

GUIDE TO GOOD PRACTICE

TEMP_01 Phereclos | H2020



University of Porto
Universidade de Santiago de Compostela
Porto Business School
Escola Profissional de Valongo
IES A Nosa Señora dos Ollos Grandes
IES Lucus Augusti
IES Arcebispo Xelmírez II
Associação Tempos Brilhantes - Escola-ON



THE CHALLENGE OF DIVERSITY

The TEMP_01 of the Phereclos project was, above all, a space for meeting and coexistence in which we merged the heads of two universities for children and young people from the Galicia-Northern Portugal Euroregion - Junior University of Porto and Xuvenciencia - with teaching and research staff from the University of Santiago de Compostela and the University of Porto and the assets of the Porto Business School, the Faculty of Business Administration and Management of the Lugo Campus of the USC and the non-profit association Tempos Brilhantes Escola-ON. Together with us we had the opportunity to develop a proposal for very diverse pre-university students from the Galician high schools Lucus Augusti and A Nosa Señora dos Ollos Grandes (Lugo) and Arcebispo Xelmírez II (Santiago), as well as the Escola Profissional - Profival de Valongo. In TEMP_01 of Phereclos, students from Galician baccalaureate of scientific excellence (STEMBach) coexisted with students from the fourth year of compulsory secondary education and also with students from training cycles in the areas of health, aesthetics, hair-care and beauty. Working with teenagers always involves the challenge of bridging the generational gap. This handicap becomes a stimulating objective if, in addition, we deal with extracurricular activities addressed to a heterogeneous and diverse group of people who are beginning to channel their academic and professional careers through the most diversified paths.



THE POWER OF INTERDISCIPLINARITY

The heterogeneity of the group, in addition to the challenge we mentioned in the previous section, is also an incentive to promote interdisciplinarity.

Training in economics and entrepreneurial culture function as a point of engagement for students in the fourth year of Obligatory Secondary Education who take Economics as an optional subject, while the students and teaching staff of STEMBAch are involved because of its scientific and technological aspect. On the other hand, vocational training students often find a professional path in self-employment, so TEMP_01 also sought to open

them up to the reality of entrepreneurs and start-ups. This interdisciplinarity goes far beyond an experiment or a one-off experience, but is preparing us all, pre-university students, secondary school and university teachers, for a future - for a present, we could say - in which interdisciplinary and multidisciplinary teams are important both in research groups and in Academia and in the workplace and companies. We note, from our experience, that diversity is always a factor that adds up and enriches us all as professionals and society as a whole.

ENTREPRENEURIAL CULTURE WITH AN ETHICAL VISION

The TEMP_01 of Phereclos chose a business vision based on the premise that economic growth cannot come at any price. We emphasise the importance of collaborative work and the construction of teams where all members are taken into account. To seek business ideas that have their roots in the community, that consider people and their surroundings, their wellbeing, their needs and their circumstances, and that encourage prosperity that, in addition to being measured with quantitative analysis tools, is also evaluated through qualitative analysis.



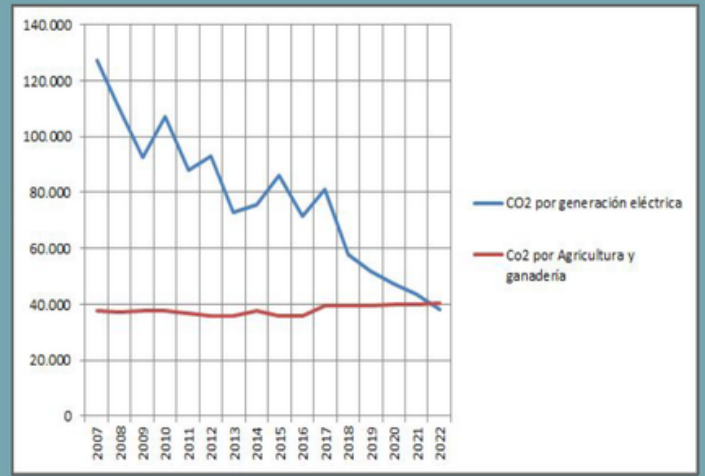
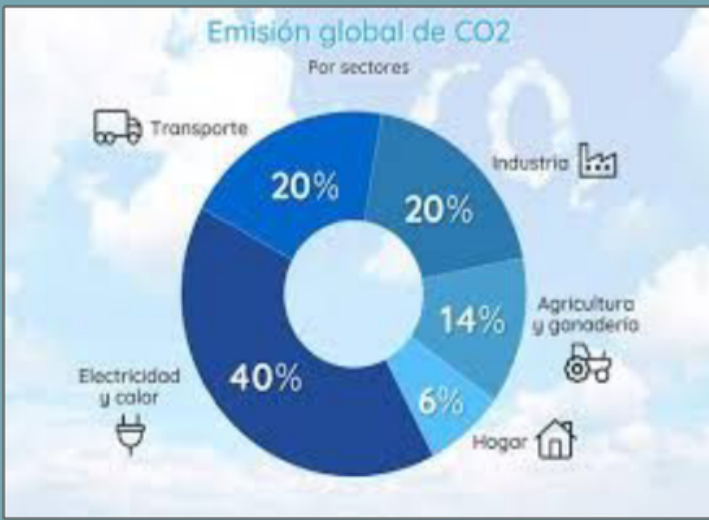


THE STEM FACTOR

For the last ten years, the teaching innovation group XuvenCiencia has been designing scientific experimentation kits that are developed in the laboratories of the Lugo Campus of the University of Santiago and which are sent to secondary schools all over Galicia. For XuvenCiencia the STEM factor transcends the acronym STEM (Science, Technology, Engineering, Mathematics) and incorporates a social and humanistic approach. The XuvenCiencia scientific experimentation kits we are working with in this TEMP_01 of the Phereclos project are the Fotometrix and the AquaLab. The Fotometrix kit determines the amount of protein in a biological liquid through photometry and thanks to a mobile photometer specially designed by XuvenCiencia. This kit is useful for physics, chemistry, biology and technology subjects, as well as for science clubs and to deal with transversal aspects of the curriculum such as healthy diet. The AquaLab monitors environmental

values for efficient water management using free Arduino hardware and is suitable for technology, physics, biology, geology, earth science and environmental science classrooms, as well as for science clubs. These are research devices in line with those used in a territory with a large specific weight of the agri-food sector in the economy and which has a significant percentage of biosphere reserves, nature parks and sites of community interest of special environmental protection in its territory. Finally, and above all, both the XuvenCiencia kits and this TEMP_01 by Phereclos seek an inclusive science and that is why we provide cheap kits that are easy to use, that do not require large laboratories or large budgets, because we believe that students from peripheral schools, with fewer resources and more distant from the large financial and research centres, also have the right to access to science and experimentation.



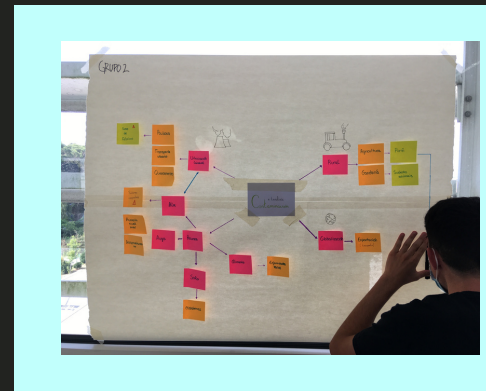


STEAM₄E

THE INTEGRATION OF STEM + ENTREPRENEURSHIP

The most complicated of all the tasks was the integration of the contents of scientific and technological innovation with those related to entrepreneurial culture. These are two worlds presented to us as watertight compartments without any kind of flow between them in Academia and school curricula. We started with the competitive advantage of having heterogeneous students and teaching staff, as we mentioned earlier. In this aspect, it was also a

great help to have the Faculty of Business Administration and Management of the Lugo Campus of the USC, which has just introduced a new degree in Business and Innovation. It was also enriching to debate in the project's closing meeting on how to achieve better integration and the experiences of secondary school teachers in incorporating students from the Social Sciences and Humanities modalities into the STEMBach programmes of excellence.



THE CONNECTION WITH CURRENT AFFAIRS: THE URGENCIES OF OUR TIME

We understand that in a context such as the current one, in which we are emerging from a social and health crisis of global dimensions, faced with the challenge of global warming and climate change, it is crucial for our survival that we are able to combine economic growth with sustainable development. It is our responsibility to understand ourselves and to make our students

understand that sustainable development is more than just a statement and objectives that we often repeat in a mechanical way; they are not just a bunch of magical words that we repeat in school curricula and in the memories of European projects: they are part of the cross-cutting axes of primary and secondary education. We consider that the

students of TEMP_01 of Phereclos understood the urgency and this is demonstrated by the business ideas they presented in the framework of this project, which obviously attempt a business performance, but in which a concern for people's health and air quality, for the management of polluting waste and for the reuse of materials whose production cost is very high in both economic and environmental aspects.



THE TERRITORIAL FACTOR MATTERS I

Galicia and Northern Portugal have a common history that goes back from the Bronze Age and megalithic culture of the third millennium BC, to the castrexa culture, the Roman Gallaecia and to the Suevian Kingdom of Galicia. The common past can and should provide a common future. Galicia and Northern Portugal constitute an European Euro-region and supranational structures such as the Atlantic Axis maintain the links and maintain networks on both sides of the river Minho. The political unity extended until the 12th century, but

the cultural and linguistic background survived: Galician and Portuguese languages are the two twin daughters of medieval Galician-Portuguese. The common history and cultural background open the door and facilitate collaborative work, regardless of the fact that today the territories belong to two different states with different educational systems. The reality that Galician and Portuguese are inter-intelligible in lexis and syntax by 95% reduces the linguistic barrier to a simple accommodation to the different accents and allows the students' mother tongue to be the working language.

THE TERRITORIAL FACTOR MATTERS II

Northern Portugal and Galicia face one of their greatest current challenges in population ageing, the birth rate crisis and migration. We need proposals that preserve our young talent, promote the communities' self-esteem and help young people to find attractive proposals for the future rooted in the territory. As important as training our pre-university students in technological entrepreneurship is to make them aware that they can be protagonists of the sustainable development of Galicia and Northern Portugal in the coming decades. It is our responsibility as teachers and researchers - as it is the responsibility of local, regional, autonomous, state and European administrations - to provide the conditions for these teenagers to aspire to a future as innovative as they wish without being forced to leave the place where they were born and where their families and friends live.





NEW HORIZONS

This TEMP_01 of Phereclos allowed the consolidation of a long-standing collaboration between the teaching innovation group XuvenCiencia of the University of Santiago and the Junior University of the University of Porto. It also opened up new horizons of collaboration between the Faculty of Business Administration and Management

of the Lugo Campus of the USC and the Porto Business School, a business school for postgraduates and advanced training, which worked together to design a training programme focused on teenagers. This experience also inspired a project the school A Nosa Señora dos Ollos Grandes in Lugo is carrying out in the academic year 2021/2022.



THE GIFT OF TIME SPENT TOGETHER

We were able to make two exchanges, in Porto and Lugo, to get to know each other and learn, to put our projects in common and also to participate in a large number of activities that exceeded the initial dimensions of TEMP_01. This was the real treat that we had during these months

and the most important success achieved. We were able to create a two-way community, with no possible borders from one side of the Minho to the other. The interaction between the students, when we came out of two courses of confinement, canceled events and pandemic fears, became the

best of all. A network was also created between secondary and university teachers, for the exchange of proposals, the sharing of new initiatives and the aim and desire that this pilot project could be replicated in the near future.