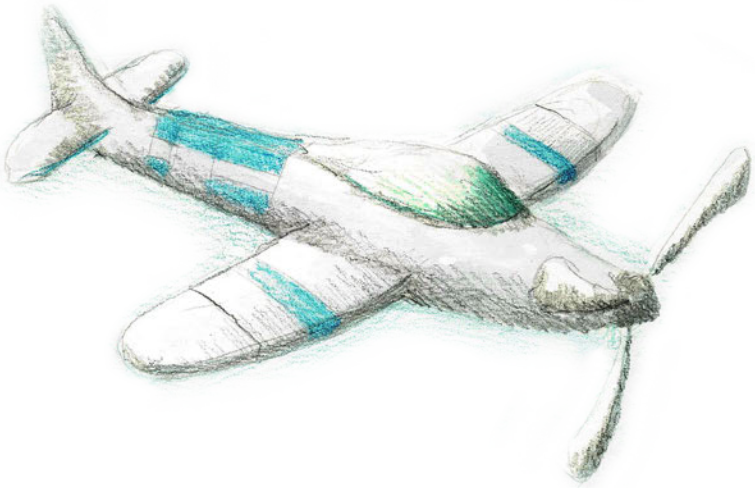

Part III

DISSEMINATION
MULTIPLIER EVENT

Schools 4.0 – Innovation in Vocational Education

Erasmus Project nº 2018-1-PT01-KA202-047463

Blended Multiplier Event (international) October 14th, 2021

Auditório Carvalho Guerra – Universidade Católica do Porto

10:00 (CET)

"Education is the greatest tool we have to transform the World"

Nelson Mandela

EVENT AGENDA

Octobre 14th, 2021

MORNING - am

9.30 **Reception** – auditório Carvalho Guerra – UCP

10:00 **Welcome Session**

Isabel Braga da Cruz – *President of the UCP Regional Center of Porto*

Raquel Matos – *Director of the Faculty of Education and Psychology at UCP*

Joaquim Azevedo – *President of the Scientific Committee of the Multiplier Event and Scientific Consultant of the Project - UCP Faculty of Education and Psychology*

João Luís Nogueira - *Director of EPATV*

João Costa – *Assistant Secretary of State for Education*

10:45 **Openning Conference** – The Education Dimension (with) Future

Keynote Speaker: Gonçalo Xufre – *Coordinator of the PISA for Schools project in Portugal*

Moderador: Sandra Monteiro – *President of the Organizing Committee of the Multiplier Event and Pedagogical Director of EPATV*

Short break

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11:30 **Presentation of the e-book**

Marta Santos – *Secretaria do Conselho da EfVET*

Olga Neves – *Illustrator of e-Book*

Speaker: João Gonçalves – *General Director of DGEsTE*

Moderator: Maria João Proença

12:30 Lunch break

AFTERNOON - pm

14:30 **Panel 1: Schools 4.0- Strategies and good practices for School´s (with) Future-international partners – Schools 4.0 Erasmus project**

Gitte Dyrlov – *Koge College I Denmark*

Pavlos Kokkinakis – *Diavima I Greece*

Moderator: Ana Cunha – *Erasmus+ National Agency*

15:00 **Panel 2: Schools 4.0- Strategies and good practices for School´s (with) Future-national partners – Schools 4.0 Erasmus project**

António Cunha – *EPATV*

José Pegada – *Insignare*

Daniela Martinho – *Raúl Dória*

João Colaço – *EPRM*

Moderator: Luísa Orvalho – *Scientific Committee of the Multiplier Event and Scientific Consultant of the Erasmus Project - SAME, Faculty of Education and Psychologie,UCP*

16:15 **Discussion**

16:30 **Musical Moment**

Ópera de Bolso

16:45 **Closing Session**

José Manuel Fernandes – *European Parliament*

Ana Cristina Perdigão – *Director of the National Agency Erasmus+*

Sandra Monteiro – *President of the Organizing Committee of the Multiplier Event and Pedagogical Director of EPATV*

Photos: https://epatv.pt/multiplier-event/

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“18 SENSES FOR THE EDUCATION OF THE FUTURE” THROUGH IO-SCHOOLS 4.0

Vision and analysis of João Miguel Gonçalves
General Director of DGEstE

October 2021

CURRICULAR OVERVIEW

João Miguel Gonçalves

João Miguel Gonçalves, Director-General of School Establishments, since June 2020.

Holder of the Technical Appreciation Course in School Administration at the Higher Institute of Social and Political Sciences – Technical University of Lisbon (Postgraduate Specialization Diploma); Post-graduate Degree in Education Administration and Planning, from the Portucalense University; Degree in Theatrical Singing from the Superior Conservatory of Music in Gaia – Class of Professor Fernanda Correia; Degree in Philosophy – Educational Branch, by Faculdade de Letras da Universidade do Porto. He also holds CAGEP (Advanced Course in Public Management), from ISCTE, and FORGEP (Public Management Training Program), from the University of Minho.

Regional Delegate for Education in the North of the Directorate General of School Establishments, between October 2018 and May 2020. Headmaster of the Professional School of Agriculture and Rural Development of Marco de Canaveses (EPAMAC) between July 2013 and October 2018; still at EPAMAC he held the positions of Deputy Headmaster and Pedagogical Principal (from June 2009 to July 2013); Vice-Chairman of the Provisional Committee (Executive Board) and Pedagogical Principal (from September 2001 to June 2009); President of the Constituent Assembly (school year 2000/2001); Professor of recruitment group 410 (Philosophy). He is the author of the following publications: “Vocational Courses – A practical guide developed for teachers (Modular Structure, Training in the Work Context, Professional Aptitude Test)”, Areal Editores, 2008; “EPAMAC – Community and Meaning: Around the construction of an azimuth for the directive action - minimal concept “pro domo mea”, Author’s Edition, July 2013.

In the artistic area, he has developed a career as a lyrical singer - whose work has been carried out in Portugal and abroad, namely for the promotion of Portuguese culture, by bringing to other countries, for example, a recital of song and piano about the Portuguese music of the 19th and 20th centuries, focusing on the following themes: the Sea and the Empire; Portuguese Nostalgia and Fado(s); rurality and popular inspiration; sadness and Destiny.

A specialist on António Sérgio, Portuguese intellectual and cultural figure, holding a vast collection of his bibliography and very regularly invited to organize exhibitions of his personal collection, as well as to give seminars, participate in colloquiums and write articles about this great philosopher.

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PRESENTATION

SCHOOLS 4.0

e-Book

INNOVATION in VET

Acknowledgements

Scientific Coordination

J. Azevedo

L. Orvalho

sense

COMMUNITY NETWORK

sense

EDUCATION Building Civilization

sense

PROJECT Methodology

Action Research - in and for action

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sense

IDENTITY
Training and
Vocational Education

sense

KNOWLEDGE
Episteme Vs doxa

sense

COOPERATION
International

sense

CENTRALITY OF THE MODULAR CURRICULUM STRUCTURE

FLEXIBILITY
ADAPTABILITY
COHERENCE
EFFECTIVENESS

reinvent

sense

BUILDING ROUTES THAT WERE NEVER EXPLORED
Organization
Spaces
Praxis

sense

AFFIRMATION OF THE INDISPENSABLE DIVERSIFICATION
Human diversity | a school for everyone

sense

AFFIRMATION OF DISRUPTIVE INNOVATION
RETHINKING PEDAGOGICAL PRACTICES

"Intelligence at the problem level alone is liberating and constructive of new relationships.“
António Sérgio

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sense

ASK QUESTIONS (the right ones!)

What is useful for the future?

How to make VET the first choice?

How to do student recruitment? (unravel...)

sense

SCHOOL AUTONOMY

Contextualizing autonomy in the face of reference curricular policies

sense

INTEGRATED MODEL FOR MANAGING CURRICULUM CHANGE AT SCHOOL

Four pillars

- MODULAR CURRICULUM DEVELOPMENT
- TEACHER PROFESSIONAL DEVELOPMENT
- ORGANIZATIONAL DEVELOPMENT OF THE SCHOOL
- PEDAGOGICAL DEVELOPMENT OF THE TEACHING-LEARNING PROCESS

sense

LEARNING DYNAMICS AND INCLUSIVE EDUCATIONAL PRACTICES

sense

MODULAR ASSESSMENT

Diversity of instruments

Diversity of methodologies

Assess everything | always to support learning

sense

QUALITY

Assurance Models

sense

VOCATIONAL ORIENTATION

Tutoring

Coaching

Counseling

Mentoring

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sense

THE SEVEN KNOW-HOWS FOR FUTURE EDUCATION

Morin

TO MAKE KNOWN WHAT IT IS TO KNOW

To confront permanent risks of error and illusion

To give every spirit the ability to face the vital struggle for lucidity

KNOW WHAT IS PERTINENT TO LIFE

Methods for grasping the mutual relations and reciprocal influences between the parts and whole in a complex world

TEACHING THE HUMAN CONDITION

Complex unity of human nature (physical, biological, psychological, cultural, social and historical)

Becoming aware of one's complex identity and the identity common to all other humans

TEACHING EARTHLY IDENTITY

All humans, henceforth faced with the same problems of life and death, live in the same community of destiny

CONFRONTING UNCERTAINTY

Teaching uncertainty

Teaching the principles of strategy, which allow you to face the risks, the unexpected and the uncertain, and to modify your development by virtue of the information acquired along the way

TEACHING COMPREHENSION

Teaching mutual understanding between humans is, from now on, vital if human relations are to emerge from their barbaric state of misunderstanding

Study misunderstanding and its roots

TEACHING ANTHROPO-ETHICS

Earth Citizenship

Planet Earth-Homeland

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EDUCATION as a PROJECT

1. Anthropological

2. Ethical

3. Epistemological

(...) because the best virtues of the worker are the virtues of the citizen, and because advances in technology make it increasingly necessary to cultivate moral forces, the educator must remember that, as Kant said, 'we do not educate youth for this present society, but for a better society, possible in the future».”

(...) it is the school at work, and not in the public square, that we can come to establish true democracy..”

Admonition to The Montessori Method by Luisa Sergio, 1915

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ANNEXES

ANNEX 1 - The results of the pre-questionnaire applied to partner schools

https://drive.google.com/file/d/0B-7fWw7X4IETLTJCek40WkgwNGpSNmJjbFRhLXR4cWF3UFY4/view?ts=5d7c1505

ANNEX 2 - Important links

https://www.ashoka.org/pt-pt

https://www.efvet.org/ongoing-projects/

http://www.fep.porto.ucp.pt/pt/central-noticias/investigadores-cedh-integram-projeto-europeuschools-40-innovationvocational?fbclid=IwAR09XCEGumaWmU0nmtj5jQRrCJAautJ1eAI43nOyCn3VD6ntWnwRia_og8

https://www.efvet.org/wp-content/uploads/2018/11/EWS_template.pdf

https://www.efvet.org/wp-content/uploads/2020/04/Newsletter_Schools-4.0_Issue-2.pdf

https://www.efvet.org/2019/05/28/schools-4-0-innovation-in-vocational-education/

https://www.efvet.org/annual-conferences/ "COVID-19 beyond 2020: A new generation of VET?"

http://www.oecd.org/education/ceri/study-on-social-and-emotional-skills-the-study.htm

http://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf

https://www.oecd.org/education/Global-competency-for-aninclusive-world.pdf.

vetinnovation4o – Schools 4.0. Innivation in VET [Facebook do Projeto].
Escola Profissional Amar Terra Verde

https://xavieraragay.com/transformacion_educativa/la-inteligencia-artificial-entrara-con-fuerza-en-la-educacion-debemos-prepararnos-y-anticiparnos?fbclid=IwAR2mP2J5pWEv82KKE-ohtBLNByY0iy7fhdmX-fknH4bQZ-3cyEUBJAFmnCiM

Quadro de referência EQAVET

http://www.anqep.gov.pt/default.aspx

Garantia da Qualidade na Educação e Formação Profissional

http://www.qualidade.anqep.gov.pt/?cpp=1

Vantagens de utilizar Avaliação por pares

https://www.professorideal.com/metodologia-ativa/metodologias-ativas-vantagens-de-usar-avaliacoes-por-pares/

ANNEX 3 – Open Educational Resources (OER) and Creative Commons (CC)

It is necessary to take more advantage of the potential of the web when it moves from the physical space to the digital space (fully online), since students no longer have the teacher as their main resource.

Open educational resources (OER) - are teaching, learning, and research materials that are either (a) in the public domain or (b) licensed in a manner that provides everyone with free and perpetual permission to engage in the 5R activities. OER is one facet of open education, or efforts to make education more affordable, accessible, and effective—providing unfettered access to learning to as many people as possible.

Open education involves open practices, open policies, and open educational resources. OER enables educators to adapt learning resources to meet the needs of the growing populations of online learners, whether those needs are for translation into first languages.

Creative Commons (CC) is a global nonprofit organization dedicated to supporting an open and accessible Internet that is enriched with free knowledge and creative resources for people around the world to use, share and cultivate. Different sites where OER and Creative Commons (CC) can be searched: https://search.creativecommons.org/

To avoid plagiarism, always respecting authorship and the creative process, it is necessary to know the terms of use of Creative Commons (CC), copyright and related rights https://creativecommons.org/about/cclicenses/ and the type of licenses and OER copyright duration https://www.nla.gov.au/how-long-does-copyright-last

Examples of digital repositories and educational resources to engage students with learning:

Wikimedia Commons - https://commons.wikimedia.org/wiki/Main_Page

Creative Commons - https://pt.wikipedia.org/wiki/Creative_Commons

Creative Commons for Educaters - https://commons.wikimedia.org/wiki/File:Creative_Commons_for_Educators_and_Librarians.pdf

Gamification in Higher Education - https://repositorioaberto.uab.pt/bitstream/10400.2/8257/1/ebookslead%2304.pdf (This e-book is licensed under a Creative Commons License - CC-BY-NC-SA. Attribution 4.0 International.)

English courses - Kan Academy - https://pt-pt.khanacademy.org/

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Pictures - https://www.flickr.com/creativecommons/

Music - https://www.jamendo.com/legal/licenses?language=en

Files Multimedia - https://wiki.creativecommons.org/wiki/SpinXpress

Wikipedia multimedia repository - https://commons.wikimedia.org/wiki/Main_Page

Multimedia Educational Resource for Learning and Online Teaching (MERLOT) - http://www.merlot.org/

University of Leicester's OER Repository - http://www2.le.ac.uk/projects/oer

Jorum (Learning to Share) - https://store.jisc.ac.uk/home

OER Commons - http://www.oercommons.org/

There is also a Creative Commons search browser extension that we can use to find and creative commons and public domain work such as images - https://creativecommons.org/2020/01/06/cc-search-browser-extension/

There are also a number **toolkits** developed by the University of British Columbia that walk you through how to create your own media - http://diy.open.ubc.ca/toolkit-landing-page/

An integrated set of learning content creation tools, such as: Mind Maps, Flashcards, Quizzes, Notes, Slides - https://www.goconqr.com/pt

Mind Maps

https://www.goconqr.com/pt

PT/users/sign_up/step_3

https://www.goconqr.com/pt-PT/users/sign_up/step_3

https://www.goconqr.com/pt-PT/library?subject_id=1549

https://mail.google.com/mail/u/0/?tab=rm&ogbl#inbox/FMfcgxwJXfsKNwHbGfMhnLLsDcpxDTld

https://www.goconqr.com/pt-PT/mind_maps/25347203/edit

Padlet

https://padlet.com

Others

SlidesShare, Slides do Google, Pinterest, Twitter Pools

Screenchat - Digital tools to enhance the recording of classes and share with students, videos with audio, using free software Camstudio - https://www.youtube.com/watch?v=Jh1cVh__uaE

Casa das Ciências - Fundação Belmiro de Azevedo - https://www.casadasciencias.org/sugestoes

COVID-19: 10 Recommendations to plan distance learning solutions - https://en.unesco.org/news/covid-19-10-recommendations-plan-distance-learning-solutions