

# Cross-curricular Training of Specialized Translators: an Interdisciplinary Didactic Experience in Economic and Technical Translation

*Formación transversal de traductores especializados: una experiencia didáctica interdisciplinar de traducción económica y técnica*

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**Resumen:** Los cambios registrados en el mercado de la traducción en los últimos años exigen una revisión de los métodos de enseñanza y aprendizaje empleados para formar a nuevos profesionales. La división tradicional de la traducción especializada en campos del saber estancos no se corresponde con las necesidades del mercado, en el que resulta frecuente trabajar con textos que combinan contenido de distintas disciplinas. En este artículo, presentamos una experiencia didáctica interdisciplinar

llevada a cabo durante dos cursos consecutivos en la que estudiantes y docentes de dos asignaturas de traducción especializada cooperaron en la realización de un proyecto de traducción de temática económica y técnica. En concreto, se eligió como texto de partida un artículo de investigación sobre crecimiento económico y capital humano que combinaba contenidos de economía con métodos de análisis estadístico. El diseño del proyecto exigió tener en cuenta las competencias y los resultados de aprendizaje previstos en cada asignatura para favorecer el establecimiento de conexiones entre las especialidades. Asimismo, fue necesario contemplar los aspectos relativos a la planificación y al desarrollo de las diferentes etapas del trabajo, considerando que no todo el alumnado estaba matriculado en ambas asignaturas. Para evaluar el aprendizaje se construyó una rúbrica con cinco criterios que se ajustaban a las exigencias de la traducción especializada y del género traducido. Para cada criterio se definieron cinco niveles de consecución, cuatro asociados con los niveles de evaluación de los artículos de investigación, y un quinto dirigido a premiar la excelencia del trabajo realizado. Tanto los resultados académicos del alumnado como la valoración que este realizó de la experiencia de aprendizaje indican que el método empleado podría constituir una buena opción para responder a sus necesidades de formación interdisciplinar y favorecer su motivación e implicación en el aprendizaje. Por todo ello, cabría valorar la pertinencia de introducir en los próximos planes de estudios de traducción e interpretación asignaturas basadas en el desarrollo de proyectos de traducción interdisciplinares.

**Palabras clave:** interdisciplinariedad; traducción especializada; transferibilidad; polimatía; proyecto multiasignatura.

**Abstract:** The recent changes in the translation market call for a review of the teaching and learning methods used to train new professionals. The rigid traditional division of specialized translation into fields of knowledge does not correspond to market needs, which often involve working with texts that combine content from different disciplines. In this paper, we present an interdisciplinary didactic experience carried out during two consecutive academic years in which students and teachers of two specialized translation modules cooperated in an economic and technical translation project. Specifically, a research article on economic growth and human capital that combined economic content with statistical analysis methods was chosen as the source text. The design of the project required considering the competencies and learning outcomes planned for each module in order to enhance the establishment of connections between specialties. In addition, it was necessary to consider a variety of aspects related to the planning and development of the different project phases, because not all students were enrolled in both modules. For evaluation, a rubric was constructed with five criteria that were adjusted to the requirements of specialized translation and the translated genre. For each criterion, five levels of achievement were defined, four associated with the levels of evaluation of research articles, and a fifth one aimed at rewarding excellence. Both the academic results of students and their evaluation of the learning experience suggest that the method used could be a good option for meeting their interdisciplinary training needs and enhancing their motivation and involvement in learning. For the above reasons, the relevance of including modules based on the development of

cross-curricular translation projects in future translation and interpreting curricula should be assessed.

**Keywords:** interdisciplinarity; specialized translation; transferability; polymathy; cross-module project.

## 1. INTRODUCTION

A polymath, or *homo universalis*, is defined as an individual who is able to draw on complex bodies of knowledge to solve specific problems. German philosopher Johann von Wovern was the first to use the term *polymathia* in Western Europe in 1603 to refer to «knowledge of various matters, drawn from all kinds of studies... ranging freely through all the fields of disciplines» (Murphy 2014, 279). At that time, universities were not specialization centers but places where students were trained in science, philosophy and theology. Leonardo da Vinci, Hildegard of Bingen, Benjamin Franklin or Rabindranath Tagore, among others, are well-known polymaths who practiced several arts and sciences. Among less celebrated polymaths who played a role as translators through history, we might include Hunayn ibn Ishâq, Adelard of Bath, Mark of Toledo, Abul Faizi ibn-Mubarak or John Fryer (Wordsworth and Delisle, 2012). Most of them were reputed scholars, philosophers, astronomers, mathematicians, and the like who contributed to the dissemination of knowledge, the development of languages, the invention of alphabets or the transmission of cultural values.

In the 21st century, Root-Bernstein has rekindled the interest in the term *polymath* as opposed to *specialist*. The author defines a polymath as a person able to «put a significant amount of time and effort into their avocations and find ways to use their multiple interests to inform their vocations» (Root-Bernstein 2009, 857) and argues that while researchers consider «specialization as a requirement for adult success and that skills and knowledge do not transfer across domains» (*ibid.*: 853), polymathy and creativity should be encouraged by having students follow a y-shaped path by majoring in two subjects and exploring ways to link them. This will help them recognize connections in the world and question what they don't know (Root-Bernstein and Root-Bernstein 2019). Several other authors in the past decade have referred to polymathy and connected it to other terms as interdisciplinarity, multidisciplinary, multiskilling or cross-training (Araki 2018, 66). Without dismissing the relevance of encouraging interdisciplinarity understood as a collaboration between research groups or individuals from different disciplines, Mandal (2019) argues that interdisciplinarity should be also fostered within individuals themselves, as this is the way in which compartmentalization of skills and knowledge within the individual could be fully overcome.

Some polymathic educational initiatives are slowly sprouting at different educational levels. The College of Natural Sciences of the University of Texas at Austin offers

a certificate program, *Polymathic Scholars*, where students have the opportunity to create a field of study on their own. The University of South California founded in 2011 the *Sidney Harman Academy for Polymathic Study* that organizes courses, seminars and workshops for individual and group interdisciplinary work.

The creation of double degree and flexible degree programs is consistent with theories on polymathy and interdisciplinarity, in that they permit students to combine different disciplines that are interesting or meaningful to them. Likewise, project-based degree programs combine theory and practice from different fields of study to prepare students for their future careers. Most degree programs offered by universities, however, at least in Spain, are still traditional course-based programs which divide knowledge into rigid modules and do not permit teachers to confront students with real labor market situations. This is the case, among others, of many translation and interpreting degree programs, where translation courses are still divided into rigid modules with labels such as legal, scientific, economic, audiovisual or literary translation, a division that does not reflect the real character of the translations currently commissioned in the professional market.

To overcome this problem, a few authors, among whom Way (2002) or Cagnolatti (2021) have designed and successfully implemented translation training projects where interdisciplinarity plays a key role. However, still more research is needed to evaluate the potential benefits of encouraging interdisciplinary learning experiences as a replacement or a supplement to traditional translation courses. As a contribution to this task, this paper presents and discusses the design and main results of an interdisciplinary didactic experience in which students and teachers of two specialized translation modules cooperate in an economic and technical translation project. In discussing the project, we will try to weigh the main difficulties faced during implementation against the outcomes measured in terms of students' performances and motivation. As a final objective, the possibility of including cross-curricular translation projects as part of future translation and interpreting curricula will be addressed.

The rest of the paper is organized as follows. The second section briefly presents the theoretical background and the rationale for the project, and reviews a few works on interdisciplinarity in higher education and in particular in translation and interpreting degree programs. The third section describes the project in question with a special focus on its design, while the fourth discusses its implementation and main outcomes. The fifth and final section addresses the results and limitations of the experience, drawing some conclusions and suggesting possible extensions.

## 2. THEORETICAL BACKGROUND

### 2.1. Some definitions

Although the terms multidisciplinary, interdisciplinarity and transdisciplinarity are often used with similar meanings, there are relevant differences among them. Menken and Keestra (2016, 32) define multidisciplinary, interdisciplinary and transdisciplinary research based on the degree of integration of the knowledge drawn from the disciplines in question (see Figure 1). While multidisciplinary involves no integration at all, interdisciplinarity involves the integration of «relevant concepts, theories and/or methodologies from different academic disciplines», as well as generated results. Finally, transdisciplinarity occurs when «researchers collaborate with agents from outside the academic world».

The above terms are also used interchangeably to describe learning settings combining different disciplines. However, as Jensen, Stentoft & Ravn (2019, 11) point out, there are differences in the way students deal with the boundaries of disciplines. As in multidisciplinary professional and research projects, in multidisciplinary learning settings students address issues or phenomena from a multitude of disciplinary perspectives, but do nothing to navigate and explore the intersections of these disciplines. In contrast, an interdisciplinary perspective requires the intertwining of two or several disciplines, thus enabling students to extend their knowledge beyond what any single discipline could offer. As the authors argue, such an interdisciplinary perspective encourages students to «transgress boundaries» and may result in the development of yet undefined professions. Finally, a transdisciplinary learning setting involves the participation of outside stakeholders, as is the case with practicums, where students participate in a business's task under the supervision of professors and professionals.

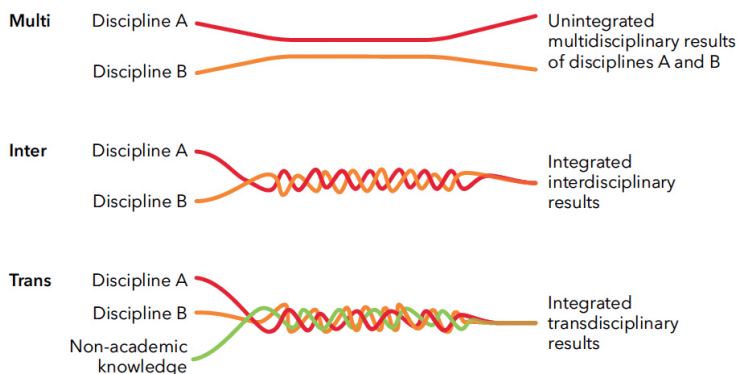


Figure 1: Levels of integration of knowledge (Menken and Keestra, 2016: 32).

## 2.2. *The need for interdisciplinary learning*

As Petrie (1992, in Stentoft 2019, 50) argues, real-life problems rarely confine themselves to one disciplinary box because interdisciplinarity and transdisciplinarity are integral parts of the professional world, which is not rigid, but dynamic and flexible, and based on unknown parameters. Accordingly, «Universities can no longer exclusively be considered arenas where disciplines are handed down from professors to students (Stentoft 2019, 49) expecting a predetermined outcome using predetermined methods that emanate from the disciplinary boundedness» (Klaassen 2018, 843).

Also Akkerman and Bakker (2011, 133) address interdisciplinary learning from the concept of boundary, defined «as a socio-cultural difference leading to discontinuity» between disciplines. Yet, they claim that the concept of boundary also suggests a «sameness and continuity in the sense that within discontinuity two or more sites are relevant to one another». Consequently, it is at boundaries that the opportunity for learning becomes more motivating because the confluence of different perspectives promotes the creation of «a third space» for common construction of learning, which stimulates critical thinking, helps student develop new knowledge, and teaches them to be open to different perspectives (Klaassen 2018, 843).

An important issue to be addressed is the way in which interdisciplinary learning is understood as regards the involved learners and disciplines. Jensen, Stentoft & Ravn (2019, 11) emphasize that interdisciplinary learning can be conceptualized through the characteristics of the people involved but also as the way knowledge is produced and handled in the learning process, based on whether interactions take place within or across disciplines. These conceptualizations, however, are not to be seen as mutually exclusive. On the contrary, a learning setting that combines the participation of students from different backgrounds with the acquisition of competences from different disciplines can be considered as an ideal learning setting where students can share their previous experiences and skills and cooperate in the acquisition of new, more significant knowledge. It should not be forgotten, however, that while research seeks results that benefit the whole of the society, learning processes are normally focused on the individual. Although in interdisciplinary learning the learning setting may be a shared one and collaboration between students has a positive impact on final results, individual performances are also relevant. We need, therefore, to make a distinction between interdisciplinary learning as a tool (i.e. the combination of either students or contents from different disciplines) and interdisciplinary learning as a result (i.e. the achievement of personal interdisciplinarity within the student).

Another element to be considered when planning interdisciplinary learning is the degree of «boundedness» of the involved disciplines (Bernstein 2000), and their relation to each other. As Weingart (2010, 8) claims, disciplines may share «a common set of problems and theories, concepts and specific methods to study it». The extent to which this common set of problems is also shared with those of other disciplines will affect the degree of integration that can be achieved.

### 2.3. Methodology in interdisciplinary learning

Although researchers seem to be clear about the need to overcome disciplinary boundedness, the shift towards interdisciplinarity that has emerged in scientific research is moving really slowly to education, maybe because of a lack of information on how to apply the principles of interdisciplinary work to educational design (Klaassen 2018, 842). Currently, curricular design is mostly based on traditional disciplines, which are often static, rigid, invented and resistant to change and innovation (Aguayo Arrabal 2017, 6).

It must be noted that interdisciplinary learning is a wide label under which various methods can be included based on the specific needs of the learning setting. DeZure (2010) presents a large catalog of methods that enable discipline integration, such as theme-based team teaching, experiential-learning, gaming, discovery-based learning, role-playing, inquiry-based learning, problem-based learning and field experiences such as internships, service learning and study abroad. Some of them, such as inquiry-based learning and problem-based learning have already been discussed in the field of translation training (García and Veiga 2015). As Gantogtokh and Quinlan (2017, 14) suggest, it is of paramount importance to select the most suitable teaching and learning process for each module, so as to ensure coherence in learning. Other equally important issues, they argue, are (i) establishing logical connections across modules through structuring and sequencing, (ii) defining coherent assessment and evaluation mechanisms, both for students' performances and for the implementation of the curricula and (iii) creating collaborative communities and environments to support students along their whole learning experience.

To assess the interdisciplinary or transdisciplinary approaches that better fit the contextual situation of a higher education institution and that are most beneficial to students, Klaassen (2018, 857) suggests the following set of key questions, which need to be answered as a starting point.

- What is the type of problem that is addressed?
- What type of educational questions belong to that problem?
- What type of research approach is used? Inductive vs. design abduction?
- What type of solutions are generated?
- What type of outcomes are driving the learning process? (and at what level?)
- What integrative features are used in the programme design?
- What types of activities are used to realize the integrative features and at what levels?
- What types of activities allow skills/knowledge development in the best possible way?
- What type of staffing is needed for this particular context?

While some of these questions are only relevant for the planning of curricula as a whole, some others are easily transferable to the planning of modules and even of particular projects within them. For this reason, and because in deciding which method to use we need first to define the specificities of our learning setting and the learning problem we intend to address, we have used these questions to design our learning experience. In a research context, Lam, Walker and Hills (2014) characterized interdisciplinary problems as problems that originate from the real world and whose complexity prevents them to be solved without the integration of efforts from different disciplines. Similarly, in learning contexts, interdisciplinary problems can be described as those that cannot be addressed from a monodisciplinary perspective, as they require the integration of different disciplinary perspectives.

The learning problem should lead us to formulate the relevant educational questions that, like research questions in research projects, help us define the purposes of our educational project. Once the learning problem has been defined and the research questions have been formulated, we can determine the intended outcome of our learning process, i.e. what we expect our students to be able to do. The need of a particular outcome will guide the selection of a particular method. For such selection, we suggest using a design abduction approach, in line with Dorst (2013), as it enables us to explore different patterns of relationships instead of an already tried and tested pattern of relationships.

Hersam, Luna and Light (2004) highlight the importance of going beyond «traditional content-based knowledge objectives» to embrace also the personal, social and practical dimensions that they consider «of critical importance to overall student learning» (ibid., 50) Thus, together with content-based educational objectives, they include highly relevant social, personal and practical learning objectives such as «students will gain a sense of ownership of the course content and collaborative projects» or «students will gain confidence as students and professionals». In addition, the need to encourage students' independence is emphasized, as well as the development of interpersonal structures that enable them «to effectively share their diverse disciplinary expertise».

## 2.4. *Interdisciplinarity in Translators' Education*

Until the 2010s, the number of works devoted to interdisciplinary teaching and learning in higher education gradually increased over the years, but scientific research into the subject was still «limited, explorative» and more focused on pedagogical characteristics than on students' gains (Spelt *et al.* 2009, 365, 375). Many studies focused on the development of comprehensive curricula mainly in the fields of Engineering and Technical Sciences with little focus on particular project-based modules. In the last ten years, in contrast, the number of works describing individual faculty experiences, modules and projects within the scope of interdisciplinary education has considerably



increased, with varied subjects as aging (Picchiello *et al.* 2020), medical communication (Eklics *et al.* 2019), urban health games (Knöll *et al.* 2014), social media, humanitarian technology or prototyping (Holzer *et al.* 2018). Interdisciplinary courses in the field of translators' education, however, are still scarce or almost nonexistent despite the fact that Translation Studies has been traditionally considered a discipline of eminently interdisciplinary nature formed out of linguistics, literary studies and some other fields (Ožbot 2015, 360) and that research in translation has frequently involved cooperation with other disciplines such as neuroscience, linguistics, cultural studies, sociology or computational science (Lee-Jahnke 2011, Rojo López and Campos Plaza 2016, Aguayo Arrabal, 2017).

Clearly, Translation Studies can be described as interdisciplinary at the theoretical level. Similarly, translation as a profession is becoming more and more interdisciplinary because it involves formal or informal team work where the integration of methods, knowledge and skills is mandatory. Indeed, a number of authors have pointed to the growingly fuzzy limits of the translator profession. Massey (2021, 52) claims that «the intraprofessional diversification of translation brings with it a widening range of new tasks, roles and demands. This is coupled with a progressive convergence around the fuzzy edges of the translation profession with adjacent professional communication profiles such as technical communication and corporate communications». Focusing on the particular context of the publishing market, Veiga Díaz (2020) shows how translation students can develop a professional profile that combines translation skills with additional value-adding preparing and editing competences.

There is also a commonly shared notion that translators need to be trained as polymaths or even T-shaped professionals (Conley *et al.* 2017) who combine excellent knowledge and skills in specific areas with a broad set of generally applicable skills and are also good at working in a collaborative way (Henke *et al.* 2018). Such training should enable trainees to combine their translation competence with skills normally associated with different areas of expertise, among which encyclopedic knowledge on one (or several) disciplines, text editing, software management, data and terminology management, or intercultural communication skills. Hence, translator training must be interdisciplinary.

Considering all the above, it is in part surprising that, while considerable attention has been paid to interdisciplinarity in Translation Studies, the focus on how to foster intrapersonal interdisciplinarity of future translators has been scarce to date. This may be linked to the traditional classification of specialized translation into a variety of types of translation, which has provided a convenient framework for curriculum design, yet not reflecting the complexity of professional translation. For example, in its first bulletin, the International Federation of Translators (FIT 1955) proposed a classification of specialized translation comprising 18 types of specialized translation, namely administrative, cinematographic, business, diplomatic, legal, military, music press, advertisement, radio, literary (which encompassed five different types of translation), scientific and institutional translation. More recently, Mayoral and Fouces (2011, 53) simplified those

categories and proposed ten, a number which is still inappropriate. Moreover, the most common classifications of translation specialties are not even homogeneous, insofar as the differences among the different specialties are based on diverse classification criteria, particularly for audiovisual translation and localization, whose specificities are based on technical questions, rather than on the topic covered, as would apparently be the case for scientific, technical, legal, economic or business translation.

Within such a rigid organization of isolated, separately-graded modules, it is difficult to find the necessary conditions to successfully design, develop and implement interdisciplinary learning projects. Some experiences, though, are already finding their way in this direction with rather different approaches. Blasco Mayor and Jiménez Ivars (2000) describe a learning project involving the translation in a scientific-technical translation module of a computer sciences handbook to be used in a PhD seminar. The authors highlight some implementation problems, such as the need to motivate students or the poor commitment of some of them to teamwork, but also the positive assessment that students made of the experience and of the contribution of the outside expert commissioning the translation. Way (2002) refers to an interdisciplinary project involving Spanish students of Legal and Business Translation, Spanish students of Private International Law and Erasmus students, who cooperated in the judgment of an international law case and in the translation of such judgment and the associated material. For the translation students involved, the project was particularly aimed at improving the interpersonal and documentation competences of the participants, but also at increasing their confidence and self-concept as part of their psycho-physiological competence.

More recently, Cagnolatti (2021) describes several class interdisciplinary assignments involving the translation of social and human science texts in a scientific-technical translation module. Finally, Carmona Ruiz (2020) discusses an individual project of interdisciplinary translation developed as a final master's degree dissertation and highlights the need to combine different traditional translation types, in his case, medical and screen translation.

Beyond the differences between the above learning experiences in terms of type of translation, number and background of the participants or intended and acquired learning goals, among other issues, all the described projects share new ideas that can be replicated and redesigned with a view to increasing personal interdisciplinarity among translation students. In the same line, the learning experience described in the following sections proposes another possibility to deal with interdisciplinarity in translators' education by focusing on the combination of two particular translation modules for the implementation of a common translation project.

### 3. DESIGN OF AN INTERDISCIPLINARY LEARNING EXPERIENCE

Our point of departure for the design of the proposed interdisciplinary learning experience was the set of key questions proposed by Klaassen (2018, 857), which

were used to determine whether a project that went beyond the boundaries of one module would be beneficial to our students. Likewise, this set of questions served as a guide to determine which learning methods and processes should be integrated in the project in order to help students address their learning and understand how crossing different disciplinary boundaries contributes to a better understanding of the relationships between disciplines and of how the competences acquired in one module can be transferred to another mainly because of the common set of problems, theories, concepts and methods of study they share (Weingart 2010, 8). Below, we describe the basis for the design of the project, as well as the materials and methods used for project implementation.

### 3.1. *Definition of the problem, educational questions and possible solutions*

Being aware of the benefits of interdisciplinarity that were mentioned in the theoretical background section but also of the limitations and challenges posed by current curriculum design in translators' education, our challenge was to implement interdisciplinary work within the framework of a degree designed according to the traditional rigid division of modules, yet going beyond the boundedness of individual disciplines or translation specialties. As teachers of specialized translation modules, we observed that the interdisciplinarity of specialized texts is often dismissed in monodisciplinary modules, which focus on problems that are specific to a single discipline, thus departing from dynamic and flexible real-world translation projects and neglecting the need to overcome the compartmentalization of skills and knowledge to successfully approach the translation market requirements. Likewise, we observed that traditional multidisciplinary curricular designs frequently include the same competences and learning goals in various modules, such that they are assessed in every module repeatedly but unrelatedly, as is the case for the modules involved in this project. As a result, students often find it difficult to perceive the transversality and transferability of the competences acquired in different modules due to disciplinary boundedness (García and Veiga 2015, 110) and to work overload (often mentioned by students in the classroom). Accordingly, the problem addressed in the proposed learning experience was how to manage the interdisciplinary nature of the specialized texts used in economic and scientific translation modules in such a way that students would be able to integrate the concepts, theories and methods from the relevant disciplines and generate a common output that simplified assessment and reduced work overload for students enrolled in both modules.

To find a solution to this problem, the following educational questions were posed:

- How can we transform two separate modules with repeated but unrelated multidisciplinary results into an appropriate setting for interdisciplinary translators' education?

- What type of interdisciplinarity should we boost to reach that goal?
- What type of project would be most beneficial?

In addition, the design of the project should be oriented to answering more specific questions about the benefits of this type of approach:

- Can an interdisciplinary cross-module project help students transfer competences and knowledge from one discipline to another and contribute to a better understanding of real translation projects?
- Can we simplify assessment and reduce work overload by implementing an interdisciplinary project involving students from two modules?
- Can we enhance curriculum coordination and collaboration by implementing interdisciplinary cross-module projects?

Based on the literature review conducted and on our reflections on the proposed educational questions, we came to the conclusion that a learning setting that combined the participation of students from different backgrounds or modules with the acquisition of competences from different disciplines would be necessary in order to create that ‘third interpersonal space’ where students could effectively share their previous experiences and diverse expertise and cooperate in the acquisition of new, more significant knowledge. Thus, combining students, knowledge, procedures and competences from both modules to reach a common output, i.e. the translation of an interdisciplinary text, would be a possible solution to the problem at hand.

### 3.2. *Outcomes driving the learning process and integrative features used*

Considering the above assumptions, the learning method should be driven by two main outcomes: 1) the ability to integrate and transfer knowledge, competences, expertise and skills from at least two of the disciplines involved in the translation of specialized administrative, economic, scientific and technical texts and 2) the ability to work with people from different backgrounds to produce a common output. The specialized nature of the selected modules, with potentially coinciding competences and learning outcomes, and the low number and diversity of students enrolled in the modules provided the ideal conditions for the creation of that ‘third space’ that allowed for knowledge co-construction within the framework of a traditional rigid division of modules, mainly because of knowledge transferability between disciplines and ease of time and space management.

As per the elements that should be combined to form an effective learning setting or ‘integrative features’, two main elements were considered: the students and staff involved in the selected modules (participants), and the competences and learning goals included in the two modules involved in the experience.

### 3.2.1. Participants

The interdisciplinary cross-module project was conceived as a pilot experience for implementation in two optional 6-ECTS specialized translation modules taught during the eighth semester of the four-year undergraduate program in Translation and Interpreting of the University of Vigo, namely Scientific and Technical Translation (M1) and Administrative and Economic Translation (M2) from English into Spanish for students of English as their second foreign language. The number of students enrolled in these modules is usually low, often below 5 students, and international students usually choose these modules, which facilitates cooperation and guarantees the diversity of backgrounds.

Students rarely enrolled in both modules because of a coincidence in the scheduling of one of the sessions. Yet, we consider that the proposed project would be ideal for students of the two modules to avoid work overload and simplify assessment. For this reason, in the design of the project, three scenarios were envisaged: one with most students enrolled in both modules, a second one with no students in common and a third one with only one student in common. In scenario 1, the composition of the common group would not be altered in terms of background and no subgroups would be required; in scenario 2, the common group would be composed of two subgroups with divergent backgrounds and teachers would act as liaisons; and in scenario 3, the common group would be composed of two subgroups with divergent background and one common student with comprehensive knowledge of both disciplines who would act as liaison between the two subgroups.

Finally, the teachers of the selected modules must participate and cooperate in all the stages of project design and implementation to ensure the transferability of competences between modules to train students as polymath professionals able to combine skills normally associated with different areas of expertise. No special staffing is required for the creation of an appropriate integrative context. Rather, the design and implementation of the proposed interdisciplinary project requires an approach to teaching and learning that uses a combination of perspectives and allows for co-construction of knowledge based on a sense of continuity, transferability and critical thinking. It would be desirable that the teachers involved have good knowledge of real-world needs. In this case, the teachers of these modules have professional experience in the relevant areas of expertise, which allows them to better assimilate training to real-world situations.

### 3.2.2. Competences and learning goals

Currently, the design of the curriculum of the Degree in Translation and Interpreting at the University of Vigo shows a high degree of competence overlap and recurrence throughout the programme, mainly for basic and transversal competences, which

include personal and social competences for life and key competences for employability that can be acquired in one context and transferred to a different context or situation; but also for specific competences, which are considered to be directly related to the competences required for the profession.

For the design of the project, we reviewed the competences envisaged in the modules involved in the proposed educational experience and found that 62% of the competences envisaged in the selected modules are common to both modules (13 out of the total 21 competences, which is a rather comprehensive catalog for only two modules). Five of these competences are basic competences defined by the Spanish Ministry of Education for every undergraduate program, and none of them are transversal competences. This leaves us with 67% of common specific competences (8 out of 12) and 33% of divergent specific competences (4 out of 12). Table 1 shows common and divergent competences in the selected modules.

Similarly, the learning goals of the modules involved in the didactic experience largely coincide in that they are oriented to the acquisition of knowledge about the characteristics of the specialized language used in the relevant disciplines and to the acquisition of the skills required to successfully translate texts produced in those disciplines, using the appropriate conventions to tailor the text to target audience expectations. Conversely, the learning goals of the modules diverge in that the disciplines involved show different characteristics in terms of the language and techniques required to correctly convey the information originating in each discipline.

The design of the modules is based on the assumption that students must learn to translate texts originating in a single discipline using the knowledge, procedures and skills relevant to that discipline. Yet, real-world texts combine disciplines and, consequently, combine information and conventions. With this in mind, the integrative activities of the experience were developed.

### 3.3. *Integrative activities for skills and knowledge development*

Based on the outcomes envisaged for this interdisciplinary learning experience, mainly the ability to integrate and transfer knowledge, competences, expertise and skills from separate disciplines and the ability to work with people from different backgrounds to produce a common output, we considered a collaborative project to be the ideal framework for the design of the activities that would be integrated in the experience.

According to the competences and learning goals of M1 and M2, the common output should be a translation of an interdisciplinary text that required the application of knowledge and competences relevant to the two modules involved. To this end, a specialized text that combined characteristics of two of the disciplines included in the translation modules involved in the learning experience was selected for translation. In particular, we chose a research article on economic growth and human capital that

Type	Scientific and Technical Translation	Administrative and economic translation
<b>BASIC</b>	Demonstrate knowledge and understanding of a matter of study using prior knowledge and advanced materials, including pioneering concepts of their field of study.	
	Apply acquired knowledge to their professional activity, discuss and find solutions to problems.	
	Collect and analyze relevant data for reflection on social, scientific or ethical topics.	
	Convey information, ideas and solutions to specialized or non-specialized audiences.	
	Develop the learning skills required for autonomous lifelong learning.	
<b>SPECIFIC</b>	Know the norms and uses of the relevant work languages.	
	Apply term management and creation strategies to specialized translation.	
	Acquire information mining and documentation skills.	
	Enhance decision-making processes in specialized translation.	
	Develop rigor and seriousness of purpose.	
	Develop translation skills.	
	Acquire basic knowledge of the relevant disciplines.	
	Develop critical thinking.	
		Know foreign languages.
		Know foreign cultures and civilizations.
	Know oral and written native language patterns.	
	Develop edition, revision and correction skills for translated texts.	
<b>TRANSVERSAL</b>	Develop teamwork skills.	
	Enhance autonomous learning.	
	Behave ethically.	
	Apply computer skills.	

Table 1. Convergent and divergent competences in modules 1 and 2.

integrated and conveyed knowledge relevant to two disciplines, namely, economy and statistics. To produce a successful output translation, the students would have to combine the knowledge and competences envisaged in the two modules. Under scenarios 2 and 3, not all the students involved in the project would be enrolled in both modules. Thus, in agreement with the design abduction approach, most students would have to face challenges related to the unknown parameters of the project, to which a joint solution had to be found. The definition of the project included the following types of activities:

- Detection of commonalities and divergences between disciplines.
- Identification of discipline-exclusive content.
- Project planning based on the characteristics of the students involved.
- Terminology and information mining activities.
- Interdisciplinary glossary co-construction.
- Common discussion sessions with all the students and instructors involved in the project.
- Project assessment activities.

#### 4. IMPLEMENTATION OF THE PROJECT (AND MAIN OUTCOMES)

The project was implemented in two academic years, 2020-21 and 2021-22, under a scenario-three scheme. The project was scheduled as the final translation assignment in both modules, such that students had the opportunity to share the knowledge and skills acquired separately throughout the semester to obtain a common output. The main characteristics of the interdisciplinary translation project are summarized in Table 2:

Feature	Description
Type of project:	Short, collaborative, interdisciplinary project.
Modules involved:	Administrative and economic translation. Scientific and technical translation.
Type of output:	Translation of a specialized research article and tailoring to journal conventions.
Source text title:	Education, Human Capital and Economic Growth: Empirical Research on 55 Countries and Regions (1960 - 2009).
Disciplines involved:	Economy, statistics, education, translation.
Source text length:	4726 words.



Feature	Description
Number of interdisciplinary groups:	One per year, divided into two subgroups according to expertise area.
Number of students per group:	Four in 2020-21 and three in 2021-22.
Number of instructors:	Two, one per module.
Scheduling:	Last five weeks of the semester + two more weeks for autonomous learning before assignment submission.
Number of common lessons:	Two.
Assessment instruments:	Five-score rubric; discussion session.

Table 2. Main characteristics of the interdisciplinary cross-module project.

#### 4.1. Distribution and profile of students

All the students enrolled in both modules took part in the project. The composition of the groups was diverse, as indicated earlier in this paper. Each team was composed of two subgroups based on their area of expertise, with a liaison student who was enrolled in both modules. The high degree of competence overlap allowed for simultaneous acquisition of the common competences, knowledge and skills required to complete the project. In addition, it allowed for easy transferral of these elements from one discipline to the other, in agreement with Steenhuis & Rowland, 2018: 35. Table 3 shows the distribution and profile of the students participating in the project.

Year	Students in M1	Students in M2	Liaison students (M1&M2)	Student profile
2020-21	3	2	1	- Same educational background. - Two adults, one with professional experience.
2021-22	2	2	1	One exchange student from Mexico. Different educational and social background. Two coliving students with the same social and educational background.

Table 3. Distribution and profile of the students participating in the project.

#### 4.2. Time management

Time management might be a challenge to the development of interdisciplinary projects within a monodisciplinary framework, particularly when the participating students are not enrolled in the same modules. In our project, students attended the

lessons for the module/s in which they were enrolled, except for two common sessions which were held in the time devoted to one of the modules in weeks 1 and 4, respectively. These sessions were attended by all the students and instructors involved in the project and were conceived as discussion sessions. The first common session was used as an introductory session during which students met and identified the weight of the different disciplines involved in the project, the problems posed by interdisciplinarity and the sources and processes needed to start the project. At the beginning of this initial session, the only known parameter was the desired output. The goal of this session, according to design abduction, was to explore the patterns that might lead to a joint solution. In monodisciplinary sessions, the students of each module addressed the specificities and problems of each discipline and reflected on how to transfer the acquired knowledge and skills to the interdisciplinary text selected, in which both disciplines are intertwined. In the final common session, the interdisciplinary team presented their work and doubts, and discussed project development in order to assess both the method and the results of the project.

### 4.3. Project assessment

The project was assessed in both modules. The final assignment had a weight of 30% in the final score, which corresponds to the proportion of weeks devoted to the project. For evaluation, a rubric was constructed with five criteria that were adjusted to the requirements of specialized translation and the translated genre. For each criterion, five levels of achievement were defined, four associated with the levels of evaluation of research articles, and a fifth one aimed at rewarding excellence, as shown in table 4. The assignment was reviewed and assessed by the two teachers of the modules and students received feedback from both teachers, who adopted an interdisciplinary perspective.

Item	Maximum score				
	Rejected	Major revision	Minor revision	Accepted	Excellent
Accuracy of content	0	1	2	3	4
Familiarity (discipline's conventions)	0	0,5	1	1,5	2
Coherence and cohesion	0	0,5	1	1,5	2
Spelling and grammar	0	0,25	0,5	0,75	1
Tailoring to journal conventions ( <i>Revista galega de economía</i> )	0	0,25	0,5	0,75	1

Table 4. Rubric for assessment of interdisciplinary translation project.

Below, we discuss the main results of the implementation of the project for the two academic years.

## 4.4. Main outcomes

### 4.4.1. Assessment of results in terms of learning goals

Overall, the students involved in the cross-module project improved their performance with respect to previous years in terms of the scores obtained in the final assignment. Thus, in years 2017-18, 2018-19 and 2019-20, the mean score for the final scientific and technical translation assignment was 7,8 and the mean score for the final administrative and economic translation assignment was 8,1, whereas the mean score for the cross-module assignment in 2020-21 and 2021-22 was 9. If applied to the rubric used for assessment, such an increase involves an improvement in performance from *accepted without revision* to *excellent*. Indeed, excellent results were obtained in both years for the acquisition of knowledge about the characteristics of the specialized language used in the relevant disciplines and of the skills required to successfully translate texts produced in those disciplines, using the appropriate conventions to tailor the text to target audience expectations. These results suggest that both interdisciplinary teams have been able to transfer knowledge and competences from one discipline to the other, in agreement with Steenhuis and Rowland (2018, 35). The techniques required to accurately convey the information originating in each discipline have shown dissimilar results in the two implementation years: the results for accuracy were excellent in the first year but only acceptable in the second year. This could be due to the greater emphasis placed on coherence during the second year on the basis of the results obtained in the first implementation year, with excellent values in accuracy but only acceptable values in coherence. These results point to the need to reassess the potential difficulties of the assignment every year based on the characteristics of the students involved and their background.

### 4.4.2. Assessment of results in terms of motivation and confidence

As expected, the students enrolled in both modules reduced work overload and simplified assessment. Simplification and transferability are key aspects in the implementation of interdisciplinary projects in monodisciplinary settings because these factors foster motivation, particularly for students. Actually, after two years of implementation under scenario 3, the number of students enrolled in both modules for year 2022-23 has increased from 1 to 3, which will allow for implementation of the project under scenario 1.

At the psychological level, students worked with confidence, motivation and commitment to teamwork. Overall, the students involved in the project made a positive assessment of the activity and were eager to collaborate with students enrolled in a different module. Remarkably, they showed availability to partially alter their schedules

when the project so required in order to overcome the organizational problems derived from the rigidity of the system. All the participants met their individual deadlines, which allowed the team to meet intermediate deadlines and to successfully submit the project. In addition, students from both modules showed confidence in the capabilities of their mates and in their own capabilities to successfully complete the project.

An unexpected positive result was observed at the social level: the common sessions of the cross-module project facilitated the integration of exchange students. Usually, exchange students find it difficult to establish solid relationships with host university students because of the differences between the course plans, which often lead students to choose modules that diverge from the usual combinations for students of the host university. Accordingly, the personal profile and social background of students should be considered in project design and implementation.

## 5. DISCUSSION AND FINAL REMARKS

As our literature review has revealed, there is an urgent need for translation and interpreting curricula to include flexible, integrative modules that allow for the development of projects concerned with real-life problems instead of theoretical discussions on how to organize the study of the separate constituents of a scientific discipline. Until then, the design and implementation of cross-module learning experiences may be a good option to foster interdisciplinarity within students while also developing other required competencies at the social and psychological level.

Although the teaching and learning results have been promising in the short term, the project should be implemented in further years and modules, with different text genres and team compositions in order to obtain reliable data. Actually, our results confirm the importance of a careful analysis of student profile and background before project implementation because of potential variations in the needs of students from one year to another. Such variations require adjusting the weight of the different aspects considered in project design and implementation. Likewise, it would be advisable to test this experience in modules with a larger number of students to assess its applicability. We are aware that some potential obstacles related to diversity or time and space management could emerge in modules with many students, particularly under scenario 1. Similarly, the experience should be tested in optional and compulsory modules in order to assess whether the observed motivation and commitment derived from the personal interest of students in the modules chosen.

On the other hand, considering the results reported by authors like Chua (2014 in Steenhuis and Rowland 2018), who found that students begin to realize greater satisfaction, improved problem-solving skills and improved ability to integrate knowledge to find solutions after going through one or two projects, it is our claim that interdisciplinary

cross-modules should not be isolated experiences but a common learning strategy throughout the degree, involving students from different courses. For example, students enrolled in compulsory modules such as culture and civilization (4th semester) could work with students of legal and economic translation (7th-8th semester) to better understand the transferability of knowledge and skills throughout the degree.

Finally, it must be noted that this type of projects are highly demanding for educators, in terms not only of effort but also of knowledge and design abilities. For this reason, the commitment of higher education institutions to educator training and coordination becomes essential to help faculty develop a shared vision on interdisciplinary education. It is only by slowly removing hurdles to interdisciplinarity at all educational levels that the interdisciplinary path will be gradually followed and interdisciplinary learning successfully included as a tool and as a result in future translation and interpreting curricula.

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