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# Table of Contents

## Studies



## Notes

## Book reviews



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# Metaphors for socio-educational intervention: pedagogical implications for practice

## *Metáforas de la intervención socioeducativa: implicaciones pedagógicas para la práctica*

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## Abstract:

The concept of socio-educational intervention has been much discussed in the field of education. Nonetheless, and despite its versatility and variety of meanings, it is one of the most commonly used concepts in the fields of school and social education. The aim of this text is twofold: on the one hand it will analyse this term and argue for its usefulness and applicability in our field; on the other hand it will derive from this analysis a whole series of pedagogical principles that can help with the training of teachers and educators and the development of their professional practice. Given the complexity of socio-educational intervention processes, the methodology employed to derive these pedagogical principles will be metaphors. The aim is to collect or create metaphors that enable analysis and reinterpretation of the socio-educational intervention processes that take place within the framework of professional practice. Six metaphors are presented and analysed in the text: 1) the horse and the fountain; 2) socio-educational synapses; 3) the crocodile and the pond; 4) the tightrope walker; 5) the bullet and the moving target; and, finally, 6) signalling beacons. These all allow a novel look at the socio-educational intervention processes used by education professionals. Some of the pedagogical principles developed refer to the sovereignty of the learner in relation to learning, the need to establish links with participants and work together, and the need to establish guidelines to steer the actions of those who work in education and pedagogy, among other principles.

**Keywords:** educational principles, pedagogy, social education, intervention, educational research, community education.

## Resumen:

El concepto de intervención socioeducativa ha sido muy discutido en el campo de la educación. Sin embargo, y a pesar de su versatilidad y homonimia, es uno de los más utilizados tanto en el ámbito de la educación escolar, como en el de la educación social. El objetivo de este texto es doble: por una parte, analizar y argumentar el uso y la aplicación de dicho término en nuestro campo; por otra, derivar de dicho análisis toda una serie de principios

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pedagógicos que ayuden tanto en la formación de pedagogos y educadores, como en el desarrollo de su práctica profesional. Dada la complejidad de los procesos de intervención socioeducativa, la metodología utilizada para inferir aquellos principios pedagógicos va ser la de la metaforización. Se trata de recopilar o elaborar metáforas que posibiliten el análisis y reinterpretación de los procesos de intervención socioeducativa que se desarrollan en el marco de la práctica profesional. En el texto se presentan y analizan seis metáforas: 1) la del caballo y la fuente; 2) la de las sinapsis socioeducativas; 3) la del cocodrilo y la charca; 4) la del funambulista; 5) la del proyectil y el blanco móvil; y, por último, 6) la de las balizas de señalización. Todas ellas posibilitan una mirada novedosa sobre los procesos de intervención socioeducativa que desarrollan los profesionales de la educación. Algunos de los principios pedagógicos elaborados se refieren, entre otros, a la soberanía del aprendiz en relación al aprendizaje; a la necesidad de establecer vínculos con los participantes y de trabajar conjuntamente y, por último, a la manera de establecer referentes que orienten la acción de los profesionales de la educación y la pedagogía.

**Descriptores:** principios educativos, pedagogía, educación social, intervención, investigación educativa, educación comunitaria.

## 1. Introduction

One of the main objectives of pedagogical research is to discover or develop principles to help educators perform their professional duties in appropriately and efficiently. As Brezinka notes (2002), the pedagogical knowledge that guides educators must be simultaneously rational, practical, and relevant. The purpose of this text is to construct pedagogical principles for socio-educational intervention that facilitate the training of teachers and educators and the development of their professional practice.

There is agreement between different authors on the foundations on which pedagogy and social education are built. This is known as the *socio-educational relationship*. It is a relationship that involves a teacher or educator and a person, group, or community. These can be of any age but they are always situated in a specific sociocultural and historical context.

Where there is a multitude of opinions, is concerning the specific term that should characterise this relationship. Concepts like *action*, *praxis*, *intervention*, *orientation*, *accompaniment*, *practice*, and *interaction,* among others, have been tested by authors from the field of education in an attempt to find the one that defines, as fully and unambiguously as possible, the actions that the educator performs in the framework of this relationship. The debate about this concept has not lacked stances —often highly polarised— that connected each of these terms to certain visions and focuses in the pedagogy of social education, debates that, in my opinion, have been more ideological than strictly epistemological or scientific.

This work starts by analysing intervention as a generic concept used in the fields of school education and social education. It then takes the complexity of socio-educational relationships as a starting point and uses metaphors as a method to try to understand them. It is a matter of creating or collecting metaphors that make it possible to reinterpret processes of socio-educational intervention. In the following section, six metaphors for the socio-educational relationship are presented along with the pedagogical implications deriving from each of them. The work ends by drawing together the main conclusions.

## 2. The uses and meanings of the concept of «intervention» in pedagogy and social education

The semantic versatility and differing meanings of the term intervention between the two disciplines are perhaps its most characteristic attributes. We could almost say that intervention is a wildcard term. Interventions can be psychological, educational, school, economic, accounting, armed, surgical, social, or military to name just some of the many possibilities.

Intervention started being used as a concept in the 1970s. At first, it was linked to educational psychology —psychological interventions in schools— and to a theory of education —educational intervention— which at that time had a clearly technological orientation. This was decisive in establishing an almost organic link between intervention and technological action. Intervention was consequently associated with technological focuses: with technocratic approaches and educational relationships that were hierarchical, authoritarian, and managerial. As a result of this link, there was a notable polarisation of positions between academics in the field of education regarding this concept.

Socio-educational intervention as a concept was strongly criticised by some authors, especially those who opted for approaches more closely linked to critical perspectives. Lucio-Villegas analyses this concept based on one of the many definitions of the word intervention in the *Diccionario de la Real Academia de la Lengua Española*. Intervention would be taking part in a matter. Based on this definition, he notes with some irony that «the term intervention may not be as terrible and intrinsically evil as we had thought» (2005, p. 200).

Carballeda (2002) says that the term intervention comes from the Latin term *atei-venio* that translates as *come-between* or as «intervene». This dual meaning of the word intervention could, on the one hand, make it a synonym of mediation, interaction, help, or cooperation, or, on the other hand, intrusion, meddling, interference, coercion, scrutiny, control, or repression. Hence, in any process of social intervention, «both sides of the coin can be found» (2002, p. 93). This question accounts for and explains the ideological polarisation of different authors regarding this concept, based on the word's double meaning. It could be claimed that both positions —intervention as technological action or as ideological or critical action— have grounds for accepting or rejecting the concept of intervention given

that they were only looking at one of its faces.

For my part, I believe that, using pragmatic and etymological criteria, the term intervention offers an appropriate and useful concept for defining and characterising the actions of professionals in the framework of the socio-educational relationship. From the pragmatic perspective, this is because, with the passage of time, this concept has come to be in general use among professionals and academics in the social and educational fields. The number of publications in the field of social education that have it in their title are proof of this fact. Despite all of this, authors often insist on the versatility of the term which, from their perspective, strips it of effectiveness or technical precision in the field of pedagogy. Furthermore, from the etymological perspective, intervention seems to be appropriate as a concept because, as Carballeda notes, it includes the contradictions inherent to the actions of teachers and social educators, and because other supposedly more neutral concepts such as action or praxis seem to refer to broader and less specific situations.

In any case, this allows an initial approach relating to how we use the terms and concepts in the socio-educational field. Depending on the epistemological, sociocultural, and ideological context in which they are used, they all convey a series of connotations that make them suitable or unsuitable for more or less appropriately referring to the situations or phenomena mentioned. In the end, what really matters is not so much what we call our actions but how we do them.

To specify with precision what we are talking about, we define socio-educational intervention as a professional activity performed by educators and teachers in the setting of a sociocultural situation or problem with the aim of creating scenarios that help the participating people, groups, or communities to empower themselves, in other words, to give themselves the lessons and resources needed to improve their situation in the world. It is a professional action that, beyond its initial unidirectionality, seeks to build a bidirectional relationship with the participant as a priority.

## 3. Metaphors for socio-educational intervention

Discussing socio-educational intervention involves referring to actions characterised by a high degree of complexity. Dewey noted that «no educational practice whatsoever could exist that was not highly complex» (2015, p. 12). This complexity is what leads us to use metaphors as a method for analysing and understanding this situation. It should be noted that there are many authors in our field who have used this method of analysis and research in recent decades to consider the complexity of educational phenomena (Sfard, 1998; Chan, 2013; Neuman/Guterman, 2017).

Metaphors are not limited to describing, illustrating, delving into, or interpreting a situation. They create new realities that can significantly modify the referents from which they are created.

Creating a metaphor involves generating new perspectives on realities that had, hitherto, been known (Krippendorf,

1997). The process of building metaphors makes us see these realities differently, with other perspectives and focuses that give them greater depth and breadth, and also lead us to uncover new patterns and facets that were previously hidden by the veil of the real. It is in this sense that Sloterdijk says that «metaphors let you speak more clearly» (2014, p. 155). Han (2015), for his part, refers to the creation of metaphors as a practice of truth as, in his view, they weave a web that is rich in relationships by uncovering how things relate and communicate with each other. Finally, Swedberg (2016) emphasises the heuristic power of metaphors in social sciences and their usefulness for theorising: «The metaphor, like analogy —he notes—, is particularly important for discovering, not for verifying» (2016, p. 90).

Starting from this aim of generating pedagogical theory, six metaphors are presented below to try to understand socio-educational intervention processes and the interpersonal relationships that provide their framework. What we aim to do, based on these metaphors, is create pedagogical rules, and so each metaphor is presented with the pedagogical implications that derive from it. These implications take the shape of pedagogical and methodological principles that can help social teachers and educators develop better and more efficiently the socio-educational practices in which they participate.

### 3.1. The metaphor of the horse and the fountain

This metaphor was developed by Claxton who states that «you can lead a horse to the fountain of knowledge, but you cannot make it drink from it» (1984, p. 214). In the end, the horse must decide for itself whether to quench its thirst for reasons that are entirely its own. The choice is by the participating subject; their own decisions and choices are at the very heart of the pedagogical process (Úcar, 2016). Along these lines it is interesting to note that while this idea was formulated some time ago, education still generally operates without really paying attention to such a vital pedagogical principle, especially in school curriculums.

This metaphor emphasises people's agency in the field of learning. It is true that I can learn without aiming to, like in the case of what is known as informal learning, for example, but however attractive the learning scenarios designed or proposed for me might be, they will not result in learning if I do not specifically choose to enter into them or let myself be persuaded by what they offer.

Teachers and social educators can do many things for and with the people with whom they intervene. They can accompany them, assist them, facilitate their access to learning and resources to help them overcome the situations they experience, but in the end, the participants themselves must decide what they want to or can do with their lives in the context of their own personal circumstances, and this is often independent of anything teachers and educators might say or suggest to them. Educators cannot and should not try to make the horse in the metaphor drink. Social pedagogy and education do not involve educating but instead getting the other to choose and

decide to educate themself. From this metaphor it is clear that an intervention that does not deliberately seek joint responsibility in learning and that does not aim to create a bidirectional relationship with the participant will, in all likelihood, be doomed to fail.

### 3.2. The metaphor of socio-educational synapses

The key to any socio-educational relationship is connection, the contact that the meeting of two wills entails and that opens the door to learning and subsequent changes. Without a connection between the educator and the participant, it is impossible to speak of a socio-educational relationship. The connection between them is what builds the channel along which learning flows, together with the changes in the lives of the participants that derive from the socio-educational relationship. Without connections or contact it is only possible to speak of a failed socio-educational intervention that is interrupted in its aim of reaching the other, a socio-educational action with no purpose or meaning.

The problem is that neither education nor pedagogy know exactly how to produce this connection, this affective link that enables the start of the socio-educational relationship and its sustained development. Our attempts to reach the other and persuade them to get involved in the relationship and let us help them help themselves, which is ultimately our aim, can in many cases turn out to be useless (Stephens, 2013). There is no question that knowing, commanding, and applying all sorts of techniques —didactic, communicative, persuasive, negotiation, and a very long list of others— can help social educators improve their rapprochement with participants, but in no case does it guarantee that this connection will occur, that the spark will jump, capturing the attention and the interest of the other and leading them to learning and change. This is why the socio-educational relationship has often been conceived in terms of the educator's art or creativity: precisely because of our inability to explain this connection rationally and completely.

This idea of connection leads to another metaphor that makes it possible to visualise creatively how socio-educational relationships are produced or how they work. The neural synapses that comprise and produce cerebral activity, in my view, offer a very suggestive model for interpreting these functions. We can interpret the socio-educational model as a synaptic relationship that occurs between neurones that connect to each other and allow information to flow through them and, in this process, transform them: the social educator and participant as neurones, nerve cells that through their respective connections with the world make connections between each other to exchange information that better enables them to improve their way of being and their situation in the world.

Many questions are raised by such a parallel between synaptic connections and socio-educational relationships: What are the equivalents of dopamine or serotonin in socio-educational relationship? Is it words, gestures, or specific fa-

cial expressions by the professional? Is it the specific topics covered by the educator or the intervention techniques used? Or, instead, does everything depend on the situation and the moment in which the subject with whom the professional interacts finds themself? Or is the connection produced according to the interests and desires that motivate it? And, finally, is it the combination of both circumstances that creates the connection?

These are *pedagogical transmitters* of a sort. They connect an educator and a participant and cause the participant to choose to learn and change: in other words, to get involved in the work on improving themself and their ways of being, living and acting in the world. Trying to identify these transmitters, both in educators' own actions and in the verbal and non-verbal responses of the participants, can help the former to turn the initial intervention into a true relationship that inspires positive changes in the latter.

### 3.3. The metaphor of the crocodiles and the pond

This is a metaphor that Taylor (2008) uses in relation to community workers and their ways of getting involved with and working in the community. In my opinion, this appears to be fully applicable to teachers and social educators who perform their socio-educational activities in institutional and community settings. We will also extend this metaphor to work with people and groups as, in both cases, there is a socio-cultural and territorial medium that acts as a setting for the development of the socio-educational intervention.

Taylor starts by stating that the professionals, as technicians and experts, are often seen as external agents, outsiders whose ability to inspire change increases according to how capable they are of connecting and getting involved with people in the community. The social transformation of the community would be caused by the educators' ability to help people reflect critically on their reality to lead them to identify the perspectives and resources that can help them initiate change. It is in this process that the metaphor of the crocodiles is used.

I feel that this metaphor is extraordinarily suggestive in relation to what we are as educators, and what we have the ability or potential to do. The crocodile knows how to move about in the water of the pond that is its home. The water is its medium and this means that its abilities and potential are at their maximum when it moves in the water.

The social educator's medium is the socio-cultural sphere of relationships, including relationships with people, groups, and communities, and the socio-educational processes involved. However, stated in this way, this is just a generalisation or abstraction. The specific medium in which a given educator acts is not automatically their medium, unless they try to make it so and work hard on making this the case. Consequently, one of the first tasks of a social educator when starting a socio-educational intervention with people is to find their place as quickly as possible in what will become their medi-

um, at least for as long as the intervention lasts.

Finding their place in the socio-cultural sphere means getting to know others and the community they inhabit. However, the knowledge to which we refer must be an embodied knowledge, experienced in the first person in the relationship and the sociocultural context that surrounds it and in the territory where it develops. The documentation —CV, personal report, egogram, school performance, etc.— relating to the people involved in a specific socio-educational intervention process can be vital for doing the work, but it is of very little practical use if it is not complemented or enhanced by the embodied knowledge to which we refer, knowledge that involves people, groups, bodies, resources, and territory. Taylor notes that it is necessary to add other knowledge to technical knowledge, as this in itself is not sufficient for intervening.

The educator's strength, to generate change in the other, does not exist if it is not felt, integrated, experienced, and, above all, requested by the other, whether this be an individual or a group. The educator exists as such and can unveil *their powers* when they are accepted and recognised by the group and the participants. This is when the educator and participants can combine forces like the crocodile and the water in the pond. This is something that transcends joint responsibility in learning or in the socio-educational relationship. Storø (2013) speaks of a collaborative alliance between the educator and participants, an alliance that must occur both in regards to the interpersonal relationship and the objectives pursued and the activities carried out to achieve them.

Finally, we must insist that it seems unlikely that the collaborative alliance could occur without the participating person, group, or community perceiving some kind of authenticity in the teacher or social educator. Without this sense, the basic trust needed to establish and develop the socio-educational relationship will not be generated, which in turn could make this relationship non-viable.

Honesty and transparency from educators concerning the learning outcomes that can be expected or the real possibilities for change can help avoid situations and feelings of frustration, disappointment, or even having been misled. These situations and feelings can occur as much between educators as between the people who participate in the socio-educational relationship. In this setting, I do not regard honesty as just a moral virtue but, above all, in the sense that Goffman defined it (1974), a communicative and conversational norm that enables more effective interaction.

### 3.4. The metaphor of the educator as tightrope walker

A tightrope walker is someone who can walk along a tightrope without falling. If the rope is too loose, the challenge of walking along it can become an impossibility; if it is too tight, any bounce, however small, can throw the walker off and into the void. The tightrope walker's specialist knowledge and skill involve knowing how to walk while maintaining balance and even doing acrobatic poses. It

is a theoretical and practical knowledge that, among other skills, includes the ability to sense how tight the rope is, how much it needs to be tightened or loosened to be able to walk on it, and how to use articles that help maintain balance on this unstable base.

The social professions are middle management that operate in everyday life; they are located in a space shared with politicians, technicians, community leaders and opinion leaders, people, groups, organisations, bodies, and institutions. Social professions mediate between the personal, material, and functional socio-cultural resources of the setting and the people who inhabit it. They also mediate between the people responsible for the institutions, agencies, and organisations that employ them and the people and communities with which they work. Working as a teacher or social educator means performing a pedagogical role with a strongly marked political and ideological dimension. It could be said that the social educator, as a professional mediator, operates at the very heart of the social conflict.

This process of mediation can put social educators in situations that are very hard to manage from the professional role they perform, especially when the people or communities in which they intervene are in positions of vulnerability or conflict. For example, what should a community social educator do faced with the eviction of a family from the neighbourhood where they are working or a neighbourhood dispute where violence threatens the safety of members of the community? Taking a position in conflicts like these might lead to what Jacquard (1974) described, referring to the teacher as *the field of betrayals*; a space where their actions can be regarded by their employers as neglecting their professional responsibility or by the participants with feelings of abandonment or mistrust. Both cases can cast doubt on factors such as their job stability or professional ethics and credibility, not to mention the potential personal emotional conflicts it can entail.

The extreme positions are clear and do not usually present problems for any of the parties in the conflict, situations, for example, where the law or human rights are infringed. However, the problem does not arise in these cases but instead in ones where the former and the latter might come into conflict. The social educator's ability to connect with the main figures in the situations of conflict, to mediate and keep tensions in balance, to act as a catalyst in situations, tempering the positions of the people or organisations, to propose, make visible, and channel ideas, and, ultimately, to know how to stay at the centre of the conflict, maintaining dialogue with all of the parties involved, can be compared to the skill of the tightrope walker who crosses a chasm balancing on a rope.

It is true that, unlike the tightrope walker, the educator does not risk their life, but they do risk their emotional stability and the balance of their life, as well as the ethical principles that support them. The main tool in social pedagogy is the educator (Eriksson and Markström, 2003). The social educator is a subject who puts themself at stake in the socio-educational relationship; who uses

their emotions and feelings as currency to exchange with the emotions of the participants, who feels, suffers, and enjoys with the people with whom they intervene and who can be deeply affected by the situations they are involved in as a result of their work.

These elements make up the tightrope on which the pedagogy and social education professional must maintain balance. Learning to do this requires time and dedication, and this learning is only possible in day to day practice, by putting a great deal of care and attention into it and, above all, reflecting in-depth and critically on the situations experienced and interventions delivered.

### 3.5. The metaphor of the bullet and the moving target

Bauman (2010) uses a very suggestive metaphor to describe learning situations in liquid societies. He speaks of a moving target and how the trajectory of a bullet must be constantly adjusted if it is to hit it. We should note —apart from how inappropriate a military metaphor is for a pedagogical encounter— that this metaphor can be applied better to an asymmetrical pedagogical relationship than to a symmetrical one where both parties, the educator and the participant, are voluntarily and deliberately involved. Clarifying this metaphor means emphasising that both are, or could simultaneously be, the target or the bullet, or to put it another way, both could be looking for each other at the same time. The socio-educational relationship is a bidirectional one involving an interchange that works in both directions: from the educator to the participant and vice versa. This is why the classic terms used in education such as *target group* are no longer appropriate for defining socio-educational interventions where both educator and participant are agents who participate in the relationship actively and, in many cases, at the same level.

Not every attempt to create change comes from educators in the same terms. Coercing or obliging others to change is not the same as, for example, providing them with the resources to help them change themselves. The distinction between intervention *on* and intervention *with* is relevant here. The former does not involve the opinions, desires, or expectations of the latter and only follows the will of the educator, the expert *who knows*. The power of technique and the technician has not, in my view, been examined sufficiently in our field.

The latter, in contrast, is constructed jointly by the educator and participants, combining or sharing, at levels that can vary, the knowledge and skills that each of them possesses. It is this second perspective, based on a relational horizontal approach and linked to socio-constructivist perspectives (Storø, 2013), that seems better and more appropriate to us, given that, unlike the former, it does not involve asymmetric relationships and respects and makes the most of the contributions and resources of every single participant.

In this perspective, educators and participants are at the same level and free from relational hierarchies, al-

though they have clearly differentiated roles. The former contributes to their technical training, and their professional experience to tackling socio-educational situations and problems. The latter, bring their knowledge and experience —first hand and in the first person— of the situations in which they live their lives, whether these realities are physical, psychological, or cultural and belong to the order of the imaginary, the symbolic, or the real (physical and virtual). In my view, the process of socio-educational intervention in socio-educational situations or problems, or in other words shared participation between social professionals and participants, essentially entails comparing and agreeing on the lines of action and behaviour that in an appropriate and satisfactory manner respond to these realities or problems.

Sociological research into education has shown that educators project certain expectations onto the participating subject about how they will behave. In response, these create not just specific behaviour in that subject but also and at the same time other specific expectations concerning the development and results of the socio-educational relationship. Much of the success of this relationship depends on how both blocks of expectations are managed and negotiated: those of the educator and those of the participants. The mutual alignment of the expectations is a fundamental prior requirement for the success and sustainability of the socio-educational relationship. If educators wish to obtain good results that are simultaneously satisfactory and effective, they must necessarily focus their intervention on negotiation and management of expectations as this is one of the few ways of guaranteeing the participants' motivation and involvement in social educational practices.

### 3.6. The metaphor of signalling beacons

It has been said that social pedagogy is neither a method nor a group of methods. However, I believe that one of the distinctive features of social pedagogy compared to other types of pedagogy is its method or, to be more specific, its methodological principles.

If the claim that social pedagogy does not have its own method means that there is no standardised or normalised way of doing things, then effectively, it does not have a method. What we should ask is whether, in the social sciences, and in the framework of human —and specifically pedagogical— relations, it makes any sense to use the concept of method in the same way that it is used in the experimental physical-natural sciences. I believe it does not. The deliberately open way in which Morin (1993) defines it seems more appropriate to me. This author states that the method is what teaches people to learn and that this method can only be created during one's search for learning. Therefore, it is not possible to speak of standard, closed, or pre-set approaches. «There can be no prescriptions,» wrote Alinsky, «for particular situations because the same situation rarely recurs, any more than history repeats itself» (2012, p. 157).

What guides the actions of social educators in the framework of social pedagogy, and what guides and justifies their decisions are, in my view, their methodological principles. These principles are a sort of *signalling beacon* that helps social educators find their way in the uncertain and complex desert of human relations, the shifting sands on which social pedagogy is built and developed.

We call them signalling beacons because they warn and guide the educator about the corrections, changes, and modifications they must introduce in their actions to react to the constant changes of the people with whom they intervene and of the specific setting in which they are situated. Signalling beacons are the methodological principles that make it possible for educators to triangulate their position in a given socio-educational intervention with a person, group, or community in a specific moment.

Socio-educational intervention is not something that can be taught; it can only be learnt. And this process of learning must occur through practice, in everyday life and in the encounter between two individuals: the professional and the participant. This does not cast doubt on either the importance of training in theory for the educator or of advance planning of the actions to be performed. Both, in my view, are requirements for the success of the socio-pedagogical encounter. The former makes possible:

1) Better prior diagnosis of the situation.

2) More productive interpretation and use of the data obtained during the intervention.

3) The availability of strategic and technical reference points for action, among other aspects.

Advance planning of the socio-educational intervention makes it possible to anticipate possibilities, prepare a range of responses, and have resources available when faced with new or unexpected situations. Theory and planning provide security in the action but will most likely be insufficient if they are not backed up by the professional's own intuition. This intuition is fine-tuned over time by experience and reflection on the educator's own actions if they observe them consciously, reflect on them, and integrate these observations and reflections. This intuition, which can be guided by empathy, has been described as an essential competence for social professionals (Eriksson and Markström, 2003).

These are all resources that the professional brings into play in socio-educational interventions. However, they are resources that can only be activated based on what Shotter has called *knowledge of the third type*; a knowledge that is not propositional (knowing what) or procedural (knowing how) but instead is knowledge from within. Only if the professionals are immersed in the socio-educational situation can they know exactly what courses of action are available and select the one that their intuition, experience, knowledge, and technique as their own signalling beacons suggest to them as being most appropriate to produce situations in which the subjects with whom they interact can learn and improve themselves and their situation in

the world. This is why Moss and Cameron (2011) state that, faced with the complexity, randomness, and unpredictability of human beings, we have to trust in the judgements made by the social educators involved in practice, given that it is they who can make situated judgements based on knowledge, experience, dialogue, and reflection.

Learning outcomes are unpredictable given that they are relational properties, fruit of the pedagogical encounter of two unique individuals —educator and participant— in the framework of everyday life (Úcar, 2013). This does not, as we noted above, mean that prior planning or pre-established educational objectives are unnecessary. Learning is an untamed activity that only obeys the conditions, appetites, and rules —conscious or unconscious— of the learning subject in the specific situation in which they learn.

The social educator must discover, investigate, and rework their own signalling beacons, based on what they have learnt in their own life, in theory, practice, and experience. These are all lessons that the professional contributes to socio-educational interventions.

Formalised methodological principles inferred from one's own practice are key elements in the social educator's training, particularly ones they can activate in their socio-educational interventions. As Storø notes (2013), the ability to adapt methods to the context one is working in, is an important function of teachers and social educators.

## 4. Conclusions

The aim of this work was to develop a series of pedagogical principles to guide teachers and educators in their professional practice. To this end, we started by identifying the range of terms used by authors to describe their professional practice. Based on pragmatic and etymological arguments, we opted for the generic concept of *socio-educational intervention*, despite its range of meanings and uses. This type of intervention is defined as a professional activity performed by educators and teachers in the setting of a sociocultural situation or problem with the aim of generating scenarios to help the people, groups, or communities that participate to empower themselves. In other words, to acquire the learning and resources necessary to improve their lives and their situation in the world.

Using the process of constructing metaphors as a method of analysis and research has allowed us to analyse six metaphors for socio-educational intervention. From each of them, a series of pedagogical principles have been derived that can be used in the training of social educators and in the professional development of their practice.

From the metaphor of the horse and the fountain, it has been inferred that the participants are sovereign in regards to what they want, are able, and wish to do and learn. The social educator who intervenes must accompany, teach, guide, direct, and convince the participant, but it is the participant who will decide and choose what, how, and when to learn. Socio-educational intervention is part of what could be called a *pedagogy of choice*.

The metaphor of socio-educational synapses focuses on the connections and links between people —the educator and the participant— and their respective lived worlds of meaning, and on the need for the educator to try to connect both worlds. Without this connection, the educator loses the chance to achieve their main function and aim: to convince the participant to set off along the path towards improving themself and their way of being in the world.

From the metaphor of the crocodile and the pond, we have inferred the importance of the educator, not just knowing or having information, but also being involved in the lived and sociocultural reality of the participants. This involvement, as well as the fact of being seen as authentic and honest, can help with being accepted by the participants and, consequently, facilitate turning the intervention into a true socio-educational relationship.

From the educator as tightrope walker, we have derived the complexity of the intervention that occurs in the setting of people's everyday life and, often, within social conflict. The social educator, as their own and principal instrument for intervention, puts themself and their emotional health at risk in the processes of sociocultural mediation in which they participate. This requires a high level of training and capacity for learning in regards to the balanced management of one's own emotions. It also requires a good ability to read and analyse the complexity of the sociocultural situation and the forces in conflict so they can be channelled or catalysed to make them lead to opportunities for learning and improvement for the participants.

The metaphor of the bullet and the moving target addresses the need for the educator and participant to work together throughout the socio-educational intervention process, constantly modifying and redefining the objectives, characteristics, and results of this intervention. Managing and adapting the expectations of the participants is a key principle in the development of the socio-educational relationship. This adaptation is what can guarantee both the involvement of the participants and the sustainability of the socio-educational relationship itself.

The last metaphor —signalling beacons— emphasises the methodological principles that help the social educator to guide themself and make decisions in the setting of a given socio-educational intervention. These principles are mobile, changing, situated, and emerging. The ability of educators and teachers to learn from their own practice and develop, modify, and incorporate new pedagogical principles is what can make them become good professionals over time, in other words, capable of accompanying and helping the people with whom they intervene to learn what will help them improve their way of being and acting in their particular life contexts.

## Notes

1 See, for example: Sáez, 1993.

2 With the concept of *socioculture* I refer to the social relationships created in the encounter of cultural, personal, group, and community identities in phys·

ical or virtual frameworks that make a specific cultural or multicultural context possible. See Úcar, 2016.

[3] See Úcar, 2015.

[4] Op. Cit. Ibáñez, T. (2001).

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# How much gold is in the sand? Data mining with Spain's PISA 2015 results

## *¿Cuánto oro hay entre la arena? Minería de datos con los resultados de España en PISA 2015*

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## Abstract:

Since the start of the PISA evaluations there have been numerous studies that have metaphorically tried «to separate the gold from the sand», in other words, to derive useful knowledge to guide educational practice and policy from the vast amount of data collected. However, research that uses data mining techniques to extract knowledge from the databases provided by the OECD has been less common. This paper analyses the context questionnaires from a metric perspective using a methodology based on data mining with «regression trees». Its main goal is to discover how much value (how much «gold») is in the items that compose these questionnaires, considering their use as predictors of the performance of Spanish students. The results provide a list of the items selected in the six questionnaires and their predictive value. It also provides a methodological approach to help improve the productivity of educational research derived from PISA.

**Keywords:** PISA 2015, regression trees, context questionnaire, Spain, validity.

## Resumen:

Desde el inicio de las evaluaciones PISA abundan los estudios que pretenden, en lenguaje metafórico, «separar el oro de la arena», esto es, producir, de la cantidad ingente de datos recogidos, conocimiento útil que guíe la práctica y las políticas educativas. Pero no son frecuentes las investigaciones que usan técnicas de minería de datos para la extracción de dicho conocimiento. En este trabajo se analizan los cuestionarios de contexto desde una perspectiva métrica, con una metodología basada en «árboles de regresión» destinada a descubrir cuánto «oro» hay en los ítems que los componen, atendiendo a su uso como predictores del desempeño de los jóvenes españoles. Como resultado se obtiene un listado de los ítems más importantes en los seis cuestionarios, junto con el valor predictivo de los mis-

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mos. Se aporta un enfoque metodológico que puede contribuir a mejorar la productividad de la investigación pedagógica derivada de PISA.

**Descriptores:** PISA 2015, árboles de regresión, cuestionario de contexto, España, validez.

## 1. Introduction

The aims of PISA (Programme of International Student Assessment) include providing indicators of the effectiveness, efficiency, and equity of educational systems, as well as setting reference points to allow international comparisons and oversight of trends over time (OECD, 2016). More than a decade and a half since it was launched, it is a good time to take stock and reflect on whether this international evaluation is achieving its objectives and whether it is the gold mine of information that was expected. From a specifically pedagogical perspective, analysing the extent to which it contributes to increasing our knowledge of education and of educational systems is of interest. Its broad application and the metrical techniques it uses allow for comparisons of the spend on education and the results achieved, at both national and international levels and from synchronic and diachronic perspectives (Hopfenbeck et al., 2017) with a significant media impact. However, despite the efforts made, the most important question now concerns the objective of looking for simple or complex indicators of effectiveness and identifying which input, process, and output variables (non-cognitive) are most relevant, given their relationship with the performance levels evaluated. For the biggest critics, the research being carried out based on this large-scale evaluation is apparently not as productive as expected in creating useful knowledge for improving education. On these lines, Hanberger (2014) states that PISA suffers from issues with internal and external validity, and, in the best case, only works as an alarm system and as something to facilitate changes in policy at a national level. In Spain and many of its autonomous regions, the interest in participating in the programme to acquire knowledge to facilitate adopting measures to improve education has for long time been apparent (Instituto de Evaluación, 2007). However, there are arguments to support the position that PISA lacks specific value for this purpose (Carabaña, 2009, 2015), basically because the educational variables associated with the performance levels obtained are still not clearly apparent.

Validity is a complex and fundamental metrical concept (AERA, APA, and NCME, 2014) and could be the basis of this circumstance. Carabaña (2015) sees flaws in the definition of the competencies, thus raising a potential problem with the validity of the performance measurements themselves. However, there might also be weaknesses that relate to the validity of the measurements provided by the background questionnaires or

context questionnaires, which until now have usually been regarded as being of «secondary importance» (González-Montesinos & Backhoff, 2010, p. 14) but are now taking on an increasingly prominent role (OECD, 2016). Despite the important role of these questionnaires in international evaluations, there is hardly any data relating to the reliability of the measurements they provide (Rutkowski & Rutkowski, 2010, 2017) nor has proof of their validity been reported (Taut & Palacios, 2016). According to De La Orden and Jornet (2012), the main problems with sample-based evaluative studies include shortcomings in the conceptual and operative definition of the context measurements «and their low metric controls» (p. 78). In PISA 2015 a theoretical effort was made concerning validity as an internal structure, involving identifying underlying constructs, defining simple and complex indicators and indices (González-Such, Sancho-Álvarez, and Sánchez-Delgado, 2016), and establishing the possible relationships between them. Nonetheless, obtaining proof of validity for the context measurements is not easy given the great quantity and complexity of the information they provide and the many uses and interpretations derived from them, ranging from imputation of missing data and estimating plausible values (Kaplan and Su, 2016) to establishing subgroups in the population of 15-year-olds evaluated, «making it possible to introduce descriptors to the results (gender, ethnicity, educational level of the parents, type of school etc.)» (Martínez Arias, 2006, p. 120). In this piece, which examines the use of the PISA results as country-level assessment information and centres on identifying the factors that are most closely related to performance (Taut & Palacios, 2016), we propose a methodology based on using knowledge extraction techniques that are collectively known as «data mining» as these can, from an empirical and exploratory focus, complement the selection of variables done by the OECD (2016) in accordance with essentially political and also theoretical criteria, as explained above. This focus is proposed as ideal for discerning how much of this mass of available information is useful for the objective of explaining differences in performance, helping us «separate the gold from the sand». Going beyond the precious-metal metaphor, in this piece we connect «data mining» to PISA as this term includes a new generation of techniques and tools that aim to extract useful knowledge from the information held in large databases (Knowledge Discovery in Databases, KDD), with the special feature that this knowledge does not necessarily fit a predetermined model but instead an emerging one (Hernández Orallo, Ramírez, and Ferri, 2004). Although use of data mining in education (Castro and Lizasoaín, 2012) has increased in recent years, especially in connection with the development of e-learning, some research also uses it predict performance levels (Alcover et al., 2007; Thai Nghe, Janecek, & Haddawy, 2007; Lizasoain, 2012; Muñoz Ledesma, 2015; Ruby & David, 2015; Thakar, Mehta, & Manisha, 2015; Lakshmipriya and Arunesh, 2017), it being especially appropriate for large-scale evaluations that study efficiency (Santín, 2006) or the variables that affect the competences evaluated (Yu, Kaprolet, Jannasch-Pennell, & DiGangi, 2012; Kiray,

Gok, & Bozkir, 2015; Aksu & Güzeller, 2016; Gorostiaga & Rojo-Álvarez, 2016; Idil, Narli, & Aksoy, 2016). Blanco-Blanco, Asensio, Carpintero, Ruiz de Miguel, & Expósito (2017) illustrate the use of tree techniques to give a solid foundation to interpretations of the scores obtained in educational evaluation, using them to obtain proof of validity.

By focussing on the particular use of context questionnaires as an instrument for measuring the variables that explain performance, this study aims to explore the databases derived from the PISA study for Spain to discover how much pedagogical knowledge they contain and what items they provide. In short, taking the item as its unit of analysis, this piece will seek arguments for the validity of the measurements obtained through the PISA context questionnaires, with performance in sciences, reading, and mathematics as its criterion, and using the data mining technique with regression trees as its methodology. In this way, it will attempt to help make progress by studying the validity of the context questionnaires based on proof of the measurements taken from them by identifying, ordering, and selecting the items from them that are most relevant thanks to their value for predicting the competencies evaluated in PISA 2015 in the setting of Spain's educational system.

## 2. Method

The methodological approach for obtaining proof of validity depends on the type of interpretations that are hoped to be made based on the scores obtained. Most studies look for proof regarding the internal structure of the construct, and so the most commonly used approaches are exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). However, in this case the questions in the context questionnaires are analysed with the aim of studying their predictive and explanatory capacity, and so it makes more sense to use a multivariate approach which introduces the answers to the items as independent variables and the performance score as the dependent variable. Accordingly, the most common methodological option in these cases is linear or logistic regression analysis, but in PISA the competencies are continuous variables and the variables measured based on the context questionnaires are of different types. Consequently, we rely here on the non-parametric option of regression trees. These work appropriately with this complexity of data types in a single analysis without needing them to be transformed and are robust when faced with the presence of outliers and missing values (Streifer & Schumann, 2005).

### 2.1. Sample

The six context questionnaires used in PISA 2015 are analysed, in all cases, using the performance level obtained by students from Spain in this evaluation as the validation criterion. Consequently, the study sample comprises the 15-year-olds from Spain who participated in the evaluation, the parents of these students who completed the questionnaire intended for families, and the management and teachers from the schools where the students

were enrolled (Table 1). It should be noted that the data have not been weighted by the student final weights as the aim is not to make international comparisons, but instead to explore the situation in Spain (OECD, 2014).

TABLE 1. Number of responses in each of the questionnaires analysed.

| | N | Respondent |
|---|---|---|
| Student questionnaire | 39066 | Students |
| Educational career questionnaire | 38384 | Students |
| ICT familiarity questionnaire | 38585 | Students |
| Parents questionnaire | 4753 | Parents or guardians |
| School questionnaire | 1177 | Principals |
| Teacher questionnaire | 3894 | Teachers |

Source: Own elaboration.

## 2.2. Instruments

The theoretical framework for the PISA 2015 context questionnaires is presented in the study report (OECD, 2016).

The student questionnaire is administered during the evaluation of the students' knowledge and skills and takes around 35 minutes to answer. The questions it contains concern the students' characteristics, family and home, the students' view of their lives, their experience at school, timetable, time spent studying, study of sciences at school, and view of science. It comprises 224 items.

The educational career questionnaire, ICT skills questionnaire, family questionnaire, and teacher questionnaire are optional for the participating countries. The first of them contains 164 items and the second 81. The family questionnaire comprises 146 items concerning family-school relationship, educational career, and parents' views on science. There are two versions of the teacher questionnaire: one for science teachers (102 items) and one for teachers of other subjects (107 items). In both cases, the questionnaire is structured around context information, initial training and professional development, the school, and teaching practices, whether general or specifically relating to the sciences.

In addition, the school principal answers the school questionnaire. This comprises 229 items and makes it possible to collect information about the context and conditions of the school, school administration, teaching staff, supervision and evaluation, organisation, and the school atmosphere.

Finally, it should be noted that the scores obtained by Spanish students in the three competencies evaluated in PISA 2015, in other words, the 10 plausible estimated values for sciences, reading, and mathematics, have been taken as the dependent variables.

### 2.3. Procedure

One of the most popular decision tree algorithms is CART (Classification And Regression Trees) (Strobl, Malley, & Tutz, 2009), developed by Breiman, Friedman, Olshen, and Stone (1984). In this piece they are used as the main method of analysis, although CHAID (Chi Automatic Interaction Detection) is used to complement them. The CART process is frequently used as a segmentation methodology and can be used as a non-parametric supervised learning technique (Izenman, 2008). This comprises a recursive partitioning process applied to complex problems, which is based on the principle of «divide and conquer» (Hernández Orallo, Ramírez, & Ferri, 2004). It provides binary segmentation and a measure of the importance of the independent variables. Although it is used with a variety of objectives, it is often felt that tree analysis is classificatory when the dependent variable is nominal or ordinal and that it is regressive when the dependent variable is a scale. For its part, CHAID performs segmentations that can have more than two categories, allows selection of the independent variables that interact with the dependent variable (Kass, 1980) and provides p-values. The following process was used in this piece to identify, order, and select the context variables that make the greatest contribution to explaining student performance:

I. Estimating the initial models using CART, introducing the scores in the three competencies studied as dependent variables, and all of the items from the six questionnaires analysed as predictors. Independent estimates were made for each of the 10 plausible values (6 questionnaires × 3 competencies × 10 plausible values = 180 estimated models). The average risk values were then calculated for each questionnaire by subject. Using these, the joint predictive value of the items from the questionnaires was quantified. The general stopping rules set as default in the program were used.

II. Calculation with CART of the importance of each independent variable as the sum of the reduction of the impurity measure produced by the best division of said variable in each of the nodes (Breiman et al., 1984, p. 147). This calculation was also performed by subject and plausible value, so that the mean of the importance of each explanatory variable in each of the competencies evaluated could be estimated. The range is established based on the mean.

III. Estimation of the initial models, this time using the CHAID algorithm, which provides a selection of predictors. In this way, 180 different models are estimated, the results for which make it possible to identify the variables for each questionnaire that interact with the dependent variable.

IV. Selection of the variables that meet the following inclusion criteria: a) their standardised mean importance, estimated using CART, is at least 10% and b) they are included by CHAID as a significant influencing variable for at least one of the plausible values. The selection criteria established are intended to create

a parsimonious list of variables that does not increase the level of risk obtained by including all of the items in the model.

V. Reestimation of the mean risk values to quantify the joint predictive value of the items from the shortened questionnaires.

The analyses were performed using the IBM SPSS Statistics version 22 program.

## 3. Results

All of the items that make up each of the questionnaires were included in the initial model, while the final model only included the ones that met the criteria for inclusion. CART provides a risk estimate which, if divided by the total variance of the dependent variable ($S^2$), tells us of the proportion of it that is not explained by the variables included in the model (Risk/$S^2$). The global predictive value of each questionnaire, complete and shortened, was obtained from the square root of the proportion of variance explained. The initial model (Table 2) shows that the student questionnaire is the most informative in all subjects, while the other five questionnaires have a lower predictive value. The questionnaire completed by teachers is the one that makes the smallest contribution to explaining differences in the three subjects studied.

TABLE 2. Global predictive value of the items from the different context questionnaires in the initial models obtained with CART.

| **SCIENCES** | **$S^2$** | **Risk** | **Risk/$S^2$** | **$S^2$ explained** | **Predictive value** |
|---|---|---|---|---|---|
| Students | 7549.80 | 3955.58 | 0.52 | 0.48 | 0.69 |
| Educational career | 7549.80 | 6007.06 | 0.80 | 0.20 | 0.45 |
| ICT | 7549.80 | 6168.04 | 0.82 | 0.18 | 0.43 |
| Family | 7549.80 | 5460.54 | 0.72 | 0.28 | 0.53 |
| Principal (school) | 1181.95 | 835.56 | 0.71 | 0.29 | 0.54 |
| Teacher | 1227.68 | 1092.97 | 0.89 | 0.11 | 0.33 |
| **READING** | **$S^2$** | **Risk** | **Risk/$S^2$** | **$S^2$ explained** | **Predictive value** |
| Students | 7643.46 | 4258.73 | 0.56 | 0.44 | 0.67 |
| Educational career | 7643.46 | 5995.89 | 0.78 | 0.22 | 0.46 |
| ICT | 7643.46 | 5551.23 | 0.73 | 0.27 | 0.52 |
| Family | 7643.46 | 5607.55 | 0.73 | 0.27 | 0.52 |
| Principal (school) | 1222.94 | 941.63 | 0.77 | 0.23 | 0.48 |
| Teacher | 1339.86 | 1174.27 | 0.88 | 0.12 | 0.35 |

| Mathematics | $S^2$ | Risk | Risk/$S^2$ | $S^2$ explained | Predictive value |
|---|---|---|---|---|---|
| Students | 6926.07 | 3822.95 | 0.55 | 0.45 | 0.67 |
| Educational career | 6926.07 | 5587.38 | 0.81 | 0.19 | 0.44 |
| ICT | 6926.07 | 5831.06 | 0.84 | 0.16 | 0.40 |
| Family | 6926.07 | 5177.52 | 0.75 | 0.25 | 0.50 |
| Principal (school) | 1130.58 | 835.48 | 0.74 | 0.26 | 0.51 |
| Teacher | 1199.21 | 1058.54 | 0.88 | 0.12 | 0.34 |

Source: Own elaboration.

Tables 3 to 8 present the variables that are selected as they meet the inclusion criteria set for each questionnaire as well as the order of importance for each item by subject, calculated using CART[3].

TABLE 3. Selection of items from the student questionnaire.

| DESCRIPTION OF THE ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| Grade the student is in (11, 10, 9, 8, 7) | 1st | 1st | 1st |
| Student expectations | 2nd | 2nd | 2nd |
| Has repeated 'ISCED 2' (a secondary course) | 3rd | | 3rd |
| Possesses information about the increase of greenhouse gases in the atmosphere | 4th | 5th | 6th |
| Gives up easily when confronted with a problem and is often not prepared for class | 5th | 3rd | 7th |
| Attends chemistry courses this year | 6th | 8th | 8th |
| Attends physics courses this year | 7th | 12th | 9th |
| Self-reported ease of explaining why earthquakes occur more frequently in some areas than in others. | 8th | 11th | 10th |
| Science classes per week | 9th | | |
| Attends biology courses this year | 10th | | |
| Works for pay before going to school | 11th | 9th | |
| Has repeated 'ISCED 1' (a primary course) | | | 4th |
| Number of books | | 4th | 5th |
| Believes it is good to try experiments more than once to make sure of the findings. | | 6th | |
| Believes good answers are based on evidence from experiments. | | 7th | |

| DESCRIPTION OF THE ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| Wants to get top grades at school and continues working on tasks until everything is perfect. | | 10th | |
| Number of classes per week | | | 11th |

Source: Own elaboration.

Seventeen items meet the inclusion criteria in the student questionnaire (Table 3). The two most important variables in the three subjects are the grade the student is studying followed their level of expectation. In the educational career questionnaire 30 items meet the inclusion criteria (Table 4). «Changing study programme» is the most important variable thanks to its relationship with Reading and «not needing additional mathematics instruction» is the most important given its relationship with Science and Mathematics.

TABLE 4. Selection of items from the educational career questionnaire.

| ITEM | Science | Reading | Maths |
|---|---|---|---|
| I don't attend additional mathematics instruction in this school year because I don't need it | 1st | 5th | 1st |
| Have you ever changed your 'study programme'? | 2nd | 1st | 4th |
| I don't attend additional science instruction in this school year because I don't need it | 3rd | | 2nd |
| Hours per week you attend additional instruction in art | 4th | 2nd | 6th |
| Hours per week you attend additional instruction in science (or broad science) | 5th | | |
| Attending additional mathematics instruction at school | 6th | 4th | 7th |
| Other people regularly help me with my homework or private study. | 7th | | 8th |
| Did you change schools when you were attending 'ISCED 2'? | 8th | 9th | 10th |
| Comparing help received from the teacher in classes at school and in additional instruction | 9th | 7th | |
| Attending additional language instruction at school | 10th | 10th | 14th |
| My sister(s)/brother(s) regularly help me with my homework or private study | 11th | 15th | |
| Differences in the hints and strategies for solving mathematics tasks provided in lessons in school and in additional instruction | 12th | | |

| ITEM | Science | Reading | Maths |
|---|---|---|---|
| My grandparents regularly help me with my homework or private study | 13th | 13th | 16th |
| Attending additional instruction in pre-primary education | 14th | 16th | 18th |
| Hours per week you attend additional instruction in foreign languages | 15th | 19th | 17th |
| The teacher for the additional language instruction is one of my regular teachers in this year's school courses | 16th | 20th | |
| Nobody regularly helps me with my homework or private study | 17th | | 19th |
| Hours per week you attend additional language instruction | | | 3rd |
| Hours per week you attend additional mathematics instruction | | 3rd | 5th |
| Attending additional science instruction at school | | 6th | |
| Other family members regularly help me with my homework or private study | | | 9th |
| How many years altogether have you attended additional instruction? | | | 11th |
| The additional science instruction I attend covers chemistry | | | 12th |
| Hours per week you attend additional music instruction | | 8th | 13th |
| Participation in additional mathematics instruction through video recorded instruction by a person | | 11th | |
| I attend additional science instruction in this school year because I was attracted by the tutoring advert | | 12th | |
| Participation in additional science instruction through Internet tutoring with a person (including, for example, Skype) | | 14th | |
| I don't attend additional science instruction in this school year because I don't have the money | | | 15th |
| The additional science instruction I attend covers physics | | 17th | |
| Participation in additional language instruction during this school year through Internet or computer tutoring with a program or application | | 18th | |

Source: Own elaboration.

Twenty-one variables are selected from the ICT familiarity questionnaire (Table 5), the most important one in science and reading being the opinion of the Internet as a source of information. The school's equipment (projectors) is an especially important variable in mathematics.

TABLE 5. Selection of items from the ICT familiarity questionnaire.

| ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| I believe the Internet is a great resource for obtaining information I am interested in (e.g. news, sports, dictionary) | 1st | 1st | 5th |
| A data projector is available for me to use at school | 2nd | 6th | 1st |
| Frequency of using social networks for communication with teachers outside of school | 3rd | 2nd | 8th |
| How old were you when you first used a digital device? | 4th | 10th | 2nd |
| Frequency of downloading learning apps on a mobile device outside of school | 5th | 3rd | 10th |
| I feel comfortable using my digital devices at home | 6th | 5th | 9th |
| I have a USB (memory) stick | 7th | 15th | 4th |
| Frequency of use of digital devices to obtain practical information from the Internet outside of school | 8th | 9th | 15th |
| I have available to use at school a Tablet , iPad, BlackBerry, PlayBook | 9th | 7th | 6th |
| Frequency of use of email outside of school | 10th | | 11th |
| An e-book reader is available for me to use at school | 11th | 8th | 3rd |
| I have a printer at home | 12th | | 7th |
| Frequency of checking the school's website for announcements outside of school | 13th | | |
| Frequency of downloading science learning apps on a mobile device outside of school | | 4th | 12th |
| Frequency of browsing the Internet for schoolwork outside of school (for example, presentations) | | 11th | |
| Frequency of downloading, uploading or browsing material from the school's website (e.g. timetable or course materials) outside of school | | 12th | |

| ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| How old were you when you first used a computer? | | | 13th |
| During a typical weekday, how long do you use the Internet at school? | | 13th | |
| I have an Internet connection at home | | 14th | |
| During a typical weekday, how long do you use the outside of school? | | | 14th |
| Frequency of use of digital devices to upload your own created contents for sharing outside of school | | | 16th |
| Frequency of browsing the Internet to follow up lessons (for example, for finding explanations) | | 16th | |

Source: Own elaboration.

In the questionnaire aimed at families (Table 6), 35 items were selected, of which interest in a science-related career was most important in science and reading. Family income is the most important variable in relation to performance in mathematics.

TABLE 6. Selection of items from the family questionnaire.

| ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| Does your child show an interest in working in a science-related career? | 1st | 1st | 3rd |
| Has your child shown interest in studying science after completing secondary school? | 2nd | 2nd | 2nd |
| Do you expect your child will study science after completing secondary school? | 3rd | 4th | 4th |
| What is your annual income? | 4th | 3rd | 1st |
| At what age did your child start attending 'ISCED 1'? | 5th | 5th | 5th |
| Main reason your child attended pre-primary education | 6th | 8th | 7th |
| During the last academic year, my participation in activities at my child's school been hindered by the way to school being unsafe | 7th | 6th | 10th |
| During the last academic year, I have discussed my child's behaviour on the initiative of one of his/her teachers | 8th | 11th | 13th |

| ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| During the last academic year I have talked about how to support learning at home with my child's teachers | 9th | 13th | 9th |
| When choosing a school for my child, it is important that the school has financial aid available | 10th | | |
| Main reason your child attended supervision or child care | 11th | 16th | 11th |
| When your child was 10-years-old, how often did he/she read books about scientific discoveries? | 12th | | |
| During the last academic year, I have discussed my child's behaviour with a teacher on my own initiative | 13th | 15th | 12th |
| During the last academic year, I have discussed my child's progress on the initiative of one of their teachers | 14th | 20th | 14th |
| My child attended a supervision and care arrangement at the age of one | 15th | | 16th |
| My child attended a supervision and care arrangement before the age of one | 16th | | 15th |
| How often you help your child with his/her science homework? | 17th | 22nd | |
| How often you obtain science-related materials for your child? | 18th | 23rd | |
| Does anybody in your family (including you) work in a science-related career? | | 7th | 6th |
| When your child was about ten, how often did he/she experiment with a science kit, electronics kit, or chemistry set, or use a microscope or telescope? | | | 8th |
| How often you discuss science-related career options with your child | | 9th | |
| I believe science is valuable for society | | 10th | |
| When choosing a school for my child, it is important that the expenses are low | | 12th | |
| During the last academic year, I have been supportive of my child's efforts at school and his/her achievements | | 14th | |
| Type of provider offered this pre-primary education arrangement | | 17th | |

| ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| When your child was 10-years-old, how often did he/she fix broken objects? | | 18th | |
| During the last academic year, I have supported my child when he/she is facing difficulties at school | | 19th | |
| I believe science is relevant to me | | | 17th |
| How many parents of your child's friends at this school do you know? | | | 18th |
| My child started attending pre-primary education aged one | | 21st | 19th |
| My child started attending pre-primary education aged two | | | 20th |
| In what country was your child's maternal grandmother born? | | | 21st |
| When your child was about 10, how often would he/she watch TV programmes about science? | | | 22nd |
| My child attended a supervision and care arrangement at the age of two. | | 24th | |
| Before attending school, my child was taken care of by an adult untrained in child care (not a relative). | | 25th | 23rd |

Source: Own elaboration.

After performing the analyses, 29 items were selected from the school questionnaire (Table 7). In reading, the most important variable is ownership, while for science and mathematics, it is the proportion of disadvantaged students.

TABLE 7. Selection of items from the school questionnaire.

| ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| Percentage of 15-year-old students from socioeconomically disadvantaged homes | 1st | 3rd | 1st |
| Extent to which learning is hindered by student truancy | 2nd | 2nd | 2nd |
| Ownership | 3rd | 1st | 3rd |
| The principal is responsible for firing teachers | 4th | | 5th |
| The local or regional educational agency is responsible for selecting teachers for hire | 5th | | 7th |

| ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| Inadequate or poor quality physical infrastructure (e.g., building, grounds, heating/cooling, lighting and PA system) | 6th | 5th | 11th |
| Extent to which learning is hindered by students lacking respect for teachers | 7th | | 15th |
| Number of girls enrolled at the school | 8th | 4th | 9th |
| Part-time teachers | 9th | | 12th |
| The school governing board is responsible for deciding on budget allocations within the school | 10th | | |
| Part-time fully-certified teachers | 11th | | 14th |
| Data projectors in the school available to 15-year-old students | 12th | 7th | |
| The principal is responsible for establishing student assessment policies | 13th | | 19th |
| The principal is responsible for selecting teachers for hire | | | 4th |
| Extent to which learning is hindered by students skipping classes | | | 6th |
| The local or regional educational agency is responsible for firing teachers | | | 8th |
| Number of boys enrolled at the school | | | 10th |
| Interactive whiteboards in the school available to students in the 10th grade | | 6th | 13th |
| Location of the school | | | 16th |
| Total number of 15-year-old students in the school | | 8th | 17th |
| Implementation of a standardized policy for science subjects | | 9th | |
| Percentage of 15-year-old students whose heritage language is different from the language of the test | | 10th | |
| Full-time teachers with a doctoral or professional degree | | 11th | |
| Full-time teachers | | | 18th |
| Full-time fully-certified teachers | | | 20th |
| The school governing board is responsible for establishing student disciplinary policies | | | 21st |
| Implementing teaching and learning quality measures based on internal evaluation | | | 22nd |

| ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| Full-time teachers with a master's degree | | | 23rd |
| Computers connected to the Internet available to 15-year-old students | | | 24th |

Source: Own elaboration.

Finally, in the questionnaire aimed at teachers, there is a significant consistency for the three subjects as all of the 11 variables selected are important for sciences and 7 are shared (Table 8). The teachers' perceptions of the schools' infrastructure is the variable that is most closely related to schools' average performance in sciences, while the teachers' professional stability is most closely related to performance in reading and mathematics.

TABLE 8. Selection of items from the teacher questionnaire.

| ITEM | Science | Reading | Mathematics |
|---|---|---|---|
| The educational capacity of your school is hindered by inadequate or poor quality physical infrastructure | 1st | 3rd | 2nd |
| In how many schools have you worked over the course of your teaching career? | 2nd | 1st | 1st |
| The educational capacity of your school is hindered by a lack of physical infrastructure | 3rd | 4th | 3rd |
| I would recommend my school as a good place to work | 4th | 2nd | 4th |
| The educational capacity of your school is hindered by a lack of teaching staff | 5th | 7th | 6th |
| The educational capacity of your school is hindered by Inadequate or poor quality educational material | 6th | 5th | |
| Are you required to take part in professional development activities? | 7th | | 8th |
| The educational capacity of your school is hindered by a lack of educational material | 8th | 6th | 5th |
| The educational capacity of your school is hindered by a lack of assisting staff | 9th | | 7th |
| Type of contract | 10th | 8th | 9th |
| Type of working hours | 11th | | |

Source: Own elaboration.

To confirm that the predictive values are maintained, the explanatory capacity of the shortened context questionnaires was quantified. That is to say, only the selected variables were inputted as independent variables and values very similar to those shown in Table 2 were obtained.

## 4. Conclusions

This work has considered the context measurements in relation with performance using a novel methodological perspective that allows an overview of the importance of each item on the background questionnaires in connection with the others for each competence evaluated. The research carried out provides proof of the validity of the six context questionnaires used in PISA 2015 for this purpose, although the student questionnaire, with a science coefficient of 0.68 has the greatest predictive power. This is virtually unchanged in its shortened format, despite only 17 relevant items being selected for the Spanish sample and for the use studied. Although the discussion about which variables and levels appear as most important cannot be tackled in-depth here as it goes beyond the objective of this research, the tables in the results section provide very illuminating information on this matter that leads us to reconsider the general conclusion from studies based on PISA, according to which it appears that students' socioeconomic conditions are the most important variables (Cordero, Crespo, & Pedraja, 2013). In our study, the items referring to these questions, such as «working for pay before going to school» or «number of books», come after the «grade, repeating a course, attending class, expectations», or «motivation» variables, all of which have a marked educational-psychology character. The very clear first place for the «grade» variable might sum up the student's entire educational career, their record of performance, which would explain its predictive value.

One of the clear contributions of the CART methodology is assigning numerical values to the variables according to their relative importance in explaining the variable, making it possible to quantify their «carats». The rating of the items from the context questionnaires gives an overview of which are the most (and least) important for explaining performance differences. This holistic vision is not possible with more traditional research methods as these are usually based on an intentional selection of the predictor variables with an essentially inferential objective, and so they provide information about which of the variables included in the model are significant and, at most, about their effect size taken in isolation or interacting only with the variables included in the model. However, the results of confirmatory studies in which the necessary thoroughness in including predictor variables is not achieved can lead to a representation of the educational reality of a country that inadequately informs decision makers. At this point it is worth recalling that in the confirmatory models it is vital to include all relevant variables, to minimise specification errors, which are of great importance and at the same time often neglected in studies that set out to explain educational results.

In short, while one issue with the methodology used here is its instability, as in recursive partitioning the decision about which variables to divide and the exact position of each cut-off point in the division are fundamental (Strobl, Malley, & Tutz, 2009), applying data mining techniques to studying the context questionnaires for the large scale evaluations does appear to be a useful initial exploratory tool for making an informed selection of the predictors to be considered in the secondary analyses derived from these evaluations, providing important statistical arguments that complement the necessary theoretical arguments.

We understand that education is organised in systems that learn and that their possibilities of learning depend largely on programmes such as PISA and on statistical learning tools, among which data mining techniques play an essential role (Hastie, Tibshirani, & Friedman, 2002). Data mining could be a methodological focus that will help educational researchers make better use of the information offered by PISA (Pereira, Perales, & Bakieva, 2016). This is also proving to be a programme that learns, to obtain proof that can successfully be used as a basis for making decisions concerning improvements. The use of classification and regression trees is therefore proposed as an interesting research option, not only with the items, but also with complex indicators, and international data to obtain proof of validity of the measurements in the different participating countries.

## Notes

1 The variables are arranged according to their importance in sciences. The ones that were not important in sciences but were in one or both of the other two competencies are presented shaded at the end.

2 In the case of the school and teacher questionnaires, for the different estimates the average performance of the school on each of plausible values was taken as the dependent variable.

3 The variables are arranged according to their importance in sciences. The ones that were not important in sciences but were in one or both of the other two competencies are presented shaded at the end.

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# Design and validation of an instrument to measure teacher training profiles in information and communication technologies

## *Diseño y validación de un instrumento de medida del perfil de formación docente en tecnologías de la información y comunicación*

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## Abstract:

Introduction: this study is part of a research project concerning the teacher training in information and communication technologies (ICT) profile. Its aim is to develop and validate an instrument for measuring this profile in primary and secondary schools. Methodology: after developing the instrument and administering it to a sample of 1,433 teachers in the Community of Madrid, its reliability, content, and construct validity were analysed (the latter using Structural Equation Models with the IBM SPSS-AMOS program). Results: the reliability analysis gave Cronbach's Alpha = 0.973 for the whole of the instrument. For each dimension this figure was: Curricular Aspects, 0.738; Planning and Evaluation, 0.878; Methodological Aspects, 0.903; Use of ICT, 0.935; and ICT Training, 0.894. The discrimination coefficient values of the final instrument items ranged from 0.33 to 0.74. The Confirmatory Factor Analysis demonstrates a good fit of the model to the data (CMIN/DF = 5,138; CFI = 0,905; RMSEA = 0,056; PRATIO = 0,928). Conclusions: this instrument has therefore shown that it has the necessary technical characteristics to be considered a valid and trustworthy tool for measuring the teacher training profile in ICT.

**Keywords:** teacher competencies, digital competency, ICT standards, teacher, factor analysis.

## Resumen:

Introducción: el presente estudio forma parte de una investigación acerca del perfil de formación docente en Tecnologías de la Información y Comunicación (TIC). El objetivo, en este caso, es elaborar y validar un instrumento de medida de dicho perfil en centros de Pri-

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maria y Secundaria. Metodología: tras la elaboración y aplicación del instrumento a una muestra de 1433 docentes de la Comunidad de Madrid, se analizó la fiabilidad, la validez de contenido y de constructo (esta última a través de Modelos de Ecuaciones Estructurales con la aplicación informática IBM SPSS-AMOS). Resultados: Los resultados obtenidos en el análisis de fiabilidad Alfa de Cronbach = 0.973 para la totalidad del instrumento y en cada dimensión: 0.738 Aspectos Curriculares; 0.878 Planificación y Evaluación; 0.903 Aspectos Metodológicos; 0.935 Uso de las TIC; 0.896 Gestión Recursos TIC y 0.894 Formación TIC, oscilando los valores del coeficiente de discriminación de los ítems del instrumento final entre 0.33 y 0.74. El Análisis Factorial Confirmatorio demuestra un buen ajuste del modelo a los datos (CMIN/DF = 5.138, CFI = 0.905, RMSEA = 0.056, PRATIO = 0.928). Conclusiones: por todo ello, el instrumento presentado reúne las características técnicas exigidas para ser considerada una herramienta válida y fiable para medir el perfil de formación docente en TIC.

**Descriptores:** competencias del docente, competencia digital, estándares TIC, profesorado, análisis factorial.

## 1. Introduction

Numerous studies have considered the impact of plans to integrate information and communication technology (ICT) in non-university education. Some of them (Tejedor and García-Valcárcel, 2006; Becta, 2004) consider the reasons these plans fail, including:

— Substandard teacher training.
— Lack of methodological coordination/innovation and team work.
— Lack of ICT coordination.
— Lack of technological infrastructure and educational resources.

Similarly, the establishment of decentralised educational policies has had a very uneven impact on the conditions in which plans for integrating ICT in centres have been applied (De Pablos, Colás, and González, 2010; Area, Hernández, and Sosa, 2016), and so each autonomous region with full educational powers has implemented different integration measures with very varied outcomes.

We could be forgiven for thinking that the presence of technological resources in schools is an important differentiating factor for genuine change in the integration and development of digital competencies in teachers and students alike. However, several pieces of research indicate that this factor is not as decisive as initially supposed (Area, 2005; Marchesi et al., 2005).

In fact, according to other studies (García-Valcárcel, 2003; Cabero, 2000; Sancho, 2002), one factor for success in improving digital integration in schools is the establishment of a comprehensive programme of technological implementation that is taken up and led by the members of the management team and teaching staff, which has an impact on the implementation of innovative learning strat-

egies in the use of ICT. Accordingly, improvements that combine incorporating technological resources and introducing innovative learning methodologies give better results in student performance and in the digital competencies of their teachers (Espuny, Gisbert, and Coiduras, 2010; Aguaded and Tirado, 2010; Cebrián, Ruiz, and Rodríguez, 2007; Garrido, Fernández, and Sosa, 2008; Pérez, Aguaded, and Fandos, 2009; Fernández-Cruz and Fernández-Díaz, 2016; Area, Hernández, and Sosa, 2016).

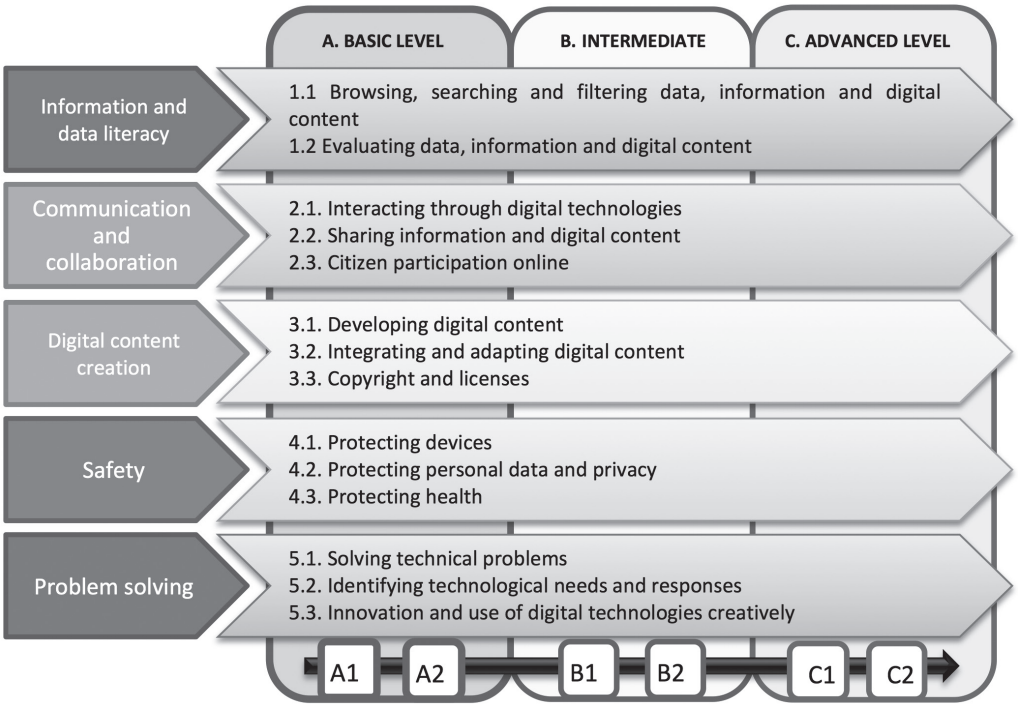
Nonetheless, one of the main obstacles encountered when integrating technology into education is the low level of teachers' digital competencies (Fernández-Cruz and Fernández-Díaz, 2016; Mueller, Wood, Willoughby, Ross, and Specht, 2008; Ramboll Management, 2006). The lack of initial training or of continued training to improve and expand digital skills through teachers' careers (Marcelo and Estebaranz, 1999; Prensky, 2001) and the failure to incorporate more active, innovative and effective teaching methodologies (Gewerc, 2002; Fernández and Álvarez, 2009; García-Valcárcel and Tejedor, 2010) are the most obvious reasons for the lack of impact of ICT in learning outcomes and in the digital competencies of the teaching staff, this latter aspect being of special relevance in this study.

Taking into account their great relevance, the technological competencies of teachers continue to be a crucial element in educational performance. These are understood as the set of knowledge and skills an individual requires, to be able to use these technological tools as educational resources that are better integrated in their day-to-day classroom work (Suárez-Rodríguez, Almerich, Díaz-García y Fernández-Piqueras, 2012).

The educational importance that digital competencies have acquired has, on the one hand, been backed up by improved legislation recognising the need for the curriculum to include ICT skills as a vital learning tool (Organic Law 2/2006, Organic Law 8/2013), and on the other hand, by the development of various models of ICT competency standards for teaching staff. These have been created by a variety of government and non-governmental bodies (Department of Education of Victoria, 1998; International Society for Technology in Education, 2008; Proyecto Enlace del Ministerio de Educación de Chile, 2006; North Carolina Department of Public Instruction, 2000; UNESCO, 2008; 2011; Almerich, Suárez, Orellana, Belloch, Bo, and Gastaldo, 2005).

Within the European Union, the development of the «Common Digital Competence Framework for Teachers» (INTEF, 2017) is worth noting. This has been in force in Spain since 2012 as a result of the implementation of the European Digital Competence Framework for Citizens v2.1 (DigComp: JCR, 2017) and the Digital Competence Framework for Educators (DigCompEdu: JCR, 2017). The outline of the levels of development and the dimensions of competency on which this model is based are set out in Table 1:

TABLE 1. Common Digital Competence Framework for Teachers (INTEF, 2017).




Source: INTEF (2017).

Without wishing to downplay how important the implementation of the Common Digital Competence Framework for Teachers in Spain has been, one of the international institutions that has worked hardest to develop clear structures to contribute to training teachers in digital capacities is UNESCO. This organisation prepares and publishes the ICT competency framework for teachers (UNESCO, 2008; 2011) with the aim of improving their practice in all areas of their work, combining ICT skills with innovations in pedagogy, the syllabus, and the organisation of schools. It is also intended that teachers will use ICT competencies and resources to improve their teaching, cooperate with colleagues, and, ultimately, be able to become leaders in innovation in their respective institutions. The overall aim of this project is not just to improve the practice of the teachers, but to do this in a way that helps improve the quality of the educational system so that it can encourage the economic and social development of the country (UNESCO, 2011). To this end, UNESCO has defined three levels of knowledge deepening in ICT skills for teacher training:

— Understanding technology, integrating technological skills into syllabuses (1st level: basic knowledge of technology).

— Using knowledge with the aim of adding value to society and the economy, applying this knowledge to solve complex and real problems (2nd level: knowledge deepening).

— Producing new knowledge and exploiting it (3rd level: knowledge creation).

These three focusses (UNESCO, 2011) correspond to alternative visions and national policy objectives for the future of education. However, each level has different characteristics according to the dimension being studied (Table 2):

1) Policy and vision: curriculum aspects of ICT.

2) Syllabus and evaluation: ICT planning and evaluation.

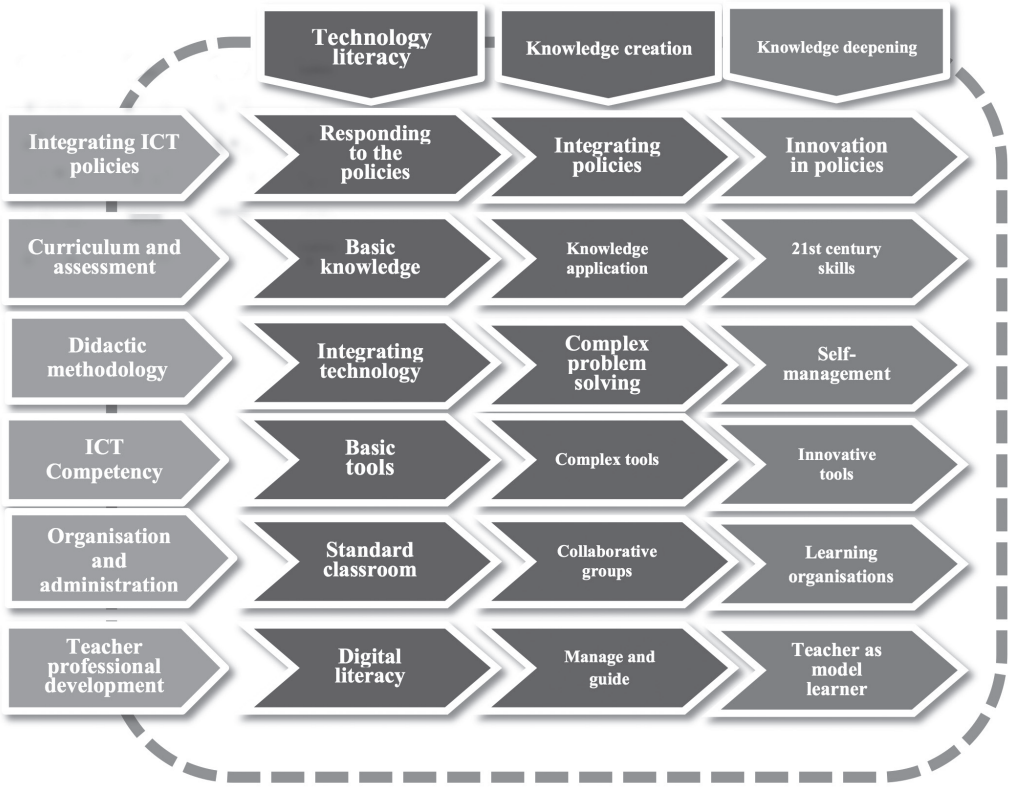
3) Pedagogy: methodological aspects in ICT.

4) ICT: using and handling technology.

5) Organisation and administration: managing ICT resources.

6) Professional training for teachers: professional development in ICT.

TABLE 2. UNESCO competency standards modules for teachers (UNESCO, 2011).




Source: UNESCO (2011).

## 2. Method

### 2.1. Objectives

In light of this situation, the main objective of this piece of work is to design and develop a valid and reliable measurement instrument based on a conceptual and operational definition that brings together the technical features required to measure the profile of teacher training in ICT in Spain.

### 2.2. Population and Sample

The study population comprises 1844 primary and secondary schools from the Autonomous Region of Madrid (CAM), comprising a total of 24,338 teachers (Consejería de Educación de Madrid, 2015-16). For this purpose, a total of 3992 teachers from 80 schools in the different areas of the Autonomous Region of Madrid (north, south, east, west, and centre) were contacted using convenience sampling. Of these, 1433 eventually participated voluntarily in the study, giving a response rate of 35.90%. Hair, Anderson, Tathan, and Black (2009) state that, as a general rule, it is advisable to have, as a minimum, a number of observations five times greater than the number of variables. However, the acceptable size is a ratio of ten to one. Our sample comprises 1433 observations and the measurement instrument, as shown below, comprises 63 items, giving an observations/variables ratio of 22.75.

The teachers were selected using a convenience sample, with the result that 64.34% (n = 922) are from state-funded independent schools, 25.4% (n = 364) are from state schools, and 10.26% (n = 147) are from private schools. This distribution matches the population distribution of the Autonomous Region of Madrid (Consejería de Educación de Madrid, 2009), both in types of school and area. The distribution by areas of the teachers shows that 3.56% (n = 51) are from the north area of the Region, 33.91% (n = 486) from the south area, 5.58% (n = 80) from east area, 20.66% (n = 296) from the west area, and 36.28% (n = 520) from the central area.

As for the sociodemographic characteristics, the sample comprises 954 women (66.57%) and 479 men (33.43%). As for age, 48.15% of the sample were under 36, while 30.1% of the subjects were aged between 36 and 45, and 21.84% were 46 or older.

Finally, regarding their professional profile, 35.52% of the sample have 5 years or less teaching experience, 24.42% have between 6 and 10 years, and 22.47% have between 11 and 20 years. The remaining 17.58% have 21 years or more of experience as a teacher.

### 2.3. Instrument

The ICT teacher training profile was measured in accordance with UNESCO's standards using an instrument prepared expressly for the occasion, comprising items that refer to the dimensions established by UNESCO and shown in Table 2. The questionnaire included a total of 63 items (see Table 3) which the teacher had to answer using a 1-5 Likert scale (where 1 indicates Not at all or Never and 5 indicates A lot or Always) for all of the items from the different dimensions. In

this study, the 5-point scale is treated as a «fine-grained ordinal» or «quasi-interval» scale (Weaver, 2015; Del Río, 2013; Pérez Juste, 1985), permitting the use of exploratory and confirmatory factorial analyses instead of item response theory or parallel analysis.

## 2.4. Preparing the Questionnaire

To prepare the scale for measuring teacher training in ICT, a system was designed using dimensions, sub-dimensions, and indicators based on the standards drawn up by UNESCO (2008, 2011). These specifications were adapted to Spain's educational context and to the digital teaching capacities of primary and secondary teachers. Accordingly, the instrument comprised six large dimensions, each split into three levels of deepening (Table 3):

— Curricular Aspects in ICT (CA), relating to how teaching staff in the stages being studied understand the «policy» or curriculum component that refers to digital competency as something that leads to changes in teacher training and as something required when changing the methodology used in the task of teaching their students. The three levels in this profile are:

- CA-1 Knows what «Digital Competency» is but does not use it in their work with students.
- CA-2 Knows about and works on «Digital Competency» in the delivery of their areas with students.
- CA-3 Implements new types of intervention and activities for working on «Digital Competency» with students.

— ICT Planning and Evaluation (PE) that impacts on how teaching staff include developing digital competencies in the work their students do by planning and evaluating these activities. The three levels in this profile are:

- PE-1 The teacher plans and evaluates activities so that their students use ICT while doing their activities in class.
- PE-2 The teacher uses different programs depending on the areas and evaluates the students' performance in relation to performance categories.
- PE-3 The teacher knows how students perform complex learning and plans new innovative activities so that they collaborate on this learning using ICT and so that they self-evaluate.

— Methodological Aspects in ICT (MD). This dimension refers to the teaching staff's methodological strategies for using ICT in the classroom and developing their students' digital competencies. The three levels in this profile are:

- MD-1 Teachers understand the use of ICT tools and use them to perform their teaching work when explaining content.
- MD-2 Teachers perform activities using ICT tools for comprehensive and collaborative work by their students and implement projects in collaboration with other teachers.
- MD-3 Teachers innovate new activities and materials for classroom work, implementing projects and new technological tools.

— Use and handling of technology (IT). This refers to the level at which teachers use ICT in the world of education, from digital literacy to technological innovation. The three levels in this profile are:

- ICT-1 The teacher understands the use of ICTs at a user level and looks for ICT tools for use in class.
- ICT-2 The teacher prepares ICT tools for their areas and uses ICT to manage, monitor, and evaluate their students.
- ICT-3 They teach their students to use complex virtual environments to create their own activities and collaborate with each other.

— ICT resource management (RM). This indicates the teacher's level in managing the technological resources in the centre, coordinating them, and helping other teachers in their use of these measures. The three levels in this profile are:

- RM-1 They use the schools computer room and manage their own classroom to work methodologically with ICT.
- RM-2 They install and organise resources so that students use ICT to do projects and collaborate.
- RM-3 They help other teachers, train them, and encourage them to perform teaching innovation projects using ICT.

— Professional Development in ICT (PD). This dimension indicates how much the teaching staff continue training in the use of ICT in teaching as a personal and professional requirement, understanding that the field of technology is constantly expanding and changing. The three levels in this profile are:

- PD-1 They use technological resources to train themselves in their subjects.
- PD-2 They use ICT resources to search for and share resources, access forums, and develop their teacher training.
- PD-3 They evaluate their teaching practice to improve it and present innovation projects in professional forums.

Once the structure of the questionnaire had been split into dimensions, indicators, and items, a group of experts was selected to check the validity of the content of the instrument. This group of assessors comprised experts in educational research with extensive knowledge of preparing and analysing scales who evaluated the suitability of the items and how they were expressed and the general design of the questionnaire. It also included academics who are experts in initial teacher training to interpret the usefulness and appropriateness of the teacher training factors included in the questionnaire. Experts in educational technology were also included to help establish the most relevant ICT training criteria for current teachers.

To help them perform this task they were informed of the purpose of the instrument and the rationale behind its content and were given a validation instrument where they had to evaluate on a scale of 1 to 5 the relevance (level of significance or importance of the item with regards to the dimension it is in) and the clarity of each item on the questionnaire. Finally, there were some open-ended questions concerning the advisability of including,

changing, or removing some of the items presented in the evaluation tool.

The relevant analyses were performed on the evaluation provided by this group of assessors and the questionnaire was restructured taking into account the criteria established by authors like Tejero (2006), Tejero, Fernández, and Carballo (2010), and Cortada de Kohan (1999), eliminating items that did not exceed an average of 4 in clarity and relevance, or that had a standard deviation of 1.5, provided that the quantitative evaluations of the experts recommended this. The changes suggested by the experts were minor (concerning grammar and wording) and almost all of the items were of high relevance. The items included in the questionnaire are shown in Table 3.

TABLE 3. Dimensions, indicators, and items in Teacher Training in ICT (TTICT).

| Dimensions | Indicators | Items |
|---|---|---|
| General curriculum aspects | **CA-1** Basic knowledge of technology | 1. I understand the meaning of «Digital Competency» set out in the Curriculum Decrees for my educational level. |
| | **CA-2** Knowledge deepening | 2. I work on «Digital Competency» in my areas/subjects doing practical activities that require the use of ICT. |
| | **CA-3** Knowledge creation | 3. I implement teaching innovation projects in my centre relating to «Digital Competency». |
| Planning and evaluation | **PE-1** Basic knowledge of technology | 4. When planning my classes I include software tools to deliver them.<br>5. I help my students use technological resources in my areas/subjects.<br>6. I use ICT to evaluate my students. |
| | **PE-2** Knowledge deepening | 7. I differentiate between specific technological resources and activities by area/subject.<br>8. I use assessment scales to evaluate my students' level of acquisition of the objectives. |
| | **PE-3** Knowledge creation | 9. I know what the different ways in which my students learn are (handling information, reasoning, planning, reflecting, problem solving, collaborating, etc.).<br>10. I plan activities to make my students use ICT to reason, plan, reflect, solve problems, and collaborate.<br>11. I teach my students to use ICT to search, manage, analyse, integrate, and evaluate information.<br>12. I teach my students to use ICT to communicate and cooperate with each other.<br>13. I teach my students technological tools to self-evaluate their performance in my areas/subjects. |

| Dimensions | Indicators | Items |
|---|---|---|
| Methodological and didactic aspects | **MD-1** Basic knowledge of technology | 14. I know methodological and technological strategies to ensure students meet the objectives in each area/subject.<br>15. I carry out activities with technological tools (presenting content, practical work, demonstrations, etc.).<br>16. I use presentations and other IT resources in my teaching work: presenting topics, giving examples, etc. |
| | **MD-2** Knowledge deepening | 17. I am familiar with the collaborative learning methodology based on projects and ICT.<br>18. I select problems from my students' real life to introduce projects in class.<br>19. I prepare online (virtual) resources that help to deepen my students' understanding of the areas/subjects.<br>20. I provide tasks to make my students collaborate to solve a project or problem.<br>21. I suggest teamwork projects that include IT tools so that my students reason, dialogue, and solve problems.<br>22. I collaborate with other teachers to develop classroom projects and solve real-life problems. |
| | **MD-3** Knowledge creation | 23. I know what my abilities are in reasoning, problem-solving, and creating knowledge and activities for each of my areas/subjects.<br>24. I prepare online materials and activities so that students will collaborate on problem solving, research tasks, and creative activities.<br>25. I help my students create their own learning activities, projects, research or creative activities.<br>26. I teach my students to use technological tools for their own projects.<br>27. I help my students reflect on their own learning. |
| Knowledge and use of ict | **ICT-1** Basic knowledge of technology | 28. I am familiar with the basic functioning (hardware) of desktop computers, laptops, printers, scanners, etc.<br>29. I know how to use word processors (editing, formatting, and printing texts).<br>30. I know how multimedia presentations work (slideshows).<br>31. I know how to use graphics editing software such as Photoshop.<br>32. I know how to use a browser to access a web page on the internet.<br>33. I know how to use search engines like Google to find websites dedicated to specific topics.<br>34. I can set up an email account.<br>35. I know computer programs (tutorial software, instructional software, practices) for each area/subject that I teach.<br>36. I know how to find pre-prepared educational ICT applications, evaluate them, and adapt them to my students' needs. |

| Dimensions | Indicators | Items |
|---|---|---|
| Knowledge and use of ict | **ICT-1** Basic knowledge of technology | 37. I use some online resources (intranet, educational platform, virtual classroom, webpage, etc.) to monitor attendance, give marks, tutor students, etc.<br>38. I use different technology tools for communication and collaboration (exchanging texts, videoconferencing, blogs, chats, forums). |
| | **ICT-2** Knowledge deepening | 39. I use specific technological tools in my areas/subjects so that the students use them to explore.<br>40. I evaluate the precision and usefulness of on-line technological resources for learning based on projects in each area/subject.<br>41. I use authoring tools (JClic, Constructor, Quadernia, etc.) to prepare online educational activities in my areas/subjects.<br>42. I use ICT to manage, monitor, and evaluate my students' learning progress.<br>43. I use ICT to communicate and cooperate with students, colleagues, parents, etc.<br>44. I use a network (intranet, virtual classroom, etc.) so that my students collaborate inside or outside school.<br>45. I use internet search engines, online databases, blogs, or email to find collaborators to develop research or innovation projects in my areas/subjects. |
| | **ICT-3** Knowledge creation | 46. I show computer programs so that my students innovate and create their own activities (web editing, picture editing, etc.).<br>47. I use virtual environments (virtual classroom, knowledge building environments) so that my students create their own activities.<br>48. I show my students technological tools to help them plan self-learning activities. |
| Managing ict resources | **MR-1** Basic knowledge of technology | 49. I use the computer room to complement the teaching delivered in my classroom.<br>50. I know the most appropriate methodological organisation to use technological resources in class (workshop, corner, individually, etc.).<br>51. I organise my own classroom so that my students work with ICT resources in class. |
| | **MR-2** Knowledge deepening | 52. I install computers and technological resources so that my students collaborate in class (laptops, tablets, interactive whiteboards, etc.).<br>53. I provide the appropriate organisation and technological resources for running project-based activities. |
| | **MR-3** Knowledge creation | 54. I help other teachers to integrate ICT in their areas/subjects and in their teaching practice.<br>55. I collaborate in innovation in my school and in continuous ICT training for my colleagues.<br>56. I help train my colleagues to integrate ICT in their classes. |

| Dimensions | Indicators | Items |
|---|---|---|
| Teacher professional development in ict | **TT-1** Basic knowledge of technology | 57. I use technological resources (text editors, spreadsheets, databases, email, blogs, etc.) in my day-to-day teaching and administration work to improve my performance in all tasks.<br>58. I use technological resources (online courses, etc.) in my training in my areas/subjects (methodology, evaluation, planning, etc.). |
| | **TT-2** Knowledge deepening | 59. I use ICT to find and share resources that support the development of educational activities and my teacher training.<br>60. I use ICT to access expert forums and learning communities relating to my teaching activity.<br>61. I use ICT to search for, process, analyse, integrate, and evaluate information for my own teacher training. |
| | **TT-3** Knowledge creation | 62. I continuously evaluate my teaching practice to innovate and improve in the educational field.<br>63. I present ideas for innovation and improvement in the integration of ICT in professional forums. |

Source: Own elaboration.

### 2.5. Data collection and Analysis Procedure

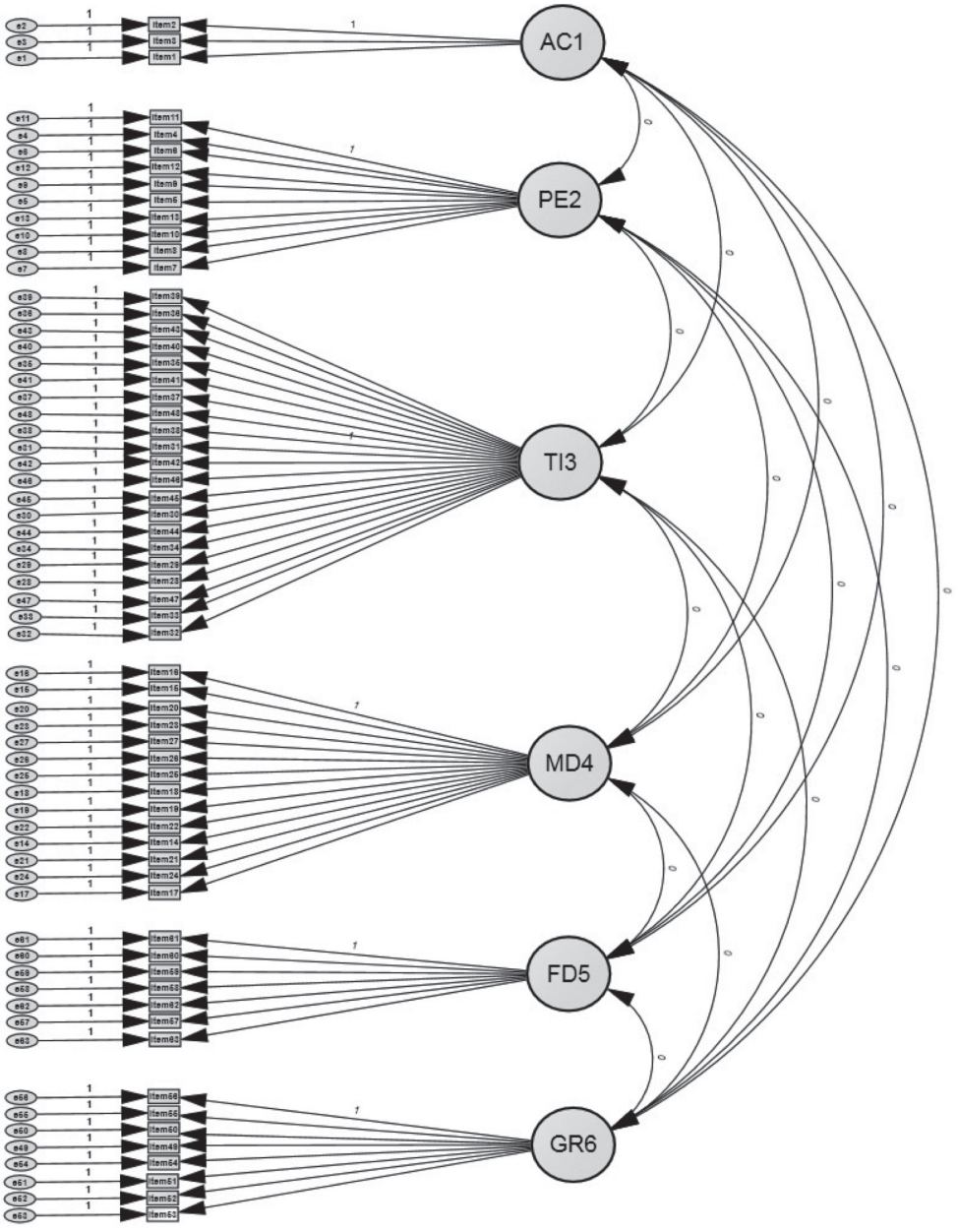
To maximise the number of participants in the study, the research team sent the questionnaires to the schools on hard copies. The printed format was chosen in preference to online questionnaires to improve the response rate for the sample gathered, as some authors have attributed low response rates to online questionnaires (de Rada, 2012). The questionnaires were accompanied by a letter providing information about the objective of the study. Once completed they were returned to a letter box provided for this purpose to protect the anonymity of the participants. Finally, the members of the management team were told that at the end of the study, they would be given a detailed analysis of the results for the teaching staff from their school, comparing them with the rest of the sample that took part in the study so that the centres would derive a genuine benefit from the diagnosis of their teaching staff's digital competencies.

## 3. Results

### 3.1. Reliability of the Instrument

When interpreting the overall Alpha of the instrument for measuring teachers' ICT training profile, an excellent level was obtained (Cronbach's $\alpha$ = .973) according to the valuations established by George and Mallery (2003, p. 231). This was also the case for the indices of homogeneity for the items («Corrected item-total correlation»). These values were greater than .3 (frequencies: 0.3-0.39 = 1 item; 0.4-0.49 = 11 items; 0.5-0.59 = 15 items; 0.6-0.69 = 30 items; 0.7-0.79 = 6 items), indicating that the distribution of the frequencies of the items displays significant

GRAPH 1. Initial model for measuring teachers' ICT training.




Source: Own elaboration.

variability. The analyses of the reliability of each of the dimensions individually gave reasonably good results. The excellent levels for dimensions that are very important for the construct studied stood out. For example, Methodological Aspects (MA - α = .903) and use of ICT (ICT - α = .935). In contrast, the General Cur-

riculum Aspects (CA - α = .738) have acceptable values that could be improved in future, either by improving their preparation, or by increasing the number of items in this specific dimension. The values of the discrimination coefficient of the final items varied between .334 and .743.

### 3.2. Construct Validity (Confirmatory Factor Analysis)

Once the theoretical foundation had been prepared through a literature review that made it possible to establish the structure of the questionnaire (Table 3) and after validating its content through expert evaluation, confirmatory factor analysis was performed by using structural equation modelling to evaluate the construct validity of the instrument. To do so, the rules for correspondence and relationships between the latent and observed variables that this questionnaire measures were specified. Accordingly, the initial measurement model was proposed (Graph 1), including all of the indicators set out in the theory. This model comprises 6 latent variables, 63 observed variables (these correspond to the items on the questionnaire from Item 1 to Item 63) and 63 error terms (from e1 to e60). Similarly, 63 factor loadings and 63 regression weights were defined among the error terms and their associated variables. The six correlations between the main latent factors were included and all of the error terms were regarded as un correlated.

In order to assume multivariate normality, the kurtosis coefficient and its critical ratio were used (Mardia's normalized estimate of multivariate kurtosis), giving values below 5 for all items (Table 4), figures that reflect multivariate normality (Byrne, 2010; Bentler, 2005).

TABLE 4. Multivariate Normality: Multivariate Kurtosis and critical ratio.

| | Min. | Max. | Kurtosis | Critical Ratio |
|---|---|---|---|---|
| Item28 | 1 | 5 | 0.306 | 2.368 |
| Item1 | 1 | 5 | -0.479 | -3.702 |
| Item3 | 1 | 5 | -0.379 | -2.929 |
| Item2 | 1 | 5 | -0.58 | -4.48 |
| Item29 | 1 | 5 | 0.554 | 4.28 |
| Item30 | 1 | 5 | -0.403 | -3.112 |
| Item31 | 1 | 5 | -1.02 | -7.882 |
| Item34 | 1 | 5 | 0.37 | 2.858 |
| Item39 | 1 | 5 | -0.786 | -6.073 |
| Item40 | 1 | 5 | -0.531 | -4.107 |
| Item41 | 1 | 5 | 0.295 | 2.283 |
| Item43 | 1 | 5 | -1.088 | -8.41 |
| Item44 | 1 | 5 | 0.302 | 2.332 |
| Item45 | 1 | 5 | -0.749 | -5.784 |

| | Min. | Max. | Kurtosis | Critical Ratio |
|---|---|---|---|---|
| Item46 | 1 | 5 | 0.357 | 2.755 |
| Item47 | 1 | 5 | 0.895 | 4.643 |
| Item48 | 1 | 5 | 0.048 | 0.373 |
| Item56 | 1 | 5 | -0.591 | -4.566 |
| Item55 | 1 | 5 | -0.661 | -5.104 |
| Item54 | 1 | 5 | -0.544 | -4.202 |
| Item53 | 1 | 5 | -0.198 | -1.526 |
| Item52 | 1 | 5 | 0.081 | 0.623 |
| Item51 | 1 | 5 | -0.698 | -5.395 |
| Item50 | 1 | 5 | -0.788 | -6.09 |
| Item49 | 1 | 5 | -1.061 | -8.202 |
| Item62 | 1 | 5 | -0.841 | -6.502 |
| Item61 | 1 | 5 | -0.819 | -6.331 |
| Item60 | 1 | 5 | -0.917 | -7.085 |
| Item59 | 1 | 5 | -0.674 | -5.209 |
| Item58 | 1 | 5 | -0.86 | -6.643 |
| Item57 | 1 | 5 | -0.554 | -4.278 |
| Item26 | 1 | 5 | -0.54 | -4.171 |
| Item25 | 1 | 5 | -0.776 | -5.999 |
| Item24 | 1 | 5 | -0.096 | -0.743 |
| Item22 | 1 | 5 | -0.797 | -6.156 |
| Item21 | 1 | 5 | -0.698 | -5.393 |
| Item19 | 1 | 5 | -0.218 | -1.688 |
| Item17 | 1 | 5 | -0.7 | -5.411 |
| Item16 | 1 | 5 | -0.964 | -7.447 |
| Item15 | 1 | 5 | -0.796 | -6.152 |
| Item7 | 1 | 5 | -0.784 | -6.06 |
| Item13 | 1 | 5 | -0.041 | -0.316 |
| Item12 | 1 | 5 | -0.72 | -5.561 |
| Item11 | 1 | 5 | -0.85 | -6.568 |
| Item5 | 1 | 5 | -0.846 | -6.535 |
| Item10 | 1 | 5 | -0.795 | -6.143 |

Source: Own elaboration.

Next, after specifying the model, its parameters were estimated using the maximum likelihood method (ML). This is the most efficient and unbiased method when the assumptions of multivariate normality are met, and it is sufficiently robust not to be affected by small variations from the multivariate normal distribution (Hayduk, 1996).

Among the results from this model (Table 5), we can see how the indices of fit of the CFI model (= .607) and IFI model (= .607) are below the 0.90 required according to Kline (2010). This is partly due to factor loadings for items 8, 9, 23, 6, and 27 below the value of 0.5 identified as necessary by Byrne (2010), and so these items were eliminated.

TABLE 5. Summary of the indices of fit of the initial and final models for measuring the teacher training profile in ICT.

| Measure | Recommended level of fit | Value Initial Model | Value Final Model |
|---|---|---|---|
| CMIN/DF | 2-5 | 14,031 | 5,138 |
| IFI<br>CFI | > .9 | .607<br>.607 | .905<br>.905 |
| PRATIO<br>PNFI<br>PCFI | > .7 | .968<br>.57<br>.587 | .928<br>.824<br>.841 |
| RMSEA<br>LO90<br>HI90 | < .06 | .095<br>.094<br>.096 | .056<br>.052<br>.055 |
| HOELTER.05<br>HOELTER.01 | > 200 | 108<br>110 | 300<br>310 |

Source: Own elaboration.

To continue with the process of checking the model's fit, the table of modification indices was used to evaluate the inclusion of some covariances between error terms that would reduce the chi-squared statistic markedly, some of them being justifiable from a theoretical position. A significant correlation was observed between various terms: the ones that correspond to our dimensions and to UNESCO's subdimensions or profiles. In light of this, given the high number of correlations found between error terms, it appeared to be advisable to create latent factors intended to fit these correlations between the error terms, using the theoretical definition of each of the items in the questionnaire to do so.

TABLE 6. Modification indices.

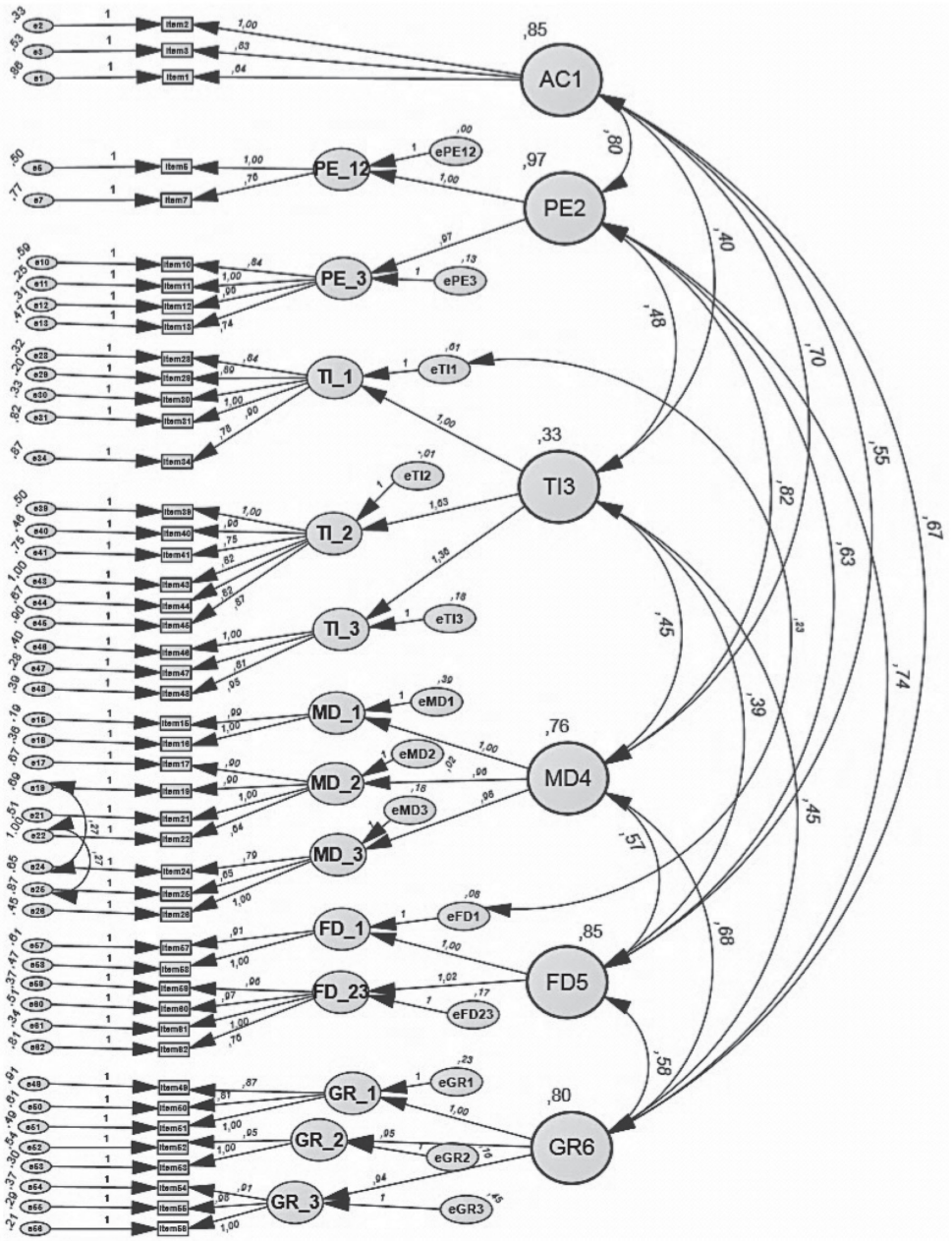
| Modification indices | | | M.I. | Par Change |
|---|---|---|---|---|
| e1 | <--> | eIT1 | 78.774 | .175 |
| e45 | <--> | e44 | 57.645 | .165 |
| eIT1 | <--> | Teacher Training | 112.079 | .155 |

| Modification indices | | | M.I. | Par Change |
|---|---|---|---|---|
| e1 | <--> | Teacher Training | 72.3 | .154 |
| eIT1 | <--> | eTT23 | 97.42 | .138 |
| e17 | <--> | e1 | 41.542 | .137 |
| e44 | <--> | eIT3 | 94.905 | .131 |
| e51 | <--> | e52 | 52.046 | .13 |
| e50 | <--> | e1 | 34.021 | .124 |
| e31 | <--> | e30 | 56.978 | .122 |
| e41 | <--> | e31 | 30.294 | .122 |
| e47 | <--> | e44 | 82.654 | .12 |
| e5 | <--> | e49 | 32.08 | .116 |
| e22 | <--> | e62 | 20.305 | .107 |
| e43 | <--> | eIT1 | 24.621 | .105 |
| e26 | <--> | e46 | 48.556 | .104 |
| e50 | <--> | eIT1 | 35.029 | .104 |
| e45 | <--> | e43 | 15.587 | .104 |
| e51 | <--> | eRM2 | 47.858 | .102 |
| e49 | <--> | ePE12 | 31.679 | .102 |
| e22 | <--> | eRM3 | 25.455 | .102 |
| e57 | <--> | e43 | 20.165 | .102 |
| e47 | <--> | e45 | 42.666 | .1 |
| e26 | <--> | e45 | 22.58 | -.097 |
| e43 | <--> | e41 | 16.24 | -.097 |
| eIT3 | <--> | Teacher Training | 72.808 | -.099 |
| e3 | <--> | eRM1 | 41.041 | -.101 |
| e44 | <--> | eGR1 | 36.803 | -.103 |
| e45 | <--> | e39 | 32.19 | -.11 |
| e54 | <--> | eRM3 | 65.013 | -.111 |
| e49 | <--> | e45 | 22.025 | -.123 |

Source: Own elaboration.

When the new factors are included in the model, the modification indices showed the advisability of some covariances between error terms that would reduce the chi-squared statistic markedly, some of which are justifiable from a theoretical position. Specifically, correlations were possible between error terms e19 and e24, as both refer to the preparation of digital educational resources, and between e22 and e26 as they refer to the development of work and collaboration projects with teachers and students.

GRAPH 2. Final model for measuring teachers' ICT training.




Source: Own elaboration.

Consequently, a FINAL Model was devised which has a very good level of fit (Graph 2) and includes all of the changes made, with RMSEA values very close to 0.05 and no modification index involving a significant change in the fit indices (Table 6).

Accordingly, a recursive model is obtained, estimated using a sample of 1,433 subjects, with 124 variables of which 46 are observed variables (corresponding with the items) and 78 are latent variables (19 are factors, 46 are error terms, and 13 are disturbance terms). Of these 124 variables, 65 are exogenous (46 error terms and 19 factors), and 59 are endogenous (46 indicators and 13 factors). In addition, 121 are parameters to be estimated, and so the model comprises 960 degrees of freedom, giving an overidentified model that can be estimated.

The indices of fit are satisfactory with a CFI of .905 and an IFI of .905. As for the residuals, a RMSEA of 0.056 is obtained and the sample size is adequate, as Hoelter's index is 300 (above 200). The parsimony ratios are also high (PRATIO = 0.928, PNFI = 0.824, and PCFI = 0.841, above 0.7).

Finally, it is worth noting the theoretical model's good fit with the definition already made through the confirmatory factor analysis regarding structural equation models. As stated above, the dimensions and profiles previously established have a reasonably good fit with the model analysed. After rejecting the items that were problematic, the fit with the theoretical model was fairly good, taking into account that UNESCO establishes three profiles for each of the dimensions in this questionnaire.

## 4. Discussion and Conclusions

This work contains an in-depth analysis of the results from the validation of an instrument to evaluate the ICT training profile of primary and secondary teachers, the theoretical basis and operational definition of which based on the standards developed by UNESCO (2008; 2011). As a result of this, six dimensions are considered in it (curriculum aspects of ICT, ICT planning and evaluation, methodological aspects in ICT, using and handling technology, managing ICT resources, and professional development in ICT). Each of these has three defined levels of development.

Specific references were found that consider in greater depth the specification of dimensions, standards, and levels of development for evaluating the digital competency of teachers in Europe (INTEF, 2017), but the study performed here has made it possible to construct its own structure of subdimensions, standards, and items based on the categories established by UNESCO (2011) at an international level. Accordingly, the relevance of this research lies in the preparation of precise standards, indicators, and items (not the ones prepared by UNESCO) that have made it possible to construct one of the few statistically robust, reliable, and valid tools available for evaluating teachers' digital competency (Tourón, Martín, Navarro-Asencio, Pradas, and Íñigo, 2018).

The theoretical approach, based on UNESCO's global standards, is based on a rigorous literature review and has made it possible to obtain optimal results in regards to the technical characteristics of the questionnaire. Its overall reliability is excellent, as is the reliability of the separate dimensions. It also has high internal consistency. In addition, it is worth not-

ing that the instrument has good content validity, supported by the consistency and rigour of the theoretical foundations and the assessment of it by a panel of experts in educational research, university academics who are experts in initial teacher training, and specialists in educational technology who evaluated the relevance to the study of the items initially proposed in the questionnaire and their clarity.

Furthermore, its construct validity was supported by the confirmatory factor analysis study, with results that showed the consistency and robustness of the factors that comprise the initial structure of the items, dimensions, and relationships that make up the questionnaire supported by the theory presented. Nonetheless, the possible impact on the results obtained of the type of sampling and sample size (Hair et al., 2009) must be considered. This highlights the desirability of expanding the study to a larger sample to increase the study's power of generalization.

Confirmatory factor analysis using the structural equation method made it possible to modify the initial model to use a structure that better fitted the construct from which it derives, UNESCO's standards of ICT competencies. Nonetheless, the results for the Curricular Aspects in ITC dimension are less consolidated results, both in the analysis of its reliability and in the confirmatory factor analysis itself, suggesting that it is necessary to improve the existing items and be more specific in the dimension by increasing the number of items that comprise it, establishing a structure in three progressive levels, as defined in the UNESCO standards.

Another of the proposed modifications to the structure of dimensions and levels of the initial teacher training profile in ICT corresponds to profiles 1 and 2 of the «planning and evaluation of the area/subject» dimension and to profiles 2 and 3 of the «teacher professional development in ICT» dimension. The correlation between its terms has made it possible to regroup them as there are no significant discrepancies in the model and because of the impossibility of leaving a factor measured by just one variable. Similarly, it is important to consider the obvious relationship between profile 1 of the «Knowledge and Use of ICT» dimension (eIT1) and the «Teacher Professional Development in ICT» dimension (eTT1), noting that both fields have a narrow variability. This is explained because the indicators that define initial digital competency involve basic knowledge of using technological resources outside pedagogical use, something that has an obvious correlation with the type of continuous training in ICT at this same level. To solve this problem, a more precise definition of each of the items that comprise the levels of these dimensions will be suggested, reiterating the need to modify the model taking into account its own theoretical basis. Similarly, future comparative studies between different models for evaluating teachers' digital competencies such as those of INTEF (2017) and UNESCO (2011) can be proposed.

In summary, the proposed instrument for measuring the teacher training profile in ICT is a relevant addition, from a theoretical perspective, because of the need to evaluate the digital competency of the

teachers who must implement the skills of the 21st century, and for their importance and reputation as standards developed by UNESCO. Similarly, the technical characteristics relating to its reliability and validity are robust and excellent, showing the consistency of the instrument through its construct validity and the satisfactory dimensional structure proposed. Therefore, in conclusion, it can be said that this study has made a contribution to the academic field of study of the digital, technological, and pedagogical competencies profile of teachers in primary and secondary education by drawing up a measurement instrument that is different, valid, and reliable and meets the objective proposed at the start of the study. The suggested construct and its operationalisation in a diagnostic tool that contributes to detecting training requirements relating to the technological gap between teachers and students require further study.

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# Teacher perception of methodological habits for informal argumentation in text commentary

## *Percepción docente sobre costumbres metodológicas de argumentación informal en el comentario de texto*

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## Abstract:

This study explores Spanish secondary-school language and literature teachers' perceptions of their habits when teaching the development of informal argumentation in textual commentary. Using a qualitative methodology with an interpretive-phenomenological design to shed light on this aim, the teachers were interviewed about this question. Then, hermeneutic units were created from the reported data using a cyclical process of segmentation, codification, and conceptualization. These were analysed using the Atlas.ti program to establish comprehensive maps of the studied reality.

The results of this research show that: teachers choose a variety of texts for preparing argumentative commentaries, favouring literary and journalistic ones with less interest in multimedia sources; negotiating text choice with students is problematic due to the low quality of the resources students provide; there is a tendency towards written commentary with limited oral interaction, despite teachers' awareness of the learning benefits that speech offers in the composition, revision and evaluation process through students' flexibility and well-founded cooperation in the learning processes. There is a strong preference for written feedback as this provides an individualised record of errors for further analysis and discursive evaluation follows guidelines and rubrics from handbooks, promoting self-evaluation and student co-evaluation with a variety of instruments. In conclusion, comparing these habits with the competence-based educational approach reveals the academicist survival of the philological canon in text selection and the cliché of commentary as an individual written practice that is more reconstructive than constructive, which hinders the democratic interest in promoting students' critical thinking, media literacy in the classroom, and oral practices in the process of teaching informal argumentation in text commentary.

**Keywords:** didactics, Spanish, Secondary Education, writing (composition), school attitudes, verbal communication.

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## Resumen:

Este estudio explora la percepción del profesorado de Lengua Castellana y Literatura de Educación Secundaria acerca de sus costumbres didácticas para el desarrollo de la argumentación informal en el comentario de texto. Desde una metodología cualitativa de diseño interpretativo-fenomenológico para esclarecer tal objetivo, se les ha entrevistado sobre dicha dimensión y por un procedimiento cíclico de segmentación, codificación y conceptualización, se han creado unidades hermenéuticas de los datos reportados que han sido analizados con el programa Atlas.ti a fin de establecer mapas de significado comprehensivos de la realidad estudiada.

Los resultados de la investigación muestran la elección docente de textos multimodales para realizar comentarios argumentativos, con preferencia por los literarios y los periodísticos e interés menor por los multimedia; la negociación problemática con el alumnado sobre la selección textual debido a la escasa calidad de los materiales que aportan y la tendencia hacia el comentario escrito con poca interacción oral aun sabiendo el provecho formativo que la oralidad reporta al proceso de redacción, revisión y evaluación del texto en agilidad y cooperación argumentada de los aprendizajes. Predomina la corrección escrita por dejar constancia individualizada de errores para la reflexión ulterior y, su evaluación discursiva sigue guías y rúbricas de manuales alentando la autoevaluación y la coevaluación discente con instrumentos variados. En conclusión, el contraste de tales costumbres con el enfoque educativo competencial revela la pervivencia academicista del canon filológico en la selección textual y del tópico del comentario como práctica escrita individual más reconstructiva que constructiva, lo cual merma la voluntad democratizadora de empoderar al alumnado en su pensamiento crítico, la promoción de su alfabetización mediática en el aula y las prácticas orales en el proceso didáctico de la argumentación informal en el comentario de texto.


**Descriptores:** didáctica, español, Educación Secundaria, escritura (composición), actitudes escolares, comunicación verbal.

## 1. Introduction

This study presents the results of exploratory research into the views of Spanish secondary school level language and literature teachers of their own methodological habits when they cover informal reasoning in teaching textual commentary. This research was carried out as part of the R&D&i project reference EDU2014-56997-P in the Excellence category corresponding to the State Programme to Promote Scientific, Technical and Innovation Research 2013-2016, sponsored by the Ministry of the Economy and Competitiveness (MINECO). It contributes to advancing international research into teachers' views of the process of composition in academic writing, research that mainly focusses on higher education (Ballano and Muñoz, 2015; Björk and Räisänen, 1997; Carlino, 2013; Castelló, 2015; Castelló and Mateos, 2015; Hyland, 2002; Kruse, 2013; Marín, López, and Roca, 2015; Tolchinsky, 2014), given how educationally important teachers' and students' argumentative compe-

tency is in this stage for establishing the validity of academic discourse (Araya and Roig, 2014; Cano and Castelló, 2016; Prados and Cubero, 2016).

Studies on academic writing that focus on secondary education are less common (Applebee and Langer, 2009; Solé et al., 2005; Villalón and Mateos, 2009) and ones referring to argumentative practice are rare (Melero and Gárate, 2013, Sachinidou, 2015). These studies generally show that its teaching and learning in the 21st century displays the continued existence of traditional habits that are closer to reproductive writing than reflexive and epistemic writing. This aspect, as Bordieu and Passeron (1981) noted, corresponds with the *symbolic violence* that prevails in classrooms as certain pedagogical actions arbitrarily impose themselves as legitimate in accordance with what Jackson (1975) describes as the *hidden curriculum*, routine habits that obey authority. This derives from a lack of democratisation in teaching and diversity in learning, as well as the assertion of the school text book as a model of cultural reproduction (Torres, 1991).

This study sets out to reveal teachers' social representations of academic writing in secondary education to understand the current meaning they give their everyday practices. This has the dual aim of examining the state of the art regarding the model of language education best practice which is based on situated learning contexts that characterise the communicative competency focus and of deconstructing their stated objections to the socio-educational changes that this new focus entails in teaching writing. Specifically, this is a pioneering initiative in its scrutiny of the viability of informal reasoning through its didactic possibilities in the discursive practice of textual commentary, in accordance with scientific foundations that are suited to the expectations regarding competencies of current education.

This competence pathway is illuminated by the protocols of the Common European Framework of Reference for Languages (CEFR), published by the Council of Europe (2001) to promote multilingualism and create consistency and transparency with levels of linguistic command across language programmes, and by the curriculum of the Instituto Cervantes (*Plan curricular del Instituto Cervantes*, 2006) regarding the large-scale functional features of the argumentative text type, especially in relation to archetypal processes and resources for development, inserting appropriate sequences, and verbal elements.

An important theoretical framework is also provided by various scientific publications about informal argumentation that cover day-to-day situations for arguing without fallacies (Lo Cascio, 1998), and by ones that cover reflexive actions with a dialogic perspective at the level of the enunciation (Camps, 1995; Ducrot, 1988), critical discourse analysis (Álvarez, 2001), and semantics that promote the development of a personal and committed meaning (Azevedo, 2006; Cros, 2003; Corcelles, Castelló, and Mayoral, 2016).

Regarding textual commentary, going beyond the academicist models where the reader's perspective was negated

with the single aim of reconstructing the author's intentions (Marín, 1989) and the writer's perspective was limited to summarising the content of the text and listing linguistic details, personal critical commentary is promoted, accepting the pragmatic-dialectical methodology where the commentator champions her own position in the face of likely counter arguments (Eemeren, 2010; Marraud, 2017; Nussbaum, 201) and, in particular, the dialogic methodology is aimed for which establishes various connecting arguments, such as hypotheses through abductive inference (Duarte, 2015), establishing intertextual links in the reading with anthologies with multiple text types that collect texts on a single subject, providing for interpretative reading (Mendoza, 2001), discussions that build shared ideas and opinions (Vega and Olmos, 2011), a portfolio for students to self-evaluate their own learning, and democratising writing practices (Cassany, 2008). These are the conditions that enable the development of informal argumentation in critical personal textual commentary (Caro, 2015; Caro and González, 2012).

In light of the foregoing, the general aim of this work is to explore the academic habits of teachers regarding the appropriate methodology for developing informal reasoning in textual commentary. This is done with the following specific objectives:

— To establish the variety of text types chosen by the teachers for students to prepare text commentaries and the reasons for choosing them, with special focus on the case of multimedia texts.

— To verify whether there is a willingness to negotiate with students on the choice of texts for oral and written commentaries and the reasons for this decision by the teacher.

— To establish whether teachers design textual commentary tasks to combine oral and written activities, and what process sequence they use.

— To clarify the feedback and evaluation strategies and methods for textual commentaries that teachers and students use (oral/written, group/individual, with/without rubric; heteroevaluation, self-evaluation, and coevaluation).

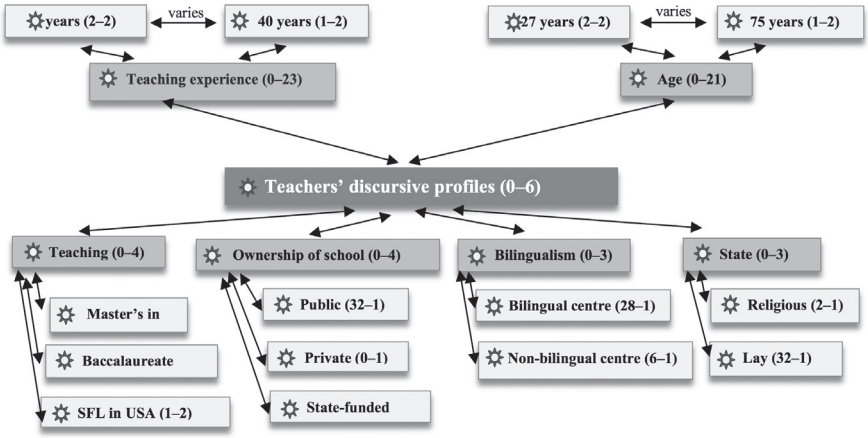
## 2. Method

This study uses a qualitative methodology with an interpretative-phenomenological design to examine in-depth the results that give academic teaching habits meaning (Flick, 2007; Tójar, 2006). The information was obtained by interviewing teaching staff to examine the key aspects of their professional profile and experience on the topic that gives its name to the research project (León and Montero, 2015).

### 2.1. Sample

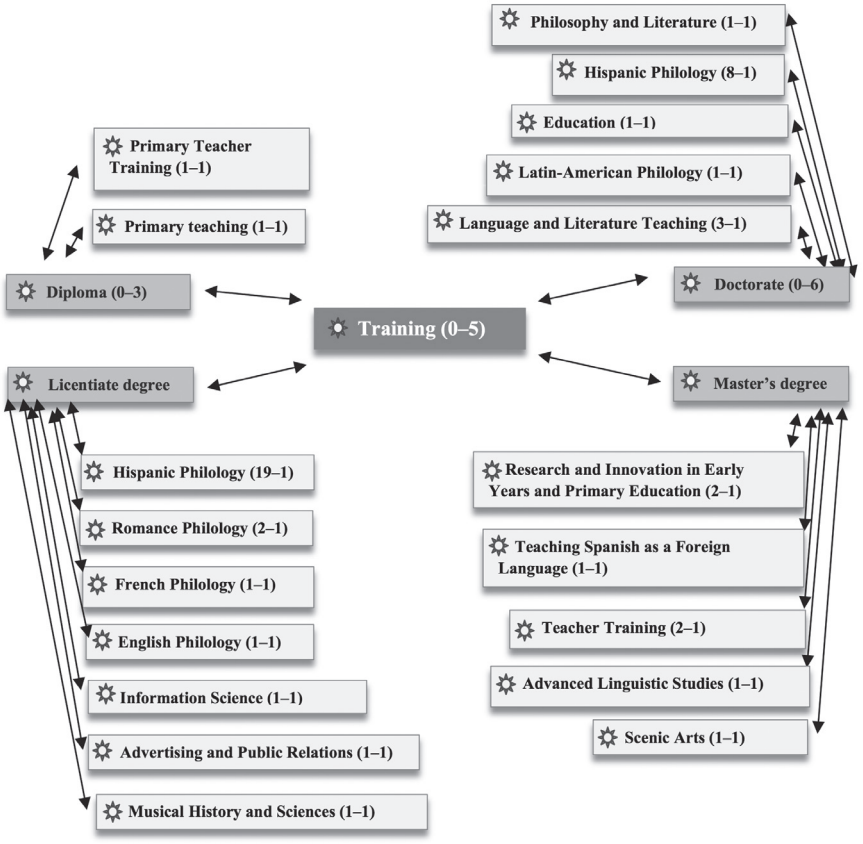
The key informants-participants were 34 Spanish Language and Literature teachers resident in Spain, whose discursive profile is shown in Graph 1 which shows their sociodemographic and professional differences.

GRAPH 1. Semantic network of teachers' discursive profiles.




Source: Own elaboration.

GRAPH 2. Semantic network of teachers' training.




Source: Own elaboration.

Their ages range from 27 to 75, they have 2 to 40 years teaching experience, and their academic training (Graph 2) includes diplomas (2), licentiate degrees (26), master's degrees (7), and doctorates (14). They teach the Spanish Baccalaureate (26), the Master's in Training Secondary School Teachers (12), and Spanish as a foreign language in the USA (1). The schools they work at are mainly publicly owned (32) and secular (32), and their syllabuses mostly follow the bilingual programme.

## 2.2. Instrument

In accordance with the proposed objectives, the group of researchers involved in the project designed a semi-structured interview script (Table 1). The content of this script was assessed by experts with reference to the subject matter of each question and their degree of precision and conceptual, syntactic, and structural suitability. These independent assessments were discussed and agreed with suggestions to improve the final version.

TABLE 1. Teachers' academic habits dimension Questions from the interview script.

| |
|---|
| This questionnaire will ask about your academic habits concerning what you regard as the most appropriate methodology for developing informal argumentation in textual commentary. |
| — What type of texts do you usually choose as the basis of your students' textual commentaries? Why? |
| — Do you also choose multimedia texts? Why? |
| — Do you also give your students the chance to provide texts and topics for critical commentary? Do you do this more in oral or written tasks? Why? |
| — Do you usually combine both dimensions (oral and written) for this purpose? What sequence do you use? Please explain the process. |
| — Which do you prefer? Oral or written feedback? Why? |
| — Do you give individual or group feedback on the textual commentary? What is the aim of this? |
| — Do you use a guide or rubric for any of the textual commentaries (oral-written, individual-group) that your students do? What aspects do you evaluate? Can you explain them to us? |
| — Do you encourage students to self-evaluate their own textual commentary? With which strategies? Do you use a guide, rubric, portfolio, etc.? |
| — Do you also encourage your students to evaluate their classmates' text commentaries? How do you do this? Explain it to us. |

Source: Own elaboration.

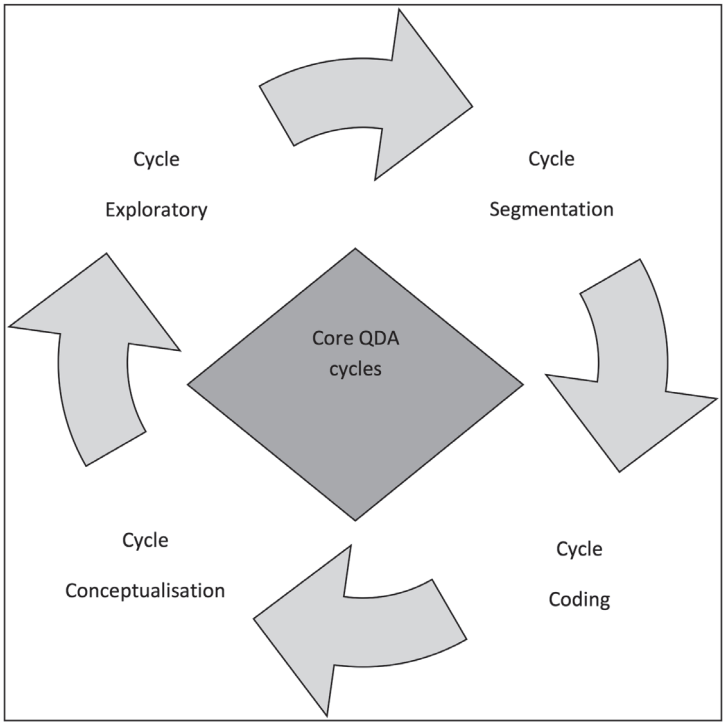
The interview is structured in four sections: introduction; sociodemographic, personal, academic, and professional details; questions; notes. The questions section is intended to consider in-depth the senses that teachers give to the use of text commentary in teaching from their own unique, idiosyncratic perspectives which are defined by their discursive profiles.

## 2.3. Procedure

The information from the interviews was transcribed into a written format as a primary source for each participant. This allowed for the creation of the corresponding hermeneutic units for analytic processing of the information using the Atlas.ti 7 program. The qualitative data analysis (QDA) was performed on two levels – the semantic content level and the discursive-narrative level – to give meaning to the qualitative information transmitted by *reducing* the set of data to «a map of meanings comprising a manageable number of elements, so that we can *arrange* them meaningfully and represent them in a way that finally allow us to *extract* and *verify* a series of comprehensive *conclusions*» about the reality studied (Miles and Huberman, 1984, p. 23).

The units of analysis were defined using thematic criteria. They were categorised-codified following an inductive system of conceptualisation of the qualitative data itself (Flick, 2007; Rodríguez, Gil, and García, 1996; Serrano, 1999). The grounded theory analytic procedure is used. As Sabariego, Massot, and Dorio explain (2012), this is exploratory as it «reveals theories, concepts, hypotheses, and propositions starting directly from the data» (p. 318). This is justified in new areas of research that still lack useful and well-funded concepts for describing and explaining events.

GRAPH 3. Core QDA cycles: textual information reduction.




Source: Own elaboration.

In the core stages of the QDA (Graph 3), the segmenting stage was preceded by the exploratory stage which is required to make appropriate decisions about the system of categories, metacategories, and families adopted. This was followed by the axial stage whose code relationships and types (descriptive, interpretative, and explanatory) correspond to the concepts transmitted by the teachers; all of this compared and agreed by two analysts. Finally, the semantic networks and matrices are used to represent graphically the information analysed.

## 3. Results

### 3.1. Results for specific objective 1

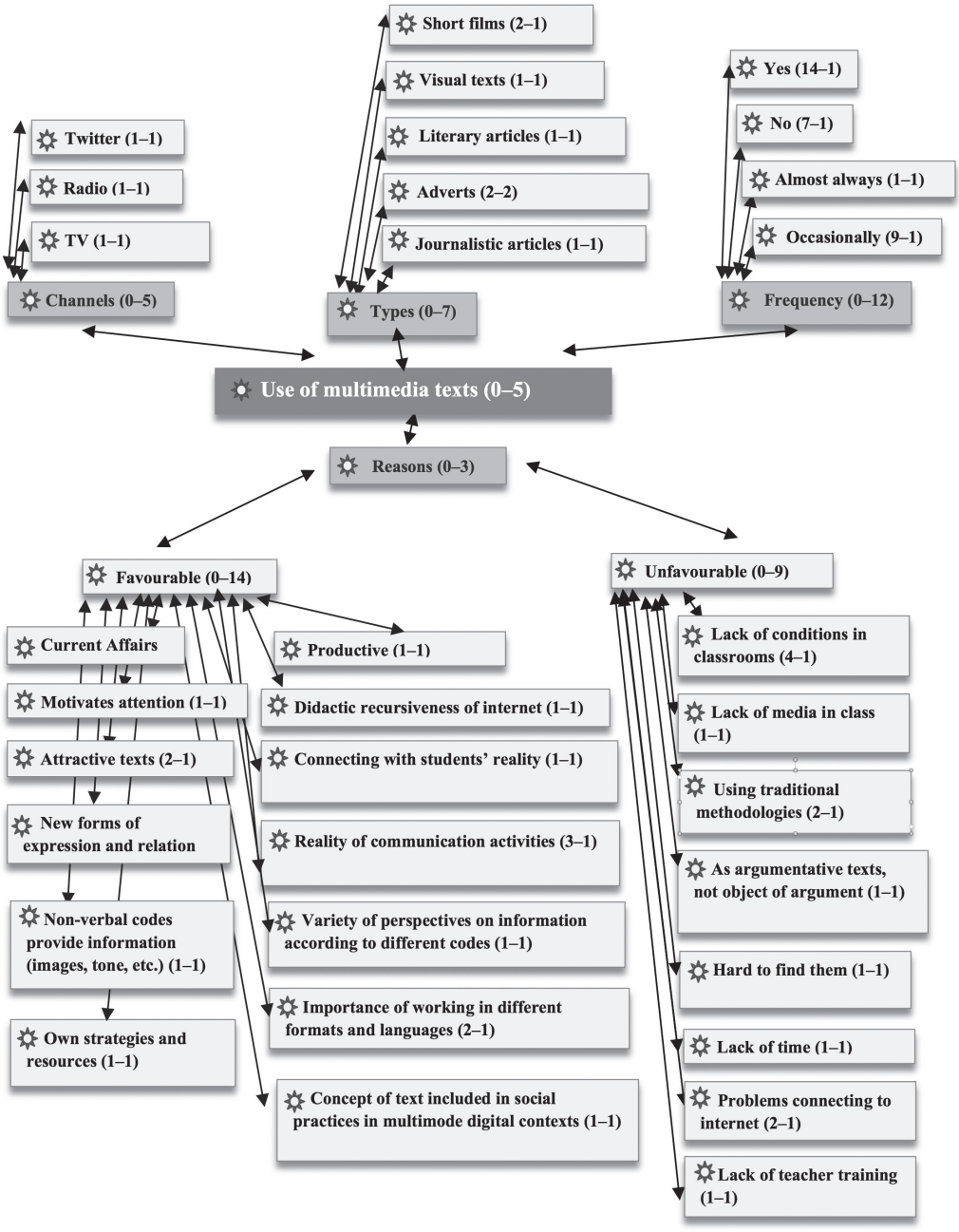
The texts teachers usually propose for their students to prepare commentaries in class have a range of types of concept depending on their thematic-linguistic specialisation (journalistic, literary, scientific, etc.), their discursive type (argumentative, expository, etc.), their channel and even other criteria, such as how contemporary they are. Some of the teachers interviewed use as criteria for selection to ensure they are appropriate to the academic level, the syllabus, texts from useful manuals, and ones collected for university entrance tests. Other teachers do not specify or prioritise any type because they use all sorts of texts to provide their students with a more comprehensive education in linguistic-cognitive skills.

There is a notable preference for journalistic texts which has two convincing argumentative justifications; on the one hand they make it possible to cover themes that are topical, global, and easy for the students to understand, and on the other, they encourage discussion and group work which develop reflexive and critical capacity, respect for other ideologies, and students' involvement in the society in which they live.

The teachers believe that journalistic and literary texts motivate students. They are also objects of study in the teaching approach for training teachers. Literary texts are associated with the established curriculum and journalistic and argumentative texts with university entrance tests. Knowledge acquisition is attributed to scientific texts and these are more appropriate for the linguistic-literary specialism of the Master's in Training Secondary School Teachers.

The results obtained regarding the didactic use of multimedia texts show many arguments for and against (Graph 4). The possible types of them include short films, adverts, visual texts, and journalistic and literary articles. The teachers whose answers included the broadcast channels identified television, radio, and the Twitter social network.

GRAPH 4. Semantic network of use of multimedia texts by teaching staff.




Source: Own elaboration.

The results relating to the teachers' use of multimedia texts show differences of opinion regarding the high or low frequency and in arguments for and against. The problems do not derive from their teaching efficacy but from

the lack of appropriate equipment inside and outside the classroom, teaching hours for working on them, good online materials, and teachers' skills at finding them. Multimedia texts are sometimes used as reference material to support the text being studied, but as such are not part of the body of texts used for commentary. The lack of training in media literacy for teachers to handle digitised texts well –often audiovisual ones– is also identified. This often means they favour using traditional methodologies.

The teachers understand that using multimedia texts makes it possible to consider in-depth digital and practical social contexts connected to the everyday reality of the students, with the motivation, appeal, and involvement derived from this. They are aware that multimedia texts are linked to the new forms of communication, the multiple formats and languages, the approach to studying non-verbal codes, working on the viewpoint, and triangulating the information, all of which requires the development of particular strategies and resources.

### 3.2. Results for specific objective 2

The discursive variant that considers in depth the opportunity teachers offer their students of contributing texts and topics for critical commentary shows results aimed at encouraging students to participate in their learning in an active and connected way. Teachers regard this as positive and constructive for students as it helps make them interested and involved, gives them practical training, and improves their skills. The students learn to *look* at what surrounds them and they find it easier to argue and interpret topics and texts that they have found and selected themselves to create a mosaic of ideas that represent the set of freedoms of society. As they are citizens situated in a social, political, and cultural context, it is important to encourage their critical and self-critical spirit. Likewise, students' contributions in audiovisual formats stands out, as does creating blogs to organise consultation material about what has been experienced.

Some teachers comment on the limited success of this practice, as students do not generally contribute texts and the ones they do suggest are simplistic and clichéd. Therefore, some teachers believe it is better if the students only suggest themes. Furthermore, teachers see other added difficulties: finding interesting topics for the whole group-class and ideal texts for analysis and, in addition, knowing that their students only read texts for obligation and are not inclined to accept new suggestions for what to read.

They note that in oral commentary, students are encouraged to exchange interesting ideas and topics, and faced with the difficulty of selecting texts for these purposes, they increase the range of topics. In contrast, some of the interviewees –teachers on the Master's in Training Secondary School Teachers– state that this type of contribution is done in the written commentary tasks, as the final research task students perform –the master's dissertation– is fundamentally evaluated based on their written report.

### 3.3. Results for specific objective 3

The results of the examination of teachers' habits in the design of didactic tasks concerning textual commentary that combine the oral and written dimensions show the limited use of the oral mode owing to the lack of teaching time, the difficulty of equally combining the two dimensions, and the view of the written dimension as fundamental for consolidating the process of working on and perfecting textual commentary (Graph 5). Writing takes precedence over speech because there is a preference for reinforcing the teaching of it as it is deemed to involve more problems with expression. It is even noted that there is a tendency for the students do less work on oral expression in the school as their socioeconomic level rises, as the correct practice of it is acquired in the home environment. In any way, most of the teachers consulted claim that the fact that oral expression is neglected in the classroom must be rectified in a coordinated way and in connection with the written language tasks.

The results that acclaim work on the oral dimension, emphasising its teaching benefits and advantages, relate to the students' involvement in the scheduled tasks: teachers use it to encourage students to participate in class and see it as a resource for motivating students and building a connection with them, which should also be relied on in commentaries on oral texts, for example, videos.

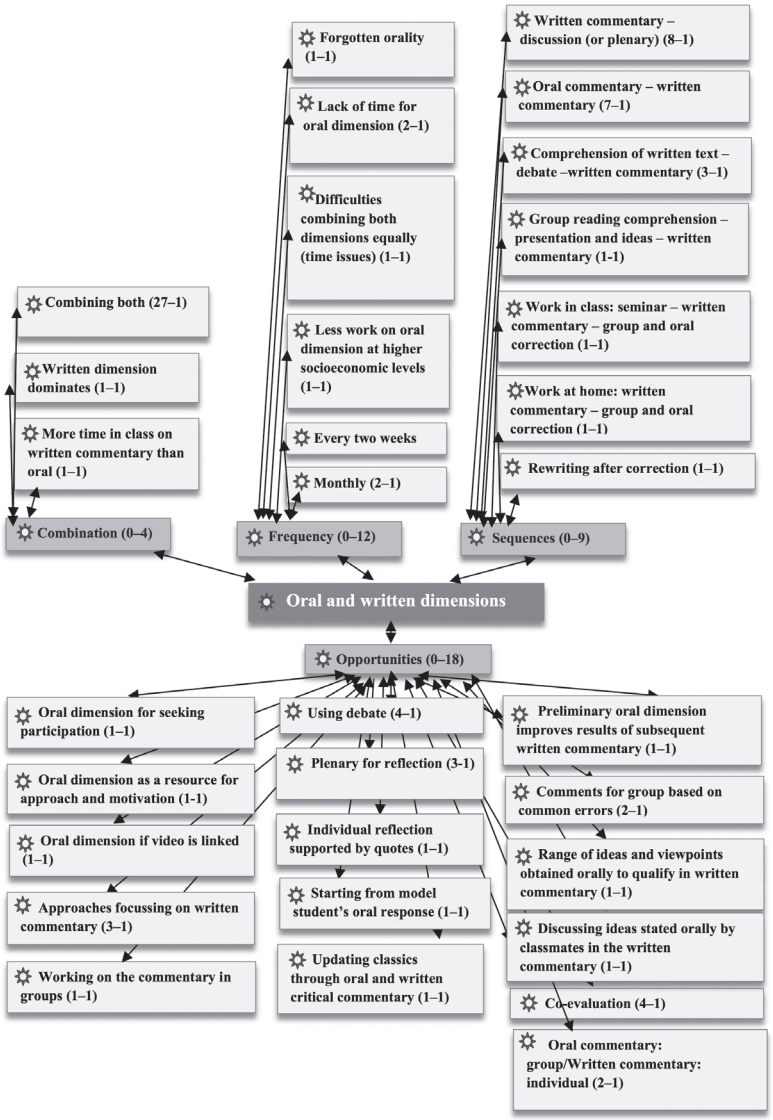
Despite the time limitations that affect the oral dimension, it is interesting to note that most teachers believe it is advisable to combine both dimensions: one sector favours starting with an individual written commentary and ending with a group reflection task, plenary, and discussion; another group of the same size favours starting with oral practice so that the students can then shape their final written commentary. Some interviewees include an initial phase of reading comprehension of the written text, either as a group task in class or individually at home, focussing on solving all key elements for subsequent interpretation and taking a critical position.

Other situations that make it possible to differentiate the type of organisation or sequence in the commentary are provided by the time available in class (written commentary if there is ample time, oral commentary if there is limited time) and the type of cooperative work by students (oral commentary in group, written commentary if working individually). The students are often organised into small groups before the joint oral discussion in the class-group.

In addition, the key informants talk about the process and the features of its didactic phases in depth. An initial oral stage using discussions provides training to help improve the result of subsequent written commentaries, as an initial analysis of a group of ideas and various points of view can be qualified, specified, and personalised coherently in writing in the second phase. After the discussion, students are also encouraged to prepare a written personal critical commentary in which they argue their position in the face of the oral opinions of their classmates. On other occasions, the teacher suggests the directions the commentary can follow.

Individual reflection based on quotes and authoritative arguments is encouraged. Rewriting and remodelling what was initially written after an initial correction by the teacher is also regarded as important. The teachers sometimes ask students to draw up a mind map after the students reading their written commentaries, and it is even worth updating the interpretation of the classics by comparing their message with topical issues that are relevant to the students.

GRAPH 5. Semantic network on the use and sequence of the written and oral dimensions in textual commentary.




Source: Own elaboration.

Finally, the oral element of the final phase of correcting the commentary allows the teacher to offer appropriate instructions based on common errors spotted in the teaching process. Co-evaluation can also be used as a feedback strategy.

### 3.4. Results for specific objective 4

The process of feedback and evaluation of the textual commentary uses a discursive variant that differentiates written feedback from oral feedback. The results obtained show, thanks to its significant frequency, that most teachers prefer a combination of the two types of feedback, as they are different, complementary, fundamental, and require particular handling as they are linked to different forms of expression. In contrast, the feedback sequence reported by some teachers places written feedback before the oral revision. At other times, the practice of commenting out loud on the written activity is mentioned.

The results concerning the particular features of written feedback emphasise its individual efficacy as it allows teachers to be more precise and detailed in their corrections of grammar, spelling, and the argument, as well as observing the correct progress of each student. Written feedback requires more time from the teacher, but does offer a more thorough overview of each case. It enables students to organise their thinking better, encourages knowledge retention, and increases time for reflecting on suggested improvements. Furthermore, any written feedback leaves proof of the work done and becomes material for evaluation. Finally, compared with oral feedback, written feedback avoids putting students on the spot as it does not show the rest of the class their possible errors and suggestions for improvement.

On the other hand, oral feedback is direct, fast, constructive, effective, and enriching; it positively recognises the student's efforts, makes it possible to share good points and errors in class, and allows students to judge their own intervention. It also develops their critical spirit and civic tolerance to opposing views. It makes it possible to check the students' comprehension immediately and improve their communication, including non-verbal forms. In addition, all of these positive aspects of oral feedback are reflected in written expression.

The discursive variant focussing on individual and group feedback on the textual commentary again offers results aimed at the interviewees' preferences for a combination of both. Some teachers also identify individual feedback with the written form and group feedback with the oral form. Teachers who use both confirm that this way they respond to the range of students, improving their learning. In relation to the sequence of work, they tend to start with individual feedback, followed by group feedback, although they maintain that using each type depends on the students' level. Likewise, those who use both types of feedback sometimes favour individual feedback and sometimes group feedback.

The results that go into depth on individual feedback focus on examining the particular good points and errors as each

student has their own distinctive critical capacity and reasoning. Individual feedback is taken on by the student with a more central role and responsibility. In addition, written feedback enables students to become better aware of their errors than group feedback in order to improve their discourse in future textual commentaries. The interviewees from the Master's in Training Secondary School Teachers link this type of feedback to the individual tutorial sessions. Finally, individual feedback frequently takes place after the group briefing, as a process of reflection on the individual's strong and weak points, a feedback process of good practices in the commentary between the students.

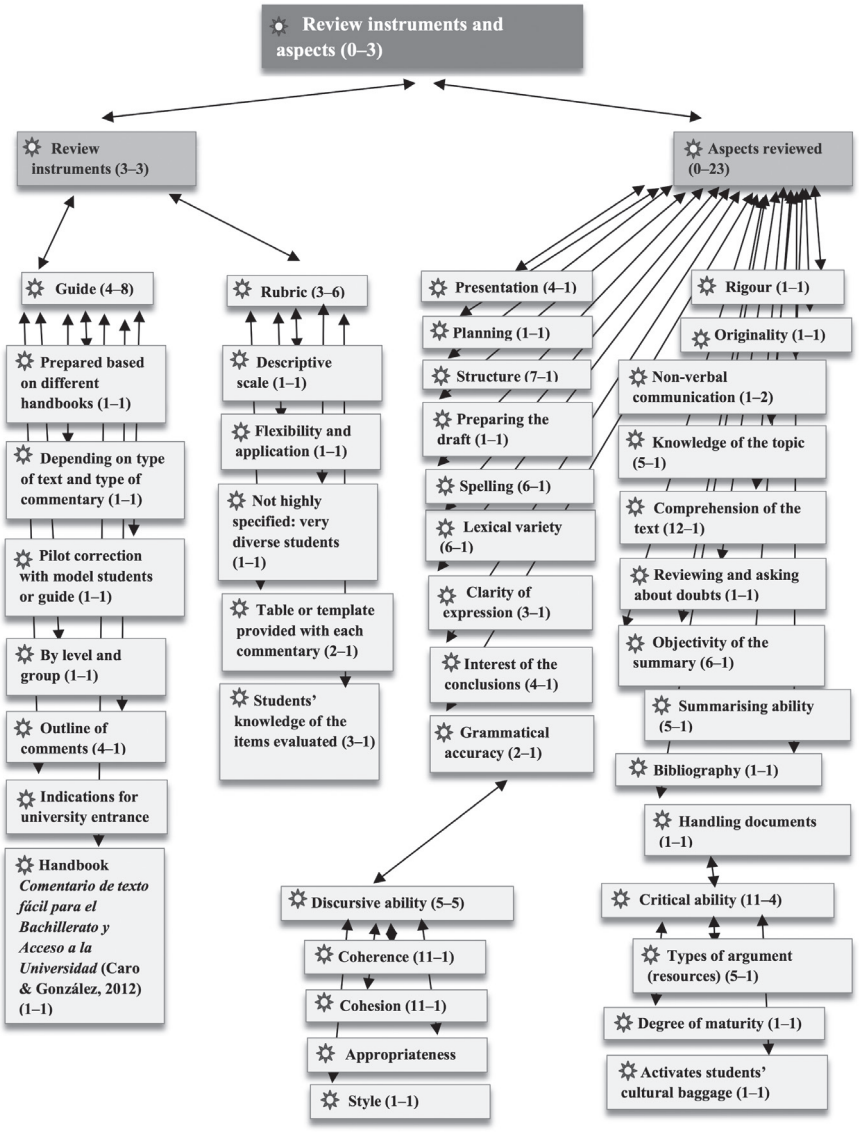
In contrast, group feedback makes it possible to solve common doubts and errors with the class as a whole to improve future commentaries, all in less time than written feedback. Despite the shyness and embarrassment some students might show, this type of feedback makes it possible to catch the attention of the class by involving students and enabling them to participate directly. In general, the interviewees state that group feedback promotes discussion and critical thinking, and results in enriching teaching experiences. For example, it creates an appropriate context for encouraging co-evaluation between students; similarly, seeing classmates' strong points and errors encourages students to self-evaluate their own work. Procedures such as combining small groups with the whole class for giving feedback, a student reading their model commentary aloud, or the sole use of this feedback in the case of comments made in a group are also identified.

Teachers identify guidebooks and evaluation rubrics as feedback instruments (Graph 6). Use of the guide depends on the type of text and commentary, and the level and profile of the group of students. Its design is inspired by different manuals, compiling guidelines offered by the university access tests or with outlines for preparing commentaries. It is also worth taking the «pilot correction» of the commentary made by a student as a model or guide. The rubric, however, is defined as a descriptive scale whose items should be known by the students; it is represented in a table or template distributed and incorporated with each comment for the student. To allow for the diversity of students, it should be applied flexibly and comprise general or loosely defined items. Teachers who do not usually use a guide or rubric for feedback do report that they have a rubric they have developed themselves or have one in the process of being prepared.

As for the aspects evaluated with these instruments, a wide range of results are collected that reflect the rich diversity of feedback options given by the key informants: correcting grammar, reviewing spelling, and lexical variety are linguistic elements that are traditionally evaluated in any expressive task. The process of preparing the commentary (planning, drafting, revision and checking doubts, presentation), knowledge of the topic, handling the necessary documentation and the bibliography provided as proof of prior research are also of interest. Other aspects of interest are the rigour shown, originality, the structure of the commentary, the objectivity of the summary, the

ability to summarise, the clarity of the exposition of ideas, and the interest of the conclusions. Discursive capacity is evaluated in its parameters of coherence, cohesion, appropriateness, and style; critical capacity in relation to the students' cultural baggage, their level of maturity, and the types of arguments used as a vital resource in any personal critical commentary. In the case of oral commentaries, non-verbal communication elements that shape the meaning and comprehension of the ideas and opinions expounded are also considered.

GRAPH 6. Semantic network of the feedback process used in textual commentary.




Source: Own elaboration.

Most of the teachers promote student self-evaluation of the commentary. The aim is for them to improve their commentary through subsequent rewriting informed by reflection. Among the effective strategies used, students are encouraged to take a position and use professional correction techniques, and reading aloud for revision is promoted. Prior reading of other commentaries is sometimes used. Self-evaluation is sometimes done after the teacher has reviewed the commentary, although the teacher identifying any problems without saying how to correct them so that the students find solutions is also an interesting option. In some cases, the sequence starts by setting out on the board the guide of elements revised to inspire an oral discussion about the different aspects and conclude with each of the students rewriting their work. A preliminary group reflection task about the range of possible options in the commentary is also an option. Students self-evaluate their vocabulary and syntax by comparing their work with their classmates' work and the model texts suggested by the teacher.

The instruments used in self-evaluation vary according to the needs and academic habits of the key informants. They include the following types: portfolios, descriptive scales, weighted mark tables, lists of evaluation criteria for the university entrance tests, personal interviews, generic rubrics owing to the diversity of the students, questionnaires with essential aspects and detailed indicators, and guidelines for making comments in accordance with the competence-based curriculum focus.

Many of the teachers interviewed encourage co-evaluation. Some state that they especially use this procedure at the start of the course, when the students are more unsure; others prefer to use it at the end of the course and emphasise the different attitudes observed among the students when evaluated by their peers.

Co-evaluation tasks aim to foster students' critical judgement by using a variety of strategies; students are encouraged to raise questions, and they are allowed to add to and amend other classmates' comments respectfully and constructively. Most teachers do this with a group or class discussion but on other occasions the students are split into small groups.

As an oral task, co-evaluation can be performed by reading selected comments out-loud. The rest of the group can then make comments on them in accordance with a previously-provided rubric. The immediacy of this process is underlined through the oral comments made in spontaneous interventions. The whiteboard is often used to make a visual note of the aspects and comments for all of the students.

Co-evaluation can also be written as a separate text where each student notes her particular observations in class or at home. Publishing this on a teaching blog is a good idea. Sometimes pairs exchange comments and written correction is provided that leads to the oral transmission of the ideas analysed to the evaluated classmate. Anonymity or the use of pseudonyms is normal in these practices.

The instruments used are similar to the ones already described for the case of

self-evaluation. Accordingly, the answer fall into three types: a list with criteria from the university access tests, a rubric, and a table with specific scores depending on items.

## 4. Conclusions

The relevant conclusions of this research are established by comparing the results of the analysis of teachers' academic habits in developing textual commentary with informal argumentation through the prism of the most appropriate didactic methodologies in the area according to a competency-based focus.

It is important to note this exploratory study's novel contribution to academic work on teachers' perceptions of the development of academic writing for two reasons: firstly, because it focusses on secondary education, a stage at which this matter is little-studied in the Spanish academic sphere; secondly, because it specifically examines the habits of teachers in the area of Spanish language and literature about teaching textual commentary and developing arguments in it.

This analysis shows that, while secondary education teachers use a wide range of text types for practising textual commentary and teachers from the Master's in Secondary Education also recommend this multi-mode approach at this intermediate stage, the use of literary and journalistic genres dominates. The literary genre is present at all levels by curricular tradition given its cultural, artistic, and content benefits, showing the currency of the literary canon in relation to the educational canon (Cerrillo, 2013). Journalistic texts are used at levels that involve preparing personal critical commentary for university access tests. Opinion pieces are ideal for this given their brevity, informal themes, and ease of comprehension, and in addition the teaching guides that are starting to appear favour quality learning of them (Caro and González, 2012). In contrast, multimedia texts are barely used for commentary, as, although the teachers note their teaching benefits in making knowledge accessible and semiotic richness, they are frequently used for seeking information but present technical difficulties, all of which agrees with recent analyses that place the media competencies of teachers at a basic level (Ramírez and González, 2016).

Teachers believe that it is positive for students to participate in selecting the texts on which they will comment. This democratising aim can improve the learning elements of joint responsibility and critique, something which is in line with the new curriculum paradigm of the competencies focus (Prensky, 2015). Nonetheless, as teachers also note that these prejudices the quality of the anthology given the limited reading repertoire of their students and they prefer to get them involved with discussions on topics that interest them, it is agreed that in teaching habits, meaningful learning plays a role, but the new competencies-based educational paradigm, the first step of which has to be empowering students, has not yet matured.

This immaturity is also influenced by the limited use of speech in teaching textual commentary, even when it is vital for developing the argument on dialogic

pathways that guarantee cooperation, equality, and meaning (Aubert, García, and Racionero, 2009; Giménez and Subtil, 2015). The teachers' different proposals or sequences and groupings regarding the combination of speech and writing in the process of producing and evaluating argumentative textual commentary show a gradual move towards active methodologies. However, as the academicist tradition of identifying textual commentary with an individual written exercise where the student must interpret the author's intention still persists, teaching time for oral commentaries is barely present.

Feedback and evaluation of textual commentary is given by combining the oral and written dimensions in group and individual situations respectively. Secondary school teachers in the Spanish language and literature speciality and teachers from the Master's in Secondary Education in this specialism alike, recognise the virtues of oral revision (immediacy, authentic and established knowledge, versatility of modes of evaluation), but they value written feedback by teachers and students more highly, given their responsibility, precision, and profitability in correcting errors and their function as a witness in final tests. Consequently, their pedagogical position fluctuates between cultivating writing as a process and evaluating it as a product.

Furthermore, they comply with the competence-based focus when they positively regard the use of rubrics and guidelines for revising commentaries (Guzmán, Flores, and Tirado, 2012). They prepare these in accordance with two different types of content: on the one hand grammatical and lexical-semantic, and on the other the rhetorical process of composition. They do not include logical reasoning processes that are needed to achieve good educational practices in communicative competencies (Giménez and Subtil, 2015). This important omission is repeated with the question about aspects evaluated and self-evaluation, hetero-evaluation and co-evaluation procedures.

The results of this study show that the habits of Spanish language and literature teachers still feature academicist traits that prevent them fully developing competency-based educational initiatives: apart from the literary and journalistic types, they do not often use other text types for commentary; they also do not usually allow students to propose texts for commentary or use multimedia resources beyond the merely informative, at the expense of empowering students and of a curriculum that is open to informal settings; they have a positive view of the interaction between oral and written dimensions in the production, feedback, and evaluation of textual commentaries, and they use effective strategies, but they exercise this little in class because they give more importance and teaching time to strengthening written practice; they use evaluation rubrics, but the indicators in these do not include the logical reasoning processes in building an argument. Therefore, there is a clear need to insist on deconstructing teachers' academicist habits that impede the full democratisation of classroom communication and training them in informal argumentative logic to encourage the appropriate use of textual commentary in accordance with the com-

petencies-based educational paradigm, as this training is a key issue to ensure that the word serves the knowledge society.

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# Review of interventions to improve pragmatic language skills in children with behaviour and attention problems

## *Revisión de intervenciones para mejorar las habilidades pragmáticas en niños y niñas con problemas de conducta y atención*

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## Abstract:

Pragmatic language is the socially appropriate use of language in accordance with the context in which interactions take place. In view of this, deficiencies in pragmatic skills have a significant impact on psychosocial adjustment. Recent evidence has shown that children who present behavioural problems usually display these linguistic difficulties as well. The aim of this work is to analyse different interventions intended to improve the pragmatic skills of children with behavioural and/or attention problems and discuss the evidence of the results. After a literature search, nine interventions were found: five aimed at children with behavioural problems and four intended for children with attention and hyperactivity problems. The results showed that, while the characteristics of the interventions varied considerably, they generally achieved positive results, especially when they were implemented using a systemic approach with other educational agents participating (such as the family or peer group). Even so, the lack of available evidence suggests that further research into evidence-based interventions to help children improve their pragmatic, communicative, and social competences is required.

**Keywords:** pragmatic language, behavioural problems, ADHD, intervention, social communication

## Resumen:

El lenguaje pragmático hace referencia al uso socialmente apropiado del lenguaje en función del contexto en que las interacciones tienen lugar. Por tanto, los déficits en las habilidades pragmáticas tienen importantes repercusiones sobre el ajuste psicosocial. Evidencias recientes han puesto de mani-

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fiesto que los niños y niñas que presentan problemas de conducta suelen experimentar también estas dificultades lingüísticas. Este trabajo tiene por objeto analizar diferentes intervenciones destinadas a mejorar las habilidades pragmáticas de niños y niñas con problemas de conducta y/o atención y discutir las evidencias de sus resultados. Tras la búsqueda bibliográfica, se localizaron nueve intervenciones, cinco dirigidas a niños y niñas con problemas conductuales y cuatro para menores con problemas de atención e hiperactividad. Los resultados mostraron que, aunque las características de las intervenciones eran muy variadas, en general se lograron con ellas efectos positivos, especialmente cuando se realizaban desde un enfoque sistémico y participaban otros agentes educativos (como la familia o el grupo de iguales). Aun así, la escasez de evidencia al respecto invita a seguir investigando sobre intervenciones basadas en la evidencia que ayuden a los niños y niñas a mejorar sus habilidades pragmáticas, comunicativas y sociales.

**Descriptores:** lenguaje pragmático, problemas de conducta, TDAH, intervención, comunicación social.

## 1. Introduction

Language, in its broadest sense, is the main tool by which we establish and continue social interactions. Analysing linguistic competence involves studying the phonological, morphological, syntactic, semantic, and pragmatic components of language. The phonological level includes the set of phonemes and sounds in a language, the morpholexical level comprises the words that form the vocabulary of a language, the syntactic level comprises the formation of more complex meaning structures based on sequencing lexemes, the semantic level refers to understanding of the meanings of the language, and the pragmatic level refers to the social use of language (Puyuelo and Rondal, 2003). In accordance with these components, language acquisition involves learning to use the constituent elements of a language (its lexicon), its combination rules (morphosyntax), and strategies to adapt the message to the social context where the communicative act occurs (pragmatics). Without neglecting the importance of any of the levels of language, the study of pragmatics deserves special attention as it can be seen as the basis of social interaction.

From a historical perspective, some believe that Roman Jakobson was one of the first thinkers to uphold the pragmatic purpose of language, as he studied the pragmatic function language and the receiver's intentionality in the communication process (Pinazo and Pastor, 2006). Other give Charles Morris the honour of being the first to define pragmatics as «the science of linking signs to their interpreters» (López and Hernández, 2016). Whatever the case, the contributions by these linguists have given rise to more complex and sophisticated studies on the pragmatic capacity of language. For example, thanks to the use of techniques for simulating artificial neural networks, it

has been observed that artificial intelligence can construct correct grammatical structures and detect errors in them. It has still, however, been unable to handle semantic and pragmatic information given its inability to obtain it from the surroundings (Rondal, 2011). In this respect, it is clear that sophisticated handling of language is not just a case of producing or understanding chains of words. Instead, it requires the capacity to combine these lexemes in dialogues and know how to adapt them to the social settings in which one interacts.

It is this particular ability that is impaired in pupils with pragmatic difficulties who display reasonably intact phonology, morphology, syntax, and semantics but have difficulties in correctly using and interpreting language in communicative exchanges. In particular, the main manifestations of pragmatic problems are difficulties in: drawing inferences about messages and intentions (for example, interpreting messages literally), noticing the interlocutor's needs or whether this person has understood the message, following the rules that govern discourse (for example, respecting starts and turn-taking in conversation), or distinguishing and using appropriate discourse registers for the context (Rondal, 2014). As a consequence, pragmatic difficulties can significantly affect the quality of communicative exchanges and the comprehension of social relations, hindering the socio-emotional and behavioural development of people who experience them.

Deficits in pragmatic skills have been observed in children with a wide range of developmental disorders. They have traditionally been linked to Autism spectrum disorders (ASD), and the bulk of the interventions carried out to stimulate pragmatic functioning have been performed in this population. However, recent studies have shown that pragmatic difficulties are not exclusive to these disorders (Gibson, Adams, Lockton, and Green, 2013) but that they also appear in association with other circumstances that frequently create special educational needs (SEN). In this context, a growing body of research has started showing that children with pragmatic language problems often also display behavioural difficulties such as disruptive behaviour, oppositional, and defiant behaviour, impulse control deficits, or attention deficit hyperactivity disorder (ADHD) (Goh and O'Kearney, 2013).

Two lines of research were drawn from the literature review: one line analysing language disorders in children with behavioural problems and, another examining behavioural problems in children with language difficulties.

With regards to the first line, the meta-analysis by Hollo, Wehby, and Oliver (2014) concludes that approximately 4 out of every 5 children aged between 5 and 13 with emotional and behavioural disorders showed low scores in language tests. The prevalence of language disorders in this population is around 81%-95%, a figure that is significantly higher than for children who do not have these difficulties (3%-14%) (Law, Boyle, Harris, Harkness and Nye, 2000). For their part, Gilmour, Hill, Place, and Skuse (2004) estimated that approximately two thirds of children with behavioural problems also had defi-

cits in pragmatic behaviour. These difficulties were also comparable in nature and severity to those observed in children with autism.

When specifically reviewing the literature on concrete behavioural problems, the study by Gremillion and Martel (2014) stands out, showing lower performance in pragmatic and expressive language skills in preschoolers children with ADHD, oppositional and defiant behaviour, and disruptive behaviour in comparison with other defiant behaviour without behaviour disorders. Regarding ADHD, studies examining the presence of language problems in children and adolescents with these needs have proliferated in recent years. A good summary of the literature published to date can be found in the meta-analysis by Korrel, Mueller, Silk, Anderson, and Sciberras (2017). In it they reviewed 21 researches that compared the performance in language tests of a clinical group of children with ADHD and a control group. From the analysis of the results they concluded that children with ADHD showed worse functioning in expressive, receptive, and pragmatic language skills. Regarding the pragmatic components, Staikova, Gomes, Tartter, McCabe, and Halperin (2013) found evidence of difficulties in handling discourse (e.g. respecting turn-taking, interruptions, etc.), drawing inferences, and narrative discourse. Furthermore, according to these authors, pragmatic deficits shape the relationship between ADHD and social competences. These results have very interesting implications for educational guidance, as it appears that the symptoms of ADHD do not directly explain these children's poor social competences, but instead the pragmatic deficits that underlie this disorder.

As stated above, other studies have provided evidence that the relationship between language and behaviour runs in the other direction. In other words, they have shown that children with language disorders, more specifically deficits in pragmatic skills, often also display behavioural problems. In this vein, Conti-Ramsden, Moka, Pickles, and Durkin (2013) observed that adolescents with a history of language disorders experienced relationship problems, emotional symptoms, hyperactivity, and behavioural problems more frequently than their peers.

Although the direction of this relationship is not entirely clear, longitudinal studies suggest that it runs from language to behaviour. For example, in a meta-analysis of longitudinal studies, Yew and O'Kearney (2012) observe that children with specific language difficulties in early childhood experience behavioural problems, attention problems, and hyperactivity more frequently and more severely than those who have normative development of their linguistic skills. In fact, they observe that the probabilities can double. According to this model, language disorders, and more specifically those affecting pragmatic skills, could increase the probability of behavioural and social problems appearing (St Clair, Pickled, Durkin, and Conti-Ramsden, 2011). This is explained by the limitations that children with pragmatic difficulties experience when communicating and understanding implicit messages, needs, or feelings. According to Brinton and Fujiki (2000) these difficulties could lead to frustration and

high stress levels. Furthermore, in social contexts they can have a negative impact on these children's relationships with peers as instead of expressing their own needs assertively, they use more maladjusted relationship models, increasing the risk of defiant or aggressive behaviour. In this sense, several studies suggest that children with pragmatic deficits display less prosocial behaviour (Bakopoulou and Dockrell, 2016) and display lower levels of social competence (Puglisi, Cáceres-Assenço, Nogueira, and Befi-Lopes, 2016).

Nonetheless, although the relationship between language and social competence is reasonably well documented in the literature, in practice it seems to be much less well recognised. Recent data show that language difficulties often go undetected among children with behaviour and attention problems (Cohen, Frania, and Im-Bolter, 2013). This is partly because diagnostic evaluation protocols do not generally examine functioning in language areas. Furthermore, in the case of ADHD it is suggested that pragmatic deficits are sometimes masked by the symptoms of hyperactivity. This underdetection can have important repercussions in the area of the intervention that might focus on behavioural problems and lead to underlying language difficulties being ignored.

Ultimately, pragmatic language difficulties are SENs that can affect the development of socio-cognitive competences and underlie many of the behavioural problems observed in schools. Therefore, from the educational perspective, it is vital to be aware of evidence-based interventions that make it possible to tackle these difficulties in the school setting. With the objective of making progress in this direction, the aim of this work was to review and synthesise the available literature on educational interventions intended to work on pragmatic language skills in children with behaviour and attention problems.

## 2. Review of interventions to improve pragmatic skills

A synthesis is provided below of aspects relating to the design, implementation, evaluation, and results of interventions performed in recent years to work on the pragmatic components of language with children with attention problems during the school stage. The description and analysis of the interventions carried out is arranged in three sections according to the profile of the population for which they were designed. The first section describes the results of five interventions aimed at children with behavioural problems. The second section describes four interventions for children with ADHD. Finally, and in addition to the aim of this work, a third section sets out another five studies that describe interventions to stimulate pragmatic skills in children with other SENs.

All of the studies evaluating interventions used a quasi-experimental pretest–posttest design comparing baseline scores with post-intervention scores. In some of them these data were also compared with a control group that did not receive the treatment. Of the nine interventions reviewed, two did not have any effects on improving pragmatic skills. Table 1 shows the data from the studies that did achieve significant changes in these skills.

TABLE 1. Synthesis of the characteristics and results of interventions to improve pragmatic skills in children with behaviour and/or attention problems.

| Source/ Country | n (age) | SEN | Research design | Areas of intervention | Results |
|---|---|---|---|---|---|
| Cordier, Munro, Wilkes-Gillan, and Docking (2013) Australia | 14 boys and girls (5-11) | ADHD | Quasi-experimental pre-test-posttest design. Comparison of means and effect size. | Verbal and non-verbal communication, turn-taking, socio-emotional adjustment, use of language, social competences, and creativity. | Improving pragmatic language. |
| Cordier et al. (2017) Australia | 9 boys and girls (6-11) and their mothers | ADHD | Quasi-experimental pre-test-posttest design with control group. Comparison of means and effect size. | Starting or maintaining conversations, non-verbal communication, understanding emotions, executive function, and negotiating. | Improving pragmatic language. |
| Corkum, Corbin, and Pike (2010) Canada | 16 boys and girls (8-12) | ADHD | Quasi-experimental pre-test-posttest design. Comparison of means. | Starting or maintaining conversations, introducing oneself, making statements, speaking assertively, using polite expressions, asking for and offering help, giving and accepting criticisms, joining in with play, and negotiating. | Improving pragmatic language and social competences. |
| Heneker (2005) United Kingdom | 10 boys and girls (6-11) | Behavioural, emotional, and learning problems. | Quasi-experimental pre-test-posttest design. Comparison of means and qualitative interpretation. | Understanding and using inferential language and vocabulary, social competences and discourse. | Improving the areas covered. |

| Source/ Country | n (age) | SEN | Research design | Areas of intervention | Results |
|---|---|---|---|---|---|
| Hyter, Rogers-Adkinson, Self, Simmons, and Jantz (2001) USA | 6 boys (8-12) | Behavioural and emotional problems. | Quasi-experimental pre-test-posttest design. Comparison of means. | Describing objects, giving instructions, discussing inappropriate behaviour, and negotiating. | Improving the description of objects, giving instructions, and respecting turn-taking. |
| Hyter (2003) USA | 2 boys (4) | Risk of behavioural problems | Quasi-experimental pre-test-posttest design. Comparison of means and qualitative interpretation. | Verbal and non-verbal communication, style of play, awareness of own skills, regulating behaviour, and empathy. | Verbal/ non-verbal communication, pragmatics, and meta-cognition improvements. |
| Law and Sivyer (2003) United Kingdom | 20 boys and girls (9-11) | Behavioural and emotional problems. | Quasi-experimental pre-test-posttest with control group design. Comparison of means. | Language skills, social communication, self-esteem, and emotional/ behavioural adjustment. | Improving use of language, social communication, and self-esteem. |

## 2.1. Interventions for children with behavioural problems

A total of five interventions were identified intended to improve the pragmatic skills of children aged between 4 and 12 who have behavioural problems and who also in some cases showed emotional difficulties.

Hyter et al. (2001) worked on describing objects, giving instructions, reflecting on inappropriate behaviour, and negotiation in a group of 6 children educated in a special educational centre. In each session the teacher acted as a model in a role-play so that the pupils could learn to imitate the desired behaviour. The group was divided into pairs or groups of three to practise, and in the following session they put into effect what they had learnt. In this model the pupils improved the most simple pragmatic skills (describing objects and giving instructions), but not more complex ones. In addition, the group also learned to respect turn-taking, although this pragmatic skill was not proposed in the design.

Some years later, Hyter (2003) prepared a model for preventing behavioural disorders under the framework of the «Head Start» programme, a programme aimed at meeting the educational needs of children from families with a low so-

cio-economic level. The intervention was performed with two boys who displayed aggressive behaviour towards their peers and had difficulties using communicative skills correctly. To train pragmatic skills, professionals (researchers from Head Start and from the school), collaborating with the children's classmates, employed techniques such as the use of models to show how to do the desired behaviour, dramatization or role-play, internal and parallel dialogue (the professional describes aloud what she and the pupil are doing or experiencing at the same time that it is being done), *shadowing* (or a period of professional observation in which pupils spend some time being «an expert's shadow» and observing her to learn how she does the task), and the techniques of scaffolding (the professional acts as a guide and facilitator for resources during the process of constructing learning). Although it was necessary to wait for the final evaluation to compare the children's progress with the baseline, Hyter noted that improvements in interaction patterns were apparent from the first month of the intervention. After four months, their pragmatic skills improved significantly, especially in the case of the second child. As a result, both replaced their aggressive and violent behaviour with attitudes based on respect and empathy, and started to be aware of their communicative skills and their peers' perception of them. Law and Sivyer (2003) and Heneker (2005) intervened in «pupil referral units» (PRUs), a type of educational centre attended by children who have been excluded from their schools. Law and Sivyer designed a model of ten sessions to work on language problems, communicative skills, and behavioural problems. In this framework they used activities and games focused on accepting rules, active listening, organising vocabulary, describing objects, problem solving, reasoning, and drawing inferences. After the intervention, improvements could be seen in pragmatic and social competences, although changes at the behavioural level were not achieved.

As for the second programme used in pupil referral units, Heneker (2005) proposed a personalised intervention model in four areas: using and understanding vocabulary, general language use, pronunciation, and social competences (learning to listen, being aware of communication style, respecting turn-taking, identifying and expressing emotions). Social competences were trained individually twice a week throughout a term. Few data are provided regarding the results, but the author claims that the children improved in the skills trained.

Although Stanton-Chapman, Kaiser, and Wolery (2006) did not achieve improvements in pragmatic skills it is worth sharing details of the design of their programme. They used two types of material for the intervention: a series of personalised stories in which the protagonists were the children who were receiving the programme, and other materials for carrying out performances with a defined theme («doctor», «animal doctor», «hairdresser», and «building»). The children with behavioural problems (also in the Head Start programme) took part in workshops with peers to represent the situations described in the stories and so work on five pragmatic skills (starting conversations, responding appropriately to interventions by

peers, catch the attention of interlocutors by calling them by their names, respecting turn-taking, and maintaining visual contact during interaction). The peers from the normative group corrected their classmates' erroneous behaviour with reminders. Although the results obtained do not make it possible to prove the usefulness of this programme to modify problematic behaviour or train socio-linguistic skills, the programme is a good example for thinking about the use of play materials as tools for interventions.

### 2.2. Interventions for children with ADHD

This section considers four interventions aimed at stimulating pragmatic development in boys and girls with ADHD aged between 5 and 12.

These interventions were supported by play as a resource for working on the interaction skills of pupils with ADHD. Regarding the use of play materials to train pragmatic skills, play is a powerful socialisation tool as well as a natural learning context. Through play, children can learn pragmatic skills like respecting turn-taking, verbalising thoughts, and sharing concepts (Docking, Munro, Cordier y Ellis, 2013). In view of this, Corkum et al. (2010) proposed an intervention model based on «Working together: building children's social competences through folk literature», a programme for working on social competences in the context of folk tales. In each session they worked on one skill (conversation, self-presentation, making positive statements to other people, speaking assertively, using polite expressions, asking for help, offering help, giving and receiving criticism, joining in with a game, and negotiating). To practice these skills, the children followed direct instructions relating to folk tales and real-life situations. They practised the skills and received feedback through role-playing games. In addition, at the end of each session, the families and teachers were given information and advice to reinforce this learning. After the intervention, the children with ADHD showed improved pragmatic and social competences.

Cordier et al. (2013) also used play and peers as tools to improve pragmatic skills. The children with ADHD invited their «normative» peers to play with them. A therapist recorded the interaction and from this material prepared conflict-resolution situations that were commented on and debated afterwards. The therapist also incentivised children to play together. After seven sessions of games and reflection in pairs, the children with ADHD had improved their pragmatic skills (handling the content of conversation, turn-taking, body language, conflict resolution, etc.).

A few years later, Cordier et al. (2017) expanded their previous proposal to include participation by the children's families (specifically their mothers). This intervention was performed in the home: interactions during play between the mother and the child were recorded so that therapists could analyse the content and offer guidelines for positive interaction for the children. The areas analysed were: introducing a conversation, body language, understanding other people's emotional reactions, executive function, and the ability to negotiate. At the end of this programme, improvements were ob-

served in the aforementioned pragmatic skills, something that seems to validate the efficacy of the model of intervention based on play and directed by the families.

Dockin et al. (2013) used the same intervention model based on play as Cordier et al. (2013). While they did not note improvements in pragmatic skills, they did observe them in the ability to solve conflicts.

Although the interventions described offer a wide range of strategies, tools, and ways of approaching the problem, various common elements can be derived from analysing them together. Firstly, areas of intervention, among which training in the protocol for conversations, in verbal and non-verbal communication, and in self-awareness and self-regulating behaviour are especially important. Secondly, the importance given to the environment and the different agents that can participate, as it is shown that the most successful interventions are ones in which families, guardians, various educational professionals, and even peers participate.

### 2.3. Interventions for children with other SENs

Finally, a description of five studies is provided in which interventions for improving the pragmatic skills of children with other SENs are reviewed (see Table 2).

TABLE 2. Interventions to improve pragmatic skills in other populations.

| Op Cit. | SEN | Methodology | Objective | Conclusions |
|---|---|---|---|---|
| Adams et al. (2012) | Other language disorders | Designing a manual with intervention ideas | Preparing a manual that contains a model for intervention in social communication. | Although not all of the initial hypotheses are fulfilled, the pilot study does contain a promising proposal for an intervention to train communicative and listening skills. |
| Lanter et al. (2016) | Intellectual disability | Single case | Offering strategies to increase functional communication behaviour (promoting the use of verbal requests). | The subject is incentivised to make verbal requests through alternative and augmentative communication strategies (pictograms) and verbal reminders. |
| Moreno et al. (2012) | Victims of child abuse | Pretest-post-test intervention without control group | Increasing functional communicative skills, relating to adults and problem solving, and generalising to the child's natural contexts. | Significant improvements are found in the formulation of requests, asking for attention, maintaining conversations, and expressing agreement/disagreement. |

| Op Cit. | SEN | Methodology | Objective | Conclusions |
|---|---|---|---|---|
| Parsons, Cordier, Munro, Joosten, and Speyer (2017) | Autistic spectrum disorders | Meta-analysis | Evidence-based review and analysis of the interventions currently performed to improve pragmatic language skills. | The most effective interventions focus on the child-family pairing and on including peers. Programmes do not work on all pragmatic areas simultaneously. The generalisation of results to other contexts is questioned. |

As can be deduced from the wide range of SENs displayed in the population for which the interventions were designed, deficits in pragmatic skills can occur in pupils with very different profiles. Consequently, there is a need to propose personalised strategies and programmes according to the children's needs to encourage pragmatic language.

Parsons et al. (2017) analysed the efficacy of 15 interventions for working on pragmatic language in children with ASD. As described above, the characteristics varied between the interventions, but most worked on non-verbal communication, interpreting facial expressions and tone of voice, and preverbal communication. None of the interventions analysed covered negotiation skills or the executive function, nor did they offer a comprehensive treatment for all of the pragmatic areas, something that again indicates the shortcomings of the interventions intended for this linguistic area.

Another example of intervention is the Social Communication Intervention Project (Adams et al., 2012). This is an intervention model that includes a manual with recommendations to personalise treatment of children with pragmatic problems or communication disorders. Although when published it was a pilot project, from that moment it already offered an effective model with play activities (playing with puppets and designing posters) to work on conversational and listening skills).

It is interesting to find specific interventions in populations where the pragmatic area is not traditionally covered, such as the research by Lanter, Russell, Kuriakose, and Blevin (2016), or by Moreno, García-Baamonde, Blázquez, and Pozueco (2012). The first of these studies is a single-case one that studies the efficacy of different strategies for training a seven-year-old boy with Down's syndrome in the use of requests. Using different strategies (communicative ideas offered by the surroundings, pictograms for augmentative and alternative communication, reminders to correct errors in communicative behaviour, etc.) his functional communication improved, and, as a side effect, so did his pronunciation. Overcoming the criticisms of the meta-analysis by Parsons et al. (2017), the intervention even enabled him to start generalising his new communicative strategies in other situations and with new agents, with him initiating the requests himself.

Moreno et al. (2012), in their study present a programme for working on pragmatic communication in 21 children who had suffered abuse in early childhood and who had problems with their social and interpersonal adjustment. They first worked on the meanings of words and phrases in social situations and then increased the complexity of the interactions. The different strategies were: starting and maintaining conversations, making requests and formulating demands, narrative skills, inferential tasks (like learning to detect irony and lies), and recognising emotions. Improvements in these skills were observed after completion of the programme.

These results as a group could prove various facts. Firstly, many children have linguistic needs that are hidden by other problems such as behavioural disorders. Secondly, these very deficits in language can affect other more visible developmental areas. And thirdly, there are few specific interventions to improve pragmatic language and those that do exist can rarely guarantee that their results can be generalised to natural settings. Finally, although there are many pilot interventions with promising results, further research is needed. All of this leads us to reflect on how the evaluation of pragmatic skills, intervention, and the extent to which they meet children's needs are presented, questions that are discussed below.

## 3. Conclusions and reflections on the contributions of the literature

For this synthesis of the scientific bibliography, interventions have been identified that are specifically designed for working on pragmatic skills in pupils with behaviour and attention problems. In addition, another four interventions have been described that, while they intended for pupils with other needs, provide relevant information that could be applicable to ones with behaviour and attention problems.

According to the literature reviewed, we believe that there is still a significant lack of published studies into educational intervention, and that this is especially evident in the case of Spain: there are studies with descriptive and correlational designs that prove the relationship between pragmatic skills and behaviour and attention problems, but no publications about interventions were found. The difficulty of finding interventions focussed on improving pragmatic skills in this population might point to a more complex problem. The available literature has shown that pupils with these needs also show shortcomings in the use of pragmatic language. Nonetheless, performance in language areas is rarely examined during diagnostic assessments in the clinical and educational settings. Instead, the evaluation is usually more cognitive-behavioural in character, focussing on the more visible aspects or observable behaviour and ignoring implicit linguistic processes (Watson, Richels, Michalek, and Raymer, 2015). Consequently, problems in this area of language are neither detected nor treated. As stated above, the lack of evaluation can mask the need for intervention, creating a vicious circle in which actions to improve pragmatic skills are not designed, and so awareness of the

importance of detection and intervention in pragmatic difficulties is not created, thus perpetuating the failure to detect them.

The masking of pragmatic issues, as well as denying one of the potential roots of children's adjustment problems, also affects the appropriateness of the intervention. For example, the programme by Presentación, Siegenthaler, Jara, and Miranda (2010) intended to facilitate the academic, emotional, and social adjustment of pupils with ADHD is based on self-instructions alongside techniques such as anger management and problem solving. As Hyter et al. proposed (2001), children with emotional or behavioural problems can often score well on certain tests, giving the impression that their pragmatic skills are adequate, when in reality the deficiencies are apparent in situations of interaction. Therefore, it is worth asking whether the proposals of the programme are the most appropriate for facilitating the children's psycho-social adjustment, since if the status of their linguistic area is unknown, it will not be clear whether this has (or does not have) an influence on the problems these children display.

As is shown in the previous section, the characteristics of these interventions were reasonably heterogenous, with a large variety in regards to intervention strategies and the resources used. For example, the intervention by Cordier et al. (2013) was based on play as a tool for interaction between children with ADHD and their peers without these difficulties. Relying on literary elements combined with role-plays, Stanton-Chapman et al. (2006) used personalised cartoons and Corkum et al. (2010) used folk tales. In a similar fashion, Hyter et al. (2001) worked on different skills through role-play.

This is not just a question of the range of the tools and strategies, but also of methodological evaluation questions. In other words, all of the studies used a quasi-experimental pretest-posttest design to test their effectiveness. That said, some explained in detail the measures used to test the effects of the intervention, while in others the data were enough to draw conclusions about the efficacy of the intervention. For example, Cordier et al. (2017) calculated different effect sizes for testing the magnitude of the change between the pre- and posttest situation, while Heneker (2005) only compared the average pre- and posttest scores.

Within this wide range of methodological possibilities, some studies show that, while a significant improvement in pragmatic skills was not achieved, the intervention did have positive effects on other dimensions. This is what happened with Docking et al. (2013) and Stanton-Chapman (2006) in whose research other areas improved (such as an increase in problem solving skills), which were not the object of intervention.

This might be the result of many factors, but it does lead us to reflect on the following question: what is being intervened on? Behaviour or language? And, if it is language, is the intervention really in the pragmatic area? Within this wide methodological variety, different measurements were used in each study. For example, Cordier et al. (2017) use a spe-

cific observational measurement to evaluate children's pragmatic skills, along with two other screening instruments to describe the children's language, and other complementary instruments to measure behaviour. In contrast, Law and Sivyer (2003) evaluate semantic-pragmatic language and socio-communicative skills as distinct elements. There is also the case of Heneker (2005), who exclusively relies on linguistic measurements to evaluate how children use language, vocabulary, and communicative skills. Nonetheless, the problem does not lie in using different measurements to evaluate pragmatic skills; instead this expands the possibilities of the specialists who intervene with the children. The problem is that there is no agreement on a single definition of what the «pragmatic area» is. In light of this situation, it is worth asking if the results meet the definition of pragmatic language, or if they match behavioural patterns that could fit into other constructs.

Ultimately, this diversity in interventions could be positive, as it shows that there are many ways of approaching and improving the pragmatic deficit, although it also makes it hard to establish a common and systematic framework for intervention. This is especially relevant as most of the interventions presented in this review are pilot studies or have a limited duration, and so applying the suggested activities and strategies could lead people to regard them with mistrust. However, despite their limitations, the studies described offer tools for stimulating the development of pragmatic skills in pupils with behavioural and attention difficulties.

## 4. Educational implications

The foregoing invites us to carry out a final reflection on the educational implications of these intervention in pragmatic language in pupils who have behaviour and attention problems. Basically, why is it necessary to intervene in pragmatic language skills? Different pieces of research into pragmatic and communicative development show that this is crucial to help children develop their linguistic skills and so facilitate their emotional, social, and behavioural adaptation and adjustment. By offering strategies to encourage pragmatic and social competence, we help children acquire social competences with which they can build positive links and support networks, thus taking care of their relationships with the different people in their development contexts.

Therefore, it is advisable to include a specific section for the pragmatic area when evaluating pupils who present behavioural and attentional issues. Pragmatic deficits can affect how we interact, especially in children as they are still establishing their skills for solving problems, understanding the structure of dialogue, or understanding the inferences of language. Since many types of maladjusted behaviour can be explained by deficits in the pragmatic area of language, this aspect should be considered in evaluations and in interventions to avoid perpetuating communicative problems.

In general, the lack of evidence-based interventions that limit and define the areas in which to work show that there are still a number of unfinished tasks. Firstly, the interventions described take place in different educational contexts. Although

the work is done in a natural setting, these interventions must guarantee that the skills acquired can be generalised to other settings and situations (Corkum, et al., 2010). Secondly, the interventions are primarily aimed at children aged between 3 and 12, overlooking the fact that language problems can be present in adolescence (Parsons et al., 2017). This means there are no interventions specific to adolescence, a gap that is in urgent need of being filled. Thirdly, although there are publications in Spain regarding pupils with pragmatic deficits, there are no studies on the application of effective evidence-based interventions. If there is a need that must be met to encourage the healthy development of children, it is necessary to continue research into it.

Ultimately, the professionals who work with these pupils have to be ready to identify their needs and know how to intervene in light of them. As is shown in the different interventions, the systemic approach is the best focus for approaching these problems, as when the different educational agents (from families to teachers, and including peers) assume responsibility and get involved in the process, the results of the intervention are better for the pupils. Therefore, if the educational system is to respond adequately to the demands of children it is necessary to train its professionals and offer guidance to families.

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# Employability and competences of Pedagogy, Psychology, and Educational Psychology graduates: a comparative study of employers and graduates

## *Competencias para la empleabilidad de los titulados en Pedagogía, Psicología y Psicopedagogía: un estudio comparativo entre empleadores y titulados*

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**Abstract:**

The labour market integration of recent graduates can be influenced by several factors, such as the economic situation of the country, the quality of their university education, and the demands of the labour market.

Although the Spanish economy has recently recovered somewhat, it still has high rates of youth unemployment, even among the best educated groups. Therefore, it is important to analyse in greater depth the transversal competences required and offered in the labour market as these can affect the integration and job satisfaction of university graduates. To analyse the differences in the view of graduates in Pedagogy, Psychology, and Educational Psychology and their employers regarding the competences needed for the labour market this article uses data from the AQU's 'Universitat i Treball a Catalunya' survey (2014a and 2014b) of graduates in these subjects from Catalan universities and of their employers.

The results show discrepancies between employers' and graduates' views. On the one hand, graduates regard some competences as more relevant, such as decision-making, while employers give greater importance to others, such as those relating to information technology and language skills, as well as theoretical and practical training. However, both groups agree that teamwork is the most important competence for work, supporting results obtained in other studies. Furthermore, employers are more satisfied than the graduates with their level in the areas of creativity, computer science, and languages. Problem-solving, however, is an area of competence that could be enhanced in university education.

This study's contribution is to provide evidence based on the retrospective assessment

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of recent graduates that can help align university training with employers' expectations.

**Keywords:** higher education, competences, vocational adjustment, employers, graduates, youth employment, labour market integration.

## Resumen:

La inserción laboral de los jóvenes universitarios se puede ver influenciada por varios factores, como la situación económica del país, la calidad de la formación universitaria o las exigencias del mercado laboral.

A pesar de que la economía española se ha ido recuperando, aún presenta cifras altas de desempleo juvenil, incluso entre los más formados. Por ello, es importante profundizar en el análisis de las competencias transversales que son demandadas y ofertadas en el mercado laboral, ya que de esto puede depender la inserción y satisfacción laboral de los graduados universitarios. En este artículo se analizan, a partir de los datos de la encuesta «Universitat i Treball a Catalunya» de AQU (2014a y 2014b) sobre los titulados en Pedagogía, Psicología y Psicopedagogía en las universidades catalanas y sus empleadores, las diferencias en las perspectivas de ambos colectivos respecto a las competencias necesarias para el mercado laboral.

Los resultados muestran que la visión de empleadores y titulados presenta algunas discrepancias. Por un lado, los titulados consideran más importantes algunas competencias como la toma de decisiones. Sin embargo, los empleadores dan mayor importancia a otras, como las que se relacionan con la informática y el conocimiento de idiomas, o la formación teórica y práctica impartida en la universidad. Ambos colectivos coinciden en posicionar el trabajo en equipo como la competencia más importante para el trabajo, confirmando los resultados obtenidos en otros estudios. Por otro lado, los empleadores están más satisfechos que los propios titulados con su nivel en los dominios competenciales de creatividad, informática e idiomas. La resolución de problemas, en cambio, emerge como un ámbito competencial que se podría potenciar en la formación universitaria.

La contribución del estudio radica en aportar evidencias que puedan ayudar a alinear la formación universitaria con las expectativas de los empleadores, a la luz de la valoración retrospectiva de los recién titulados.

**Descriptores:** educación superior, competencias, ajuste formativo, empleadores, titulados, empleo juvenil, inserción laboral.

## 1. Introduction and theoretical framework

The labour market integration of young people is a matter that at present deserves to be considered at a social, political, and academic level. The economic crisis has had a legacy in Spain that especially affects the country's recent graduates. While it is true that total unemployment has fallen since 2015, current youth unemployment figures are still alarming. In Catalonia, one of the five autonomous regions with the lowest levels of youth unemployment, the unemployment rate among young people is 30.46% (data from the INE (National

Statistics Institute), Active Population Survey, 2017).

The employment situation of young people with university qualifications is especially worrying, given their strategic role for the future of the country and the need for a return on the investment made in them, both privately and as a society. The 2014 workplace integration survey by the INE reported that the employment rate of university graduates in 2010 was 75.6% and their unemployment rate was 19.2% in 2014. By branch of knowledge and qualifications, the unemployment rate for graduates in social and legal sciences was 20.4%, higher than the rate for health sciences or architecture and engineering. Of the three qualifications considered in this study, the one with the best employment rate in 2014 was the degree in Educational Psychology (83%), followed by the degree in Pedagogy (78%) and finally Psychology (73.36%). However, it has been shown that the data on the integration of young education professionals (specifically, graduates from the degrees in Pedagogy, Educational Psychology, and Primary School Teaching) conceal problems with overqualification and precarious employment. According to Pineda-Herrero, Agud-Morell, and Ciraso-Calí (2016), in 2014 just 10.9% of graduates from 2010 had a satisfactory job where they performed duties appropriate to their level of training, with a minimum annual salary that provided them with economic independence.

The role of universities in training young people has changed in the last decade. One of the main objectives of universities at present is to promote employability (McCowan, 2015). This role has also been encouraged by the employability policies of the European Union, policies that have led to debates about the relationship between university education and the labour market (Prokou, 2008). However, do universities really train their students so that they can then integrate appropriately into the labour market?

In general terms, employability can be understood as the set of characteristics, competences, and skills that enable somebody to find a job more easily (Álvarez & Miles, 2006). According to Fugate, Kinicki, and Ashforth (2004), employability is a construct with three dimensions: the identity of the course, personal adaptability, and social and human capital. Here we focus on the dimension of human capital. This is the process of developing knowledge, aptitudes, skills, and values that will improve job satisfaction and performance, at the same time as optimising the functioning of the company (Marimuthu, Arokiasamy, & Ismail, 2009). Accordingly, there is a need for the competences that are required and offered in the labour market to be analysed in greater depth as the integration and job satisfaction of university graduates can depend on them (García-Aracil & Van der Velden, 2008).

General or transversal competences are common to most professions. These relate to basic knowledge, the ability to analyse and synthesise, organise and plan, solve problems, take decisions, communicate orally and in writing, language skills, computer skills, handling information, critical thinking, teamwork, interpersonal skills, leadership, research

skills, autonomy, responsibility, motivation, and self-esteem (Carnevale, Gainer, and Meltzer, 1989; Hernández-March, Martín del Peso, & Leguey, 2009; Bernal, Delgado, & Donoso, 2014). Authors like Wye and Lim (2009), Coleman (2011), and Cai (2013) emphasise the importance of knowing foreign languages for good integration, while Carnevale and Smith (2013), and Stevens (2005) show that communication skills, such as oral and written communication and active listening, are very highly valued in numerous professions. García and Pérez (2008) note that to attain the level of productivity demanded by companies in this era of technology, computer and on-line skills are vital. Employers also value team work (Weller, 2007), interpersonal skills (Bridge, O'Neill, & Cromie, 2003), problem solving, and decision making (Lantarón, 2014; Stasz, 1998).

Recent literature contains studies with quantitative and qualitative focuses into young people's employability and their labour market integration. Martín-González, Ondé, & Pérez-Esparrels (2015) used an exploratory factor analysis and a logit model to examine the impact of competences on the employability of graduates from universities in Valencia; they found that a good grade and workplace and international experience during university studies favour employability. Medir and Montolio (2015) studied the factors associated with the labour market integration of graduates from public universities in Catalonia. They used linear regression models for their analysis and showed a positive impact of university training on job satisfaction. Other studies like the one by Jackling and De Lange (2009) use qualitative methods, such as interviews, to analyse the convergence or divergence between the skills acquired by accounting graduates and employers' expectations. Among the main results, they found that employers seek young people with general skills (such as team work, leadership, verbal communication, and interpersonal skills). These are skills that graduates do not feel that they were taught during their university studies. Consequently, they encountered a discrepancy. There are also mixed-methodology studies, such as the work by Wickramasinghe and Perera (2010) who used data collected from surveys to perform parametric tests to analyse the differences in the employers', university lecturers', and graduates' opinions about the skills needed and acquired for working. Their results indicate that the three groups regard problem-solving, self-confidence, and team work as the most important skills.

There are also empirical studies that analyse young people's competences and employability from the perspective of graduates (for example, García, Sotelino, & Crespo, 2014) or the perspective of employers (among others, Beaven and Wright, 2006). However, according to Freire and Teijeiro (2010), the approach that can generate the most useful results is to compare the perspectives of both groups, like the one Taylor (2005) used in her evaluation of employers' expectations and how they match the perception of young people, or Saunders and Zuzel (2015) in a study of the convergence of perspectives regarding personal

qualities, transversal skills, and specific knowledge.

This study will focus on analysing the perceptions of both agents (recent graduates in Pedagogy, Psychology, and Educational Psychology, and employers) regarding the graduates' competences, the importance of these competences in their hiring, and their satisfaction with the training they have received. Its aim is to offer proof of possible mismatches and suggest areas for improvement in university training so that new professionals in education and psychology are more skilled in the job market.

## 2. Method

In this study we set the following objectives:

1) To analyse the perception of graduate competences (importance for work and satisfaction with the training received) from the perspective of the graduates themselves.

2) To analyse the perception of graduate competences (importance for work and satisfaction with the training received) from the perspective of employers.

3) To determine the differences between employers and graduates in their valuation of competences (importance for work and satisfaction with the training received).

## 3. Sample

This study uses the database of the Agència per a la Qualitat del Sistema Universitari de Catalunya (Agency for the Quality of the University System of Catalonia - AQU) regarding the workplace integration of graduates from Catalan universities from the perspective of graduates (AQU, 2014a) and employers (AQU, 2014b).

The sample of graduates in the study includes graduates from all of the public and private universities in Catalonia who graduated in the 2009-2010 academic year. They were surveyed in 2014. It comprises 17,337 people, representing 55% of the reference population (the people who graduated from Catalan universities in 2010) and has a sampling error of 0.51%. For this article, people with degrees in Pedagogy, Psychology, and Educational Psychology who, after graduating, found a job related to their training, were taken into account. After applying these criteria, the sample comprised 328 graduates: 207 with degrees in Psychology, 75 in Pedagogy, and 46 in Educational Psychology.

In the case of employers, organisations that employ educators, psychologists, and educational psychologists were considered. The sample of employers comprises 48 cases.

Table 1 provides a summary of the characteristics of the sample.

TABLE 1. Description of graduates and employers.

| | | Graduates | Employers |
|---|---|---|---|
| **Current employment situation** | — Employed<br>— Unemployed | 87%<br>10% | |
| **Area of employment** | — Private organisation<br>— Public organisation | 74%<br>26% | 88%<br>12% |
| **Main activity of the organisation** | — Health and social care<br>— Education, research, and cultural services | 44.2%<br>33.1% | 10%<br>44% |
| **Size of the organisation** | — Micro organisation (<9 workers)<br>— Small organisation (10-50 workers)<br>— Medium organisation (51-250 workers)<br>— Large organisation (>250 workers) | 30%<br>27%<br>19%<br>22% | 21%<br>15%<br>46%<br>19% |
| **Number of recently graduated employees** | | 1,298 | |

Source: Own elaboration.

## 4. Instruments and variables

The study uses the questionnaires from the AQU graduate survey (AQU, 2014a) and AQU employer survey (AQU, 2014b). In the case of the employers, only the questionnaires for companies are used for this article (omitting the questionnaires for educational centres and health centres as the former mainly employ Teaching graduates and the latter Medicine and Nursing).

To be able to choose the data for comparison between employers and graduates regarding competences, specific questions were selected from each questionnaire. In the case of the questionnaire administered to graduates, the «valuation of training received and its appropriateness for work» was selected. In this they were asked to give a valuation ranging from 1 (very low) to 7 (very good) for 14 competences relating to the level of training received in the university and its usefulness for work.

With the employer questionnaire, the responses to Block 3 («competences») were used. These involve evaluating the importance of a list of 15 competences for professional performance and the employer's satisfaction with the recent graduates' training in these competences on a scale of 0 to 10.

The usefulness of the competences for work (evaluated in the graduate questionnaire) was compared with the level of importance for work (evaluated in the employer questionnaire). Similarly, the valuation of the level of training received (from the graduate questionnaire) was compared with the degree of satisfaction with the training of the graduates (from the employer questionnaire). The competences that were common to the various blocks and questionnaires were chosen: in other words, the ones that could be compared directly.

In the case of the graduates, a new variable was created with the mean of the competences in oral expression and written communication to create a single variable, called «communication». In the case of the employers, the «creation of new ideas and solutions» variable was treated as being equivalent to the «creativity» variable based on the definition of creativity provided by Sefertzi (2000).

Finally, two blocks of 10 items were used (importance for work and satisfaction with training), administered to graduates and employers alike. Both scales show good reliability (α=.836 and α=.886 in the graduate sample, α=.770 and α=.886 in the employer sample). The 10 items on each scale provide information about the following competences, grouped in accordance with the categorisation used by the AQU (2014):

— Theoretical-practical training: theory and practice.

— Cognitive competences: problem solving, decision making, and creativity.

— Instrumental competences: communication, IT, and language.

— Interpersonal competences: team work and leadership.

In addition, items 14 and 15 of Block 2 of the employer questionnaire («hiring processes») were analysed to consider in greater depth the factors that affect the process of hiring of recent graduates. Question 13, which is dichotomous, concerns whether there are difficulties hiring suitable people for a post; if the answer is affirmative, a list of reasons for this problem was suggested, and more than one reason could be chosen.

## 5. Procedure

This study uses a relational-comparative research design with a quantitative focus.

After preliminary descriptive and exploratory analyses, we analysed the valuation of the training received and the competences at an overall level and by size of company using the Mann-Whitney non-parametric U test for rank sums to respond to the first and second objectives. This test was applied due to the type of variable (ordinal) and to the non-compliance with the assumption of normality (assumption evaluated with the Kolmogorov-Smirnov test and explored using normal Q-Q plots and detrended Q-Q plots). For the third objective, we examined whether the perspectives of employers and graduates concerning the importance and satisfaction with the level of competences matched, again using the Mann-Whitney U test. In all cases where this test showed a significant difference, Rosenthal's *r* (1991) was calculated as a measure of the effect size. As there were no data about the effects of similar variables in previous comparable studies, the magnitude of the *r* was interpreted following Cohen's statements.

Given that the survey of graduates and the survey of employers use different scales to measure competences, the scales were modified so that the data could be standardised and the competences compared.

To unify data, several methods are recommended such as the linear stretch method, the reference distribution meth-

od (De Jonge, Veenhoven, & Arends, 2014), regressions to estimate the new scale (Colman, Norris, & Preston, 1997), and the formula proposed by Preston and Colman (2000), which is the one used in this study. This formula is: (score-1) / (number of answer categories-1)*100. To make the results easier to interpret, the formula was used following Dawes (2008), multiplying by 10 instead of 100. This meant that only the graduate scale had to be modified, as the employer one was already from 0 to 10.

## 6. Results

The results obtained are presented below, arranged by the objectives of the study.

### 6.1. Analysis of the view of the competences from the students' perspective

To answer the first objective of the study (to analyse the perception of graduates' competences from the perspective of the graduates themselves), we performed a descriptive analysis of the general valuation of the training received and competences developed.

Table 2 shows that the graduates regard team work, problem solving, decision making, and communication competences as very important. Their valuation of these competences regarding the university training they received shows scores that are below the halfway point on the scale (from 0 to 10), although it is necessary to consider the negative asymmetry of all of the distributions, above all the valuation of team work, something that suggests the existence of negative scores that are further from the mean.

The graduates show greater satisfaction with the theory training they received at university, with the attainment of team working, communication, problem solving, and decision-making competences. However, the mean satisfaction with the training received is not high in general, with their valuations of language training standing out as especially negative. It is also apparent that the graduates in the sample do not regard language competences as especially relevant to their work. Nonetheless, the spread of the responses should be noted, with higher standard deviations standing out in the valuations of creativity, IT competences, and languages.

TABLE 2. Description of the graduates' valuation of their competences (importance for work and satisfaction with training).

| | | Mean | Median | Standard deviation | Symmetry | Kurtosis |
|---|---|---|---|---|---|---|
| **Training and competences: importance for work** | | | | | | |
| **Theoretical-practical training** | Theory | 5.737 | 6.670 | 2.461 | -0.397 | -0.212 |
| | Practice | 5.543 | 6.670 | 3.144 | -0.277 | -1.003 |

| | | Mean | Median | Standard deviation | Symmetry | Kurtosis |
|---|---|---|---|---|---|---|
| **Training and competences: importance for work** | | | | | | |
| **Cognitive competences** | Problem solving | 8.130 | 8.330 | 2.194 | -1.447 | 2.029 |
| | Decision making | 7.884 | 8.330 | 2.310 | -1.282 | 1.353 |
| | Creativity | 6.885 | 7.500 | 2.812 | -0.914 | 0.081 |
| **Instrumental competences** | Communication | 7.642 | 8.330 | 2.175 | -1.092 | 0.816 |
| | It | 6.392 | 6.670 | 2.904 | -0.614 | -0.462 |
| | Language | 4.969 | 5.000 | 3.500 | -0.069 | -1.298 |
| **Interpersonal competences** | Team work | 8.226 | 8.330 | 2.064 | -1.189 | 0.979 |
| | Leadership | 6.570 | 6.670 | 2.557 | -0.639 | -0.192 |
| **Training and competences: satisfaction with training received** | | | | | | |
| **Theoretical -practical training** | Theory | 6.591 | 6.670 | 2.061 | -0.519 | 0.173 |
| | Practice | 5.081 | 5.000 | 2.848 | -0.069 | -0.811 |
| **Cognitive competencies** | Problem solving | 5.843 | 6.670 | 2.503 | -0.459 | -0.450 |
| | Decision making | 5.571 | 5.000 | 2.632 | -0.220 | -0.771 |
| | Creativity | 4.700 | 5.000 | 2.888 | -0.008 | -0.978 |
| **Instrumental competences** | Communication | 5.889 | 5.835 | 2.425 | -0.343 | -0.488 |
| | It | 4.518 | 5.000 | 2.858 | 0.069 | -0.950 |
| | Language | 2.434 | 1.670 | 2.684 | 0.866 | -0.248 |
| **Interpersonal competences** | Team work | 7.276 | 8.330 | 2.309 | -0.698 | -0.067 |
| | Leadership | 4.640 | 5.000 | 2.671 | -0.020 | -0.786 |

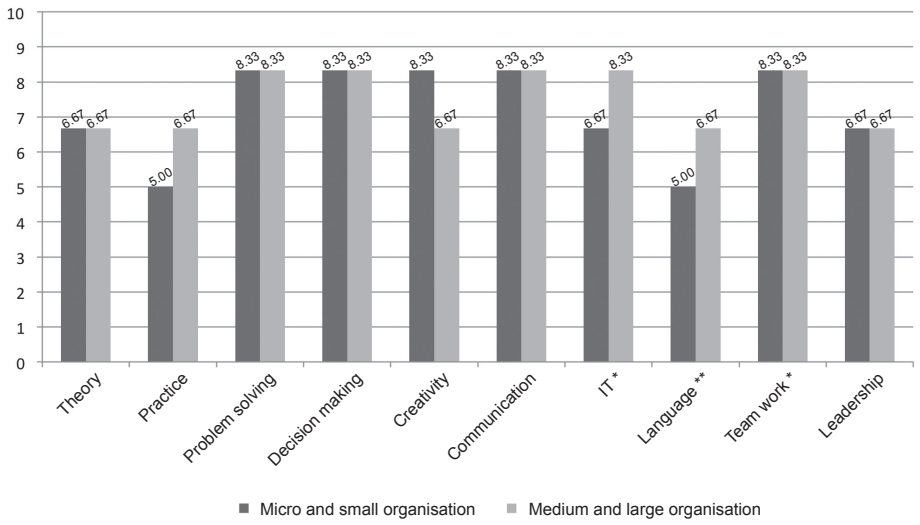
Source: Own elaboration.

To examine these results in depth, the graduates' valuations were analysed to look for possible differences depending on the size of the organisations where they work.

Graph 1 shows the comparison of the graduates' valuation of the usefulness of the training they received, according to the size of the organisations where they work (micro and small organisations; medium and large organisations). The Mann-Whitney U test indicates that computer, language, and team work competences are regarded as most important by recent graduates who work in medium and large organisations (with mean ranks of 176.47, 180.32, and 171.88 respectively), compared with those who work in micro and small organisations

(mean ranks of 148.22, 145.47, and 151.51 respectively), U=10,178.5, 9,667, 10,789.5 with a significance level of $p<.05$. The effect size, in the three competences, can be regarded as small according to Rosenthal (1991) and Cohen (1988), with $r$ values of .15, .19, and .12 respectively).

GRAPH 1. Valuation of the usefulness of the training received and of the competences for work (median), according to the graduates. Differences by size of organisation where they work.




Source: Own elaboration.
* Statistically significant difference at a .05 significance level
** Significance level of .01.

In the block for the level of satisfaction with the training received, the U test indicates that the graduates who work in medium and large organisations score their satisfaction with training in creativity more highly (with a mean rank of 172.62) than those who work in micro and small organisations (mean rank of 150.97, U=10.690, $p$=.036). The effect size is small ($r$=.12). The other competences do not present appreciable differences by size at a significance level of .05.

## 6.2. Analysis of competences from the employers' perspective

Moving on to the second objective of the study (to analyse the perception of the graduates' competences from the employers' perspective), Table 3 shows the descriptive analysis of the general valuation by employers in the sample of the training received by the hired graduates.

It can be seen that employers regard team work, problem solving, communication, and creativity skills as important, these skills being the most highly valued

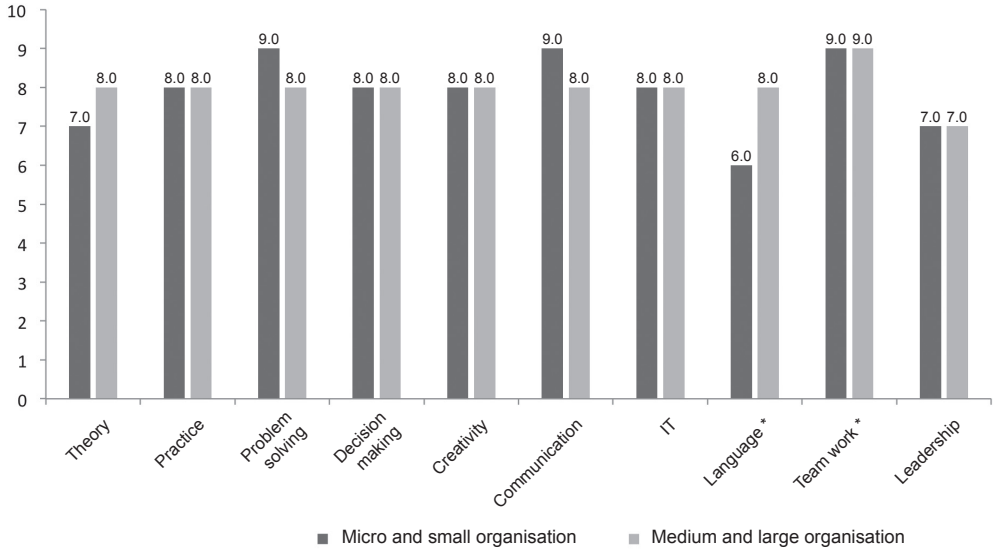
ones on average in relation to the competence level attained by the hired graduates. The competence with which the employers are least satisfied is leadership (which is also the competence they regard as least important for work); however, it is again necessary to note the high level of variance in the responses.

TABLE 3. Description of the valuation of the competences (importance for work and satisfaction with training) by employers.

| | | Mean | Median | Standard deviation | Symmetry | Kurtosis |
|---|---|---|---|---|---|---|
| **Training and competences: importance for work** | | | | | | |
| **Theoretical -practical training** | Theory | 7.375 | 8.000 | 1.817 | -1.432 | 4.586 |
| | Practice | 7.750 | 8.000 | 2.119 | -1.253 | 2.448 |
| **Cognitive competences** | Problem solving | 8.128 | 8.000 | 1.752 | -0.912 | 0.385 |
| | Decision making | 7.667 | 8.000 | 1.629 | -0.450 | -0.351 |
| | Creativity | 8.043 | 8.000 | 1.517 | -0.465 | -0.417 |
| **Instrumental competences** | Communication | 8.354 | 8.500 | 1.537 | -1.071 | 1.762 |
| | It | 8.021 | 8.000 | 1.657 | -0.738 | 0.026 |
| | Language | 7.125 | 8.000 | 2.455 | -0.817 | 0.186 |
| **Interpersonal competences** | Team work | 8.521 | 9.000 | 1.598 | -1.019 | 1.251 |
| | Leadership | 6.674 | 7.000 | 2.066 | -0.520 | 0.546 |
| **Training and competences: level/satisfaction** | | | | | | |
| **Theoretical -practical training** | Theory | 7.244 | 8.000 | 1.861 | -1.438 | 3.986 |
| | Practice | 5.511 | 6.000 | 2.212 | -0.319 | -0.012 |
| **Cognitive competences** | Problem solving | 6.273 | 6.000 | 1.744 | 0.221 | 0.317 |
| | Decision making | 5.978 | 6.000 | 1.832 | 0.192 | 0.414 |
| | Creativity | 6.444 | 7.000 | 1.791 | -0.265 | 0.915 |
| **Instrumental competences** | Communication | 6.622 | 6.000 | 2.037 | -0.455 | 1.346 |
| | It | 7.044 | 7.000 | 2.163 | -0.765 | 0.521 |
| | Language | 6.068 | 6.500 | 2.204 | -0.241 | -0.413 |
| **Interpersonal competences** | Team work | 7.000 | 7.000 | 1.638 | -0.227 | 0.471 |
| | Leadership | 5.273 | 6.000 | 2.316 | -0.042 | 0.087 |

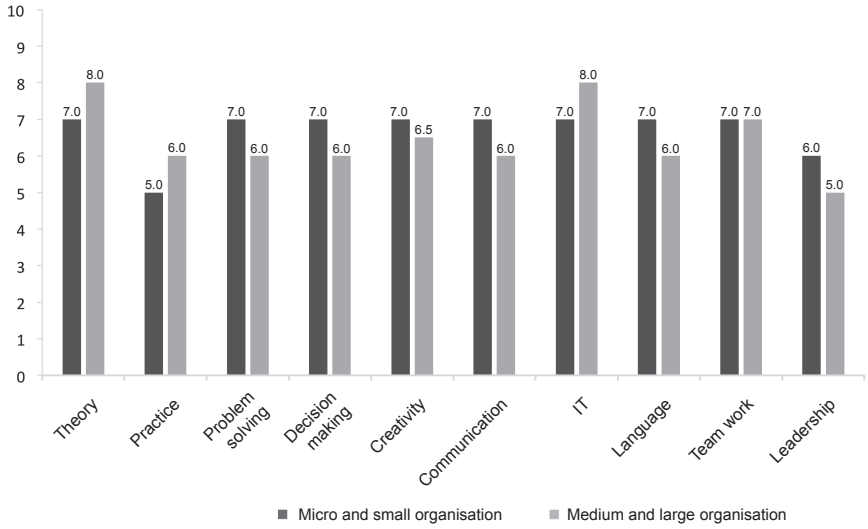
Source: Own elaboration.

GRAPH 2. Valuation of the importance of training received and of the competences for work (median) according to employers. Differences by size of company.




Source: Own elaboration.
* Statistically significant difference at a .05 significance level.

GRAPH 3. Satisfaction with the importance of the training received and the competences developed by the graduates (median), according to employers. Differences by size of company.




Source: Own elaboration.
* Statistically significant difference at a .05 significance level.

As in the previous section, these results have been analysed to seek possible differences between the valuation of competences by size of organisation (micro and small organisations; medium and large organisations) using the Mann-Whitney U test. As shown in Graphs 2 and 3, the only difference with statistical significance at $p<.05$ is in the valuation of language competences: employers from medium and large companies regard them as more important (mean rank of 27.89) than employers from micro and small companies (mean rank of 18.32, U=158.5, $p=.021$). The magnitude of this difference is moderate ($r=.33$).

The survey also asked employers about difficulties in hiring pedagogy and psychology professionals who meet their needs. The results show that 65% of the employers surveyed have had problems hiring for certain posts; the reasons for these problems are, for 33% of employers, that graduates do not have the necessary competences and, for 23%, that there is a lack graduates in specific areas. Other reasons were given by 23% of the employers who answered this question for the difficulty of covering certain posts, such as lack of personal maturity and motivation, and lack of knowledge about the functions of the specific role (for example, they mention the case of psychologists and educational psychologists who do not have competences relating to the company's training and human resources).

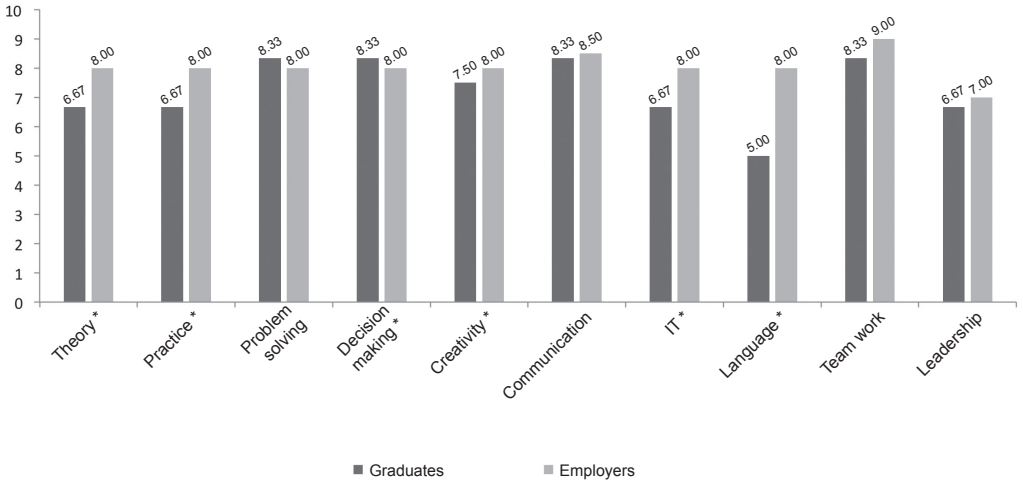
### 6.3. Differences in perception of the competences of the graduates, according to employers and graduates

To answer the last objective (to establish the differences, between employers and graduates in their valuation of competences), the perceptions of graduates and employers were compared using the Mann-Whitney non-parametric test. The results shown in Graph 4 indicate that there are statistically significant differences in the level of importance given to theory and practical training, creativity, IT, and languages. The employers value more highly the competences mentioned above (mean ranks of 259.56, 254.09, 219.93, 238.48, 245.01) in comparison with the graduates (mean ranks of 178.1, 178.9, 182.25, 181.19, 180.23; U=4,461, 4,723.5, 6,113.5, 5,473, 5,159.5, 7,648; $p<.05$).

In contrast, the decision-making competence is regarded as more important by graduates (average range of 192.31) than employers (mean rank of 158.66; U=6,439.5; $p=.038$).

Rosenthal's $r$ (1991) was calculated for all of the significant differences that emerged. The effect size was small for all of the competences ($r$ values of .25, .23, .11, .12, .17, .20).

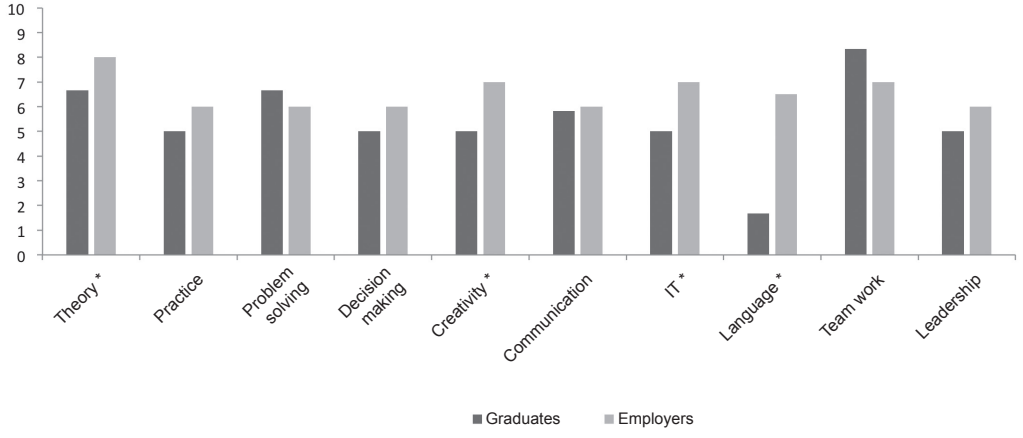
GRAPH 4. Differences in the importance of the competences between employers and graduates (median).




Source: Own elaboration.
* Statistically significant difference at a .05 significance level.

The only group of competences that do not display significant differences at a .05 significance level are interpersonal competences. In other words, graduates and employees have a similar valuation of the importance of these competences.

GRAPH 5. Differences between employers and graduates in satisfaction with the level of the competences (median).




Source: Own elaboration.
* Statistically significant difference at a .05 significance level.

Graph 5 shows the median values for the scores for the level of satisfaction with the level of competences, with the valuations of the graduates and employers.

Again, the interpersonal competences group does not display significant differences at a significance level of .05. There are only significant differences in the level of satisfaction with training in theory and in the creativity, IT, and language competences. In all cases, the employers have a higher mean level of satisfaction (mean ranks of 217.77, 247.21, 269.67, and 298.24 respectively) than the graduates (mean ranks of 182.78, 178.74, 175.66, 170.28; U=5,995.5, 4,670.5, 3,660, 2,211.5; $p<.05$). The magnitudes of the differences observed in the satisfaction with theory training, creativity, and IT competences can be regarded as small ($r$ values of .11, .21, and .29 respectively). In contrast, the difference in the level of satisfaction with language competences displays a moderate effect size ($r=.40$).

## 7. Conclusions and discussion

The economic crisis has led to a worsening of the situation of recent graduates in the labour market and an increase in their unemployment rate (MECD, 2013), exacerbating the imbalance between supply and demand (Xiaohao and Changjun, 2013) and worsening the conditions of their labour market integration concerning educational alignment, contractual stability, and the possibility of obtaining a large enough salary to be able to be independent (Pineda-Herrero, Agud-Morell, and Ciraso, 2016).

One way to analyse this problem is to study the employability of recent graduates. We agree with Suárez (2016) that the concept of employability has a dimension that is extrinsic to the individual and relates to macroeconomic factors, employment policies, labour supply conditions, selection processes, the range of training available, and support services. Nonetheless, in this article we have attempted to examine in depth the facet of employability that relates to the individual dimension, with the competences of graduates, specifically the transversal competences that have been described in the literature as being most important for good workplace integration (among others: Carnevale, Gainer, & Meltzer, 1989; Stasz, 1998; Bridge, O'Neill, & Cromie, 2003; Stevens, 2005; Weller, 2007; García & Pérez, 2008; Wye & Lim, 2009; Hernández-March, Martín del Peso, & Leguey, 2009; Coleman, 2011; Cai, 2013; Bernal, Delgado, and Donoso, 2014; Lantarón, 2014).

This article focuses on Pedagogy, Psychology, and Educational Psychology graduates, comparing the perspectives of graduates themselves and of the business who have recently hired graduates in these subjects regarding their satisfaction with transversal competences and their relevance to work.

The results of the study show that the graduates regard team work, problem solving, decision making, and communication competences as very important. They are also on average satisfied with what they were able to learn in these competences during their degree. They are less satisfied with the training they received

in languages, although the graduates in the sample do not generally regard this as a particularly relevant competence for employment.

For its part, the analysis of employers' responses shows that they regard team work, problem solving, communication, and creativity competences as very important, and that they are generally satisfied with the hired graduates' level in these competences.

Analysis of the compared perspectives of graduates and employers shows that both groups value team work as one of the most important competences for working in the psycho-educational sector, confirming the results obtained in other studies at the international level (Andrews and Higson, 2010; MetLife, 2011). As for other competences, the valuations by graduates and employers differ significantly. In particular, discrepancies are apparent regarding the importance attributed to, creativity, IT, languages, theoretical and practical training: employers regard these areas as more important for work, and so as having greater weight in the selection process (agreeing with García and Pérez, 2008, Cai, 2013, and others). In contrast, decision making is a competence that graduates overvalue in comparison with the views of the employers, something that contrasts with other research into what training is desirable for graduates in Psychology and Pedagogy (Valeeva & Karimova, 2013). These results suggest that the employers' expectations about the training of the recent graduates do not always coincide with the priorities that the graduates themselves give to certain areas of competence, something that could create an imbalance in training.

As for the satisfaction of the two groups with university training in transversal competences, some interesting discrepancies were also detected. Specifically, employers report greater satisfaction than graduates with the competence areas of creativity, IT, and languages, as well as with the level of theoretical training of the university graduates. Both groups are very satisfied with the teamwork competences of the recent graduates, a factor that corroborates the results of the AQU's qualitative study (2017) which identifies this competence as one of the strong points in the training of the graduates according to businesses in the educational and social service sectors.

According to the overall results of the survey (AQU, 2014a), university graduates believe that the most important training deficits are in the competences that are most wanted in work: languages, decision making, IT, leadership, and problem solving. However, the results show that employers are more satisfied with the competence level of Pedagogy, Psychology, and Educational Psychology graduates in IT and languages than the graduates themselves are (in particular, language competences stand out, where a moderate effect size was found), while employers regard the ability to make decisions as less important than graduates do. Regarding leadership, neither employers nor graduates regard this competence as particularly important (among those covered by the questionnaire). Despite the methodological limitations of

the study (specifically, the characteristics of the sample of organisations), these results could suggest that the employers have a more optimistic view of the competences of young educators, psychologists, and educational psychologists compared with other graduates in the general study sample.

From the results presented in this study, problem solving emerges as an area of competence that could be strengthened in university training to better meet future employers' expectations of educators, psychologists, and educational psychologists; this competence is regarded as very important by both employers and graduates, but the employers are not very satisfied with the graduates' level of command of it. Solving complex problems is a competence that is increasingly regarded as important in the selection of candidates by businesses (NACE, 2016) and so it should be emphasised in the curriculums of these qualifications.

Regarding the possible differences in the valuation of the competences according to the size of the organisations that where the recent graduates work, some significant differences were observed, but these do not match the valuations by employers and graduates, and they do not seem to be conclusive (in line with contributions by Husain, Mokhtar, Ahmad, and Mustapha, 2010). The only competence that employers and graduates both regard as more important in medium and large businesses is languages, something that could relate to a higher level of internationalisation in these organisations.

One of this study's main contributions is that it shows which competences should be regarded as more important by graduates and universities to meet the expectations of employers in the psycho-educational sector. This study has permitted us to present the characteristics and differences of views of employers and graduates in the psycho-educational sector, a topic on which there are few studies.

It has shown that, although there are discrepancies between the views of graduates and employers, the psychologists, educators, and educational psychologists of Catalonia have a good part of the transversal competences required by companies. Nonetheless, almost a third of companies have difficulties finding appropriate graduates for the posts they offer. As Singh, Thambusamy, and Ramly indicate (2014), companies today require professionals with a broad selection of competences, giving them the flexibility to perform different functions. In light of these results, it would be helpful to check whether the latest reform to syllabuses better meets the needs of the companies, and whether it facilitates the workplace integration of the pedagogy and psychology professionals in the fields that pertain to them.

It might be concluded that graduate unemployment levels could fundamentally be attributed to factors from the macroeconomic climate of the country (Weller, 2007), but, according to employers' responses concerning the difficulties they have encountered in hiring, these unemployment levels could also be the result of particular shortcomings in the spe-

cific training of these young people. More exhaustive research along these lines will be needed to explore these results in greater depth.

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# The pedagogical founding fathers of Europe: foundational education discourses for European integration, one hundred years after the First World War[1]

## *Los «padres» pedagógicos de Europa. Discursos educativos fundacionales para la integración europea, cien años después de la Gran Guerra*

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## Abstract:

This article starts by examining the roots of the European Union, the first manifestation of which was the «Europe of Six», conceived by a group of people nowadays known as the «founding fathers of the EU». It then moves on to consider the educational discourses that supported the establishment of democracy in countries where this supranational political agreement was developing. The end of the First World War (1914-1918), one hundred years ago this year, saw the start of a process of peaceful reconstruction in which the foundations of a European federation to maintain internal peace were laid. From this perspective, Europe has not only been a superlative example of political understanding but also, and predominantly, a pedagogical success story. This is why Europe is, has been, and will always be, a pedagogical project above all. In light of the new challenges we are facing today (break-up as a result of *Brexit*, citizens' mistrust of its institutions, the constant threat in markets from emerging powers, and multicultural societies, to name but a few), the solution must be educational. The pedagogical «founding fathers» of Europe tried to consolidate democracy by putting the citizen at its centre. Returning to and updating its foundational educational discourses could reposition our educational actions for reformulating the European Union.

**Keywords:** European Union, international solidarity, civic education, peace education, history of education, European education.

## Resumen:

El presente artículo navega desde las raíces fundacionales de la Unión Europea,

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cuya primera manifestación fue la «Europa de los Seis» ideada por los hoy denominados «padres de Europa», hasta los discursos educativos que abogaron por la instauración de la democracia en los países gestacionales de este acuerdo político supranacional. Al final de la Gran Guerra (1914-1918), de la cual se cumplen cien años, se inicia un proceso de reconstrucción pacífica en el que se establecen los cimientos de una federación europea para el mantenimiento de la paz interna. Europa, desde este punto de vista, no ha sido únicamente un ejemplo superlativo de entendimiento político, sino además, y principalmente, un éxito pedagógico. Por este motivo, Europa es, ha sido y será, ante todo, una vía pedagógica. Ante los nuevos retos que hoy se plantean —el desmembramiento a través del *Brexit*, la desconfianza de los ciudadanos en sus instituciones, la constante amenaza para el mercado de las potencias emergentes, además de la realidad multicultural, por citar algunos—, la solución es necesariamente educativa. Los «padres» pedagógicos de Europa intentaron consolidar la democracia poniendo al ciudadano en el centro. Retomar y actualizar los discursos educativos fundacionales puede reorientar nuestra acción educativa para la reformulación de la Unión Europea.

**Descriptores:** Unión Europea, solidaridad internacional, educación cívica, educación para la paz, historia de la educación, educación europea.

## 1. Introduction

In 2012 the European Union was awarded the Nobel Peace Prize and in 2017 it was awarded the Princess of Asturias Award for Concord. These awards commemorate a long and difficult process of peaceful reconstruction. The old continent, with its bloody past as the stage for two world wars, has, in the hundred years that separate us from the end of the First World War (1914-1918), been able to rebuild political relationships without belligerence. Education has played a crucial role in this complex journey and will continue to do so. In response to the first politicians who tried to forge an intergovernmental agreement —the so-called «founding fathers of Europe»— a series of pedagogical discourses were proposed to accompany the construction of European citizenship, or rather the attempt to strengthen parliamentary democracy to enable Europe to be a community of peaceful coexistence. This article offers an in-depth examination of the people who, through pedagogy, made this process possible, drawing attention to their decisive role in establishing unitary public education systems.

## 2. The «founding fathers of Europe»: from the «Europe of Six» to the «European Union»

The process of construction of the European Union was not without difficulties or disagreement and arguments. While the final push for this development came after the Second World War, before then —in fact, after the First World War— there had been an attempt to restore peace through the intergovern-

mental agreement to create the League of Nations in 1920. This Geneva-based organisation was a result of the application of the Treaty of Versailles. Inspired by the ideas of the Woodrow Wilson[2], the president of the USA, this new organisation with its global mission was principally dominated by the victorious European powers of France and Great Britain.

In this context, coinciding with the interwar period, and in relation to forging European integration and preventing new armed confrontations, it is worth noting the contribution by Richard N. Coudenhove-Kalergi who published the work *Pan-Europa* in Vienna[3] in 1923. Raised in the cosmopolitan capital of the Republic of Austria, this visionary argued that the old continent's crisis and the waning importance of its states on the world stage were not due to an advanced biological age but rather politics. According to Coudenhove-Kalergi, the division into twenty different states created an international anarchy that undermined the fraternity between them[4]. Far from leading to a solid, strong, coherent, and united Europe, this phenomenon was the cause of the end of European hegemony in the international sphere, in contrast with its position of leadership in the nineteenth century. The early years of the twentieth century saw the start of this decline, above all after the extremely violent clash of the First World War which resulted from nineteenth-century imperialisms and nationalisms. Faced with this dimming, for the Austrian author, the solution was to establish a political union among European countries to alleviate the breakup of that time. This is, essentially, the central idea behind the title of his work *Pan-Europe*, which is the first modern project for a united Europe. Pan-Europe is a political concept of Europe instead of a geographic one. For its author, Europe's frontiers extended as far as the democratic political system. His focus on this permanent political union was intended to be the answer to future intra-European wars, which were civil wars at the end of the day. If the source of Europe's evils was its division into states, nationalism was its main pathology. Nationalism, as a sort of secular religion, established impassable borders between states. In light of this diagnosis, he prescribed a separation of state and nation intended to dissolve nationalist borders while respecting linguistic and cultural minorities. Pan-Europa was envisaged as a synthesis of the European nation, the product of the unity of Western culture with peaceful coexistence between different traditions and linguistic-cultural minorities. Coudenhove-Kalergi's idea derives from a first attempt at intergovernmental understanding in Europe at a time when this was no more than a utopian dream (Becerril, 2016), as well as being the only possible means of maintaining its standing in the international stage. For this reason, among others, this author has been regarded as one of the «founding fathers of Europe».

The pursuit of European integration was not taken up again until after the Second World War. At the end of the war, and given the catastrophic position the continent found itself in, divided, discredited, and impoverished, there was a need to foster political rapprochement

between the thirty sovereign states, overcoming the anarchy and incomprehension that had led to these two armed conflicts. This important objective had the enthusiastic backing of the man who had led the British Government during the Second World War, Winston Churchill, who in 1947 founded the «United European Movement» (Churchill, 2016, pp. 78-87). One year after the foundation of this movement, the event that has been called the «Congress of Europe» was held in The Hague. From 7 to 10 May 1948 this meeting, opened by Princess Juliana and by Churchill himself, was held in the Dutch city and at it the first foundations of the European Union were laid. The delegates and speakers who reached an initial agreement are regarded as the «founding fathers of Europe»: Konrad Adenauer, Paul-Henri Spaak, Jean Monnet, Alcide de Gasperi, Robert Schuman, and the aforementioned Richard Coudenhove-Kalergi[5]. The debates at this first congress featured disagreements between the «unionists» —mainly consisting of the British representatives, led by the Victorian Churchill— and the «federalists» —including the French, Italians, Belgians, and Dutch.

At an official level, this congress's immediate achievement was the creation of the Council of Europe, whose statute was signed in London in 1949. The Council of Europe, based in Strasbourg, comprised two organisations: a Committee of Minsters and a Parliamentary Assembly. This Council played an important role in the European plan. This was because it promoted European unity based on «the principles of individual liberty, political liberty, and the pre-eminence of the law, on which true democracy is based» (Truyol, 1972, p. 35).

These principles, which were regarded as the common denominator of the shared heritage of the countries of Europe, were the foundations on which the nascent international cooperation in the old continent would be built. Indeed, thanks to the birth on 4 April 1949 of the North Atlantic Treaty Organization (NATO), and given the institutional fragility of the Council of Europe, the determined pro-Europe proposed a supranational organisation covering a smaller geographical area of European communities in the strict sense, establishing in Geneva the new «Consejo de Municipios y Regiones de Europa» in 1951.

Economically, the years following the Second World War were especially favourable. People speak of three «economic miracles» in the period between 1945 and 1963. Three states played a leading role in the growth of Western Europe: Germany, Italy, and France. Of the three «miracles», the German one was the first and most impressive. Under the leadership of the Christian Democrat Chancellor Konrad Adenauer (1945-1963), West Germany soon started to enjoy an economic boom. Thanks to strong export flows and an economy supported by a solid currency (the Deutsche Mark) it soon became one of the world's leading economic powers. This country, which had been weakened and devastated after the war, became an opulent state that was the envy of others, rising like a phoenix from the ashes. The German miracle was followed by the Italian one, which was different in nature

and not as impressive. The northern and central regions of Italy saw the consolidation of industrial sectors such as the manufacture of automobiles and domestic appliances. After 20 years, this progress had earned Italy a strong leading position in international markets. The Italian boom was followed by the «French miracle» that saw this country grow without interruption from 1945 to 1973[6]. Almost thirty glorious years of unstoppable progress saw France become the hyper-specialized power in the aeronautical, agri-food, and biomedical industries that it is today.

These economic conditions would help establish a true Europe. The group of people known as the «founding fathers of Europe» are of special relevance here. Midway between integration and disassociation, the Council of Europe's activities were restricted to interesting debates since the UK had categorically opposed any loss of national sovereignty. After this false start, Jean Monnet decided that, to complete the construction of Europe, it was necessary to get used to working together in the framework of specific achievements in particular sectors. Alongside this proposal, on 9 May 1950 Robert Schuman, the French Foreign Minister —inspired by Monnet's declaration— suggested placing all of France and Germany's coal and steel production under a common high authority. The German Federal Republic, Belgium, Italy, Luxembourg, and the Netherlands backed this proposal and on 18 April 1951 —after brief negotiations— the European Coal and Steel Community (ECSC) was launched. Its founding charter was the Treaty of Paris. With the foundation of the ECSC, the «Europe of Six» was born. For the first time its six member states ceded certain sovereign rights to a common body empowered to take care of the new body's interests. This High Authority, with supranational powers, was based in Luxembourg. The ECSC, whose first president was Monnet, operated very successfully despite the United Kingdom's refusal to join. In light of this triumph, and after the abortive attempt to establish a European Defence Community, the idea of Europe was relaunched at the meeting of the six foreign ministers of the ECSC in Messina on 1 July 1955. The boost given to the European Economic Community at this meeting has been called the *relance européene*. The EEC was finally established by the Treaty of Rome which was signed on 25 March 1957 and has now celebrated its seventieth anniversary. Consequently, the period between 1955 and 1957 has been referred to as the «European Spring». This agreement's aim was to guarantee free circulation of people under the protection of common citizenship and of goods by gradually erasing the national borders of the six members. The council of ministers inherited from the ECSC was joined by a «European Commission» with its headquarters in Brussels. This was an early version of a supranational power (Carpentier; Lebrun, 1994).

Naturally, creating a European common market was a strong step towards making a united Europe viable. General de Gaulle played a decisive role in this process, although, as he recalled in his memoirs, while he was not opposed to European construction, he would have fa-

voured a Franco-German consortium. De Gaulle warned that British interference in the organisms of the EEC could open the door to American influence[7]. This was the main reason for the repeated refusal to allow the United Kingdom to join the Common Market, something he opposed twice (1963 and 1966). It was a matter of strengthening continental Europe. The *entente cordial* led by de Gaulle and Adenauer appeared to regard «consolidating» the Community as more important than «expanding» it with new members, especially if expansion could endanger the internal cohesion between these members when faced with the exterior, and in particular the USA in light of its close ties to the Commonwealth. This fact, as well as the British Empire's constant transatlantic gaze prompted de Gaulle to veto the membership of the United Kingdom. General de Gaulle proposed a «Europe of nations», in other words, a Europe of inter-state cooperation, in accordance with idea of the nation state.

Meanwhile, the repeated requests by the United Kingdom, led by the Labour prime minister Harold Wilson, to be allowed to join the Community caused intense internal discussions between the six members. In the central debate, the differences between the model of an «Atlantic Europe» with more centrifugal relationships and a «European Europe» that would prioritise the centripetal agreements of the continental line were settled. While de Gaulle opposed the United Kingdom's membership of the Community, others, and in particular the avowed supporters of supranationality Luns and Spaak backed it. Eventually after prolonged hard struggles concerning the economic questions —and helped by Churchill's absence from the political panorama— on 28 October 1971 the House of Commons approved the United Kingdom joining the Community. Following applications by two other candidates on 22 January 1972, the «Europe of Six» became the «Europe of Nine» in 1973 when the United Kingdom, Denmark and Ireland joined. This moment of expansion consolidated the second stage in European construction. The «Europe of Peoples» gave way to the «Europe of Nations», the shortfalls of which would soon become apparent. It was not until 1981, with Greece joining, that the «Europe of Ten» was discussed. In 1986, the Community expanded with the entry of Spain and Portugal, becoming the «Europe of Twelve», and so on successively until the Treaty of Maastricht in 1992 which formed the basis of the European Union (Carpentier et al., 1994; Pérez Casado, 2017).

In summary, this long and complicated history saw the laying of the first foundations of the European Union, a process featuring Richard Coudenhove-Kalergi, the pro-European Austrian author of *Pan-Europa*, Jean Monnet, the first President of the High Authority of the ECSC, Konrad Adenauer who was German Chancellor in the post-war period and the promotor of the German miracle, Paul Henri Spaak who was the Belgian President representing the Socialist Party, Robert Schuman who was French Foreign Minister and the founder and inspiration of the ECSC, Alcide De Gasperi of Italy who was President of the Council of Ministers, and, of course, Charles de Gaulle,

the president of the French Fifth Republic which came into being after the colonial crisis of 1958. These people are regarded as the «founding fathers» of Europe.

## 3. The pedagogical founding fathers of Europe

In addition to these authors who made the construction of European unity possible on a basis of peaceful coexistence, democracy, and inter-governmental solidarity, there was a plethora of others who through pedagogical discourse accompanied this process of formation of the citizenry to consolidate these agreements. The educational traditions of the countries when the founding of the Europe of Six was founded were very different. Indeed, in the 1920s, after the end of the First World War, democracy had been established in some European countries while in others it was yet to be founded. Democracy was linked to three countries in particular: France, the United Kingdom, and Germany. In the first two, democracy only had to follow the long trajectory that the war had not stopped (Carpentier et al., 1994); their democratic heritage was already deeply rooted. This was not the case in Germany, where democracy was yet to be established. Its situation was different and it had initial limitations, deriving from its history. Following failed attempts at revolution in the first few months after the end of the First World War, in 1919 a Constitutional Assembly had founded a parliamentary republic defined by the Weimar Constitution that came into effect that August. The early years of this new republic were marked by clashes that underlined its political fragility. As well as successive attempted coups by the far-left and far-right, there were political assassinations, separatist movements in the Rhineland, hyperinflation in the post-war period, the Munich Putsch in 1923, led by Adolf Hitler, and the occupation of the Ruhr from 1923 to 1925 by French and Belgian troops. In contrast, from 1925 onwards the course of the nascent Republic would follow new lines. The country was stabilised under the presidency of Marshal Paul von Hindenburg who governed with a conservative majority, until he was succeeded by Hitler in 1933.

At the same time that democracy was being introduced to these countries, in the 1920s and 1930s a wave of regimes spread across Europe, ranging from authoritarian and semi-authoritarian to the fascist extreme adopted by Mussolini in Italy after the march on Rome (1922). This wave mainly hit Mediterranean and Central Europe after a brief experience of parliamentary democracy. This was the case in Hungary under the leadership of Admiral Miklós Horthy (1920), in Austria under Monsignor Ignaz Seipel (1922), in Spain under General Primo de Rivera (1923), in Turkey under Mustafa Kemal Atatürk (1923), in Poland under Marshall Józef Pilsudski (1926), and in Portugal under António de Oliveira Salazar (1926). The Russian Revolution of 1917 and, especially, the subsequent Cold War, added to this complicated political framework. The Europe-USSR opposition during this period undoubtedly accelerated European construction, dynamizing education regarding its democratic foundations and their contrast with communism. This particular phenomenon meant

that the first pedagogical «founding fathers of Europe» came from the democratic countries. Consequently, this first generation of pedagogues after the First World War, and affected by the events that had happened, focused their educational discourse on civic training to consolidate democracy in the state. Nonetheless, as we will see, their proposals went beyond the strictly national order and aimed connect citizens with humanity in the broader sense.

At the risk of omitting some figures, two generations of «pedagogical founding fathers» of Europe can be cited. The first generation formed the root of peaceful European construction and aimed to consolidate democracy through the autonomy of the student. This first generation, who mainly worked in the interwar period, includes Kerschensteiner, Spranger, and Natorp from Germany, Bovet, Claparède, Dottrens, and Ferrière from Geneva with their internationalist aims, Gloeckel from Austria, and the Viviani reform and Langevin-Wallon plan from the period after the Second World War in France. Once democracy had become established in these countries after the Second World War and following the establishment of the ECSC, a second generation of «pedagogical founding fathers» appeared who went beyond these early initiatives and strove to encourage continental unity through cultural exchange between their countries, giving speeches in favour of European integration through education. This is the case —with Guido Gonella, the Italian Minister of Education at the time of De Gasperi, Denis de Rougemont who was the head of the European Centre for Culture, and the definitive boost that Friedrich Schneider, a comparative educationalist, offered in his work *European education* of 1963. It is also worth noting a number of institutions related to these pedagogic discourses that were launched with the aim of jointly and cooperatively constructing European culture. These include the European Centre for Culture (1950) with its headquarters in Geneva and the College of Europe (1950) in Bruges, as well as the European Association of Educators, based in Darmstadt and founded in 1956.

Within this first wave of initiatives to consolidate democracy, and almost everywhere in Europe at one time or another, the ideal of state reconstruction involved establishing a unitary model of public education that had already started to be implemented before the First World War but was restarted with more enthusiasm after it. One author observes that:

> The educational reform movement, which had started long before the outbreak of war, regained strength during this period, perhaps owing to the same flaws that had become apparent in the education of citizens from the belligerent countries, flaws that were attributed to shortcomings in their educational systems. Therefore, one of the first concerns of the post-war period was to reform and improve these systems (*La reforma escolar en Alemania*, n.d., p. 7).

As a result, educational reforms came in quick succession in the interwar period in Europe. It was noted that rebuilding intracontinental understanding would require a new model of education[8].

Consequently, it is possible to speak of the first «pedagogical founding fathers» of Europe.

We will attempt to clarify who these «pedagogical founding fathers» of Europe are to understand the role they play in forging democracy and peaceful coexistence within and between states. In reality, the long line of pedagogues who tried to establish democracy in Germany dates back to George Kerschensteiner, whose contribution formed the prelude to the educational reform that would be implemented under the Weimar Republic from 1919. According to him, educational intervention should focus on civic education with the aim of turning the democratic state into a moral community (1934, p. 33-34). This is the main mission that the public education system and education in general must undertake. It is no coincidence that changes in Germany in the years following the First World War, were based on the vocational school from Kerschensteiner's work. Public education reforms in Germany were rooted in the unified school —*Einhetsschule*— movement whose main supporters were the democratic and socialist parties, as well as the associations of teachers and pedagogues with liberal tendencies which included Kerschensteiner himself as well as Natorp, Fischer, and Spranger, among others. The first manifestation of this movement was in June 1914 in Kiel at the Deustche Lehvernien assembly where the association of German teachers adopted Kerschensteiner's thesis:

> Under the rule of law, in other words, in a state that automatically regulates relationships between its members according to the principles of justice, public schooling creates a duty to give every child, without exception, the education they are entitled to in accordance with its provisions (Luzuriaga, 1964, p. 105).

To put this another way, a desire to establish public and democratic schools in Germany was taking shape, a project that would be delayed from the start of the First World War until the coming of the republic in 1919. Paul Natorp's ideal of Social Pedagogy, a project which also helped lay the foundations for educational democracy based on a social proposal stands out as well as Kerschensteiner's contribution, as does the work of Eduard Spranger, who argued that the aim of education was cultural pedagogy.

If pedagogy in Germany was concerned with laying the foundations of democracy owing to its lack of a parliamentary tradition, in Switzerland, with Geneva as its pedagogical capital, its interest was instead in coordinating inter-governmental mediation to re-establish peace in Europe. It is possible that the internal division of the Swiss population and the differing attachments of its citizens —some backing the French while others backed Germany— led this state to remain neutral in the First and Second World Wars. As required by the terms of the Treaty of Versailles, the League of Nations was founded in Geneva in 1920 to lead European reunification. However, it would fail in its attempts owing to the different interests of the victorious powers. Pedagogically, Geneva tried to lead educational reform by spreading the New School movement and active pedagogy. Pedagogues of the status of Ferrière,

Claparède, Bovet, and Dottrens among others formed the Geneva School, which opted to develop experimental pedagogy without rejecting universalist ideals. Adolphe Ferrière himself ran through internationalist initiatives ranging from the *Bureau International des Écoles Nouvelles* (1899) and the *Institut Rousseau* (1912) up to the foundation of the *International School of Geneva* (1924-1950), and including the *International League of the New School* (1921). In so doing, he established a political-pedagogical theory that brought together the parameters of Europeanism, internationalism, pacifism, neutrality, intellectual cooperation, moral puritanism, and trust in education as the builder of the future society. Symbolising the spirit of Geneva, he shared the desire for a permanent peace based on disarmament, international cooperation, and the will to construct a political and educational utopia (*l'Ere Nouvelle*) under the principles of moral and intellectual independence and an active and central role for the child. Similarly, Claparède and Bovet were the true drivers of the *Institut Rousseau*. Furthermore, Bovet established an international observatory of the state of education in the world with the foundation of the *Bureau International d'Education* (BIE) which would become a body for documenting and promoting scientific and objective studies into educational matters. The BIE enabled the promotion and consolidation of comparative pedagogy as an epistemological, cognitive, and academic discipline (Schneider, 1966) with a clear pro-Europe mission.

These initiatives and institutions, created under the influence of the spirit of Geneva, tried to establish a European union around the principles of international understanding, collaboration, and cooperation. During the interwar period, following the break-up of the central empires, the aim was to establish peace through moral weaponry for which the New School was regarded as the most appropriate means. The active educational method was chosen to make the child an active and participatory citizen in future through self-governance and the ideal of autonomy. Ultimately, the aim was to establish a European citizenry to lead to ensure peace in the continent through active teaching and the New School movement.

The Republic of Austria was not exempt from this reforming process[9] after the fall of the Austro-Hungarian Empire as a result of the First World War. In effect, the cultural, social, and economic decadence of the final years of the House of Habsburg obliged the nascent social-democratic republic to rebuild a society in the grip of a crisis. From 1919, when the socialists took power, the question of how to make Austria into a state with a new social structure in accordance with the political-social philosophy of the new republican order was considered. As part of this social transformation, which affected all areas, educational reforms were planned. To implement them Otto Gloeckel took on the role of Minister for Public Instruction (1919). Six hundred teachers associations were formed to study and practice the principles of the reform and introduce them into the Republic of Austria across all regions without exception. The two pedagogical cornerstones that sup-

ported it were the idea of concentration, based on centres of interest, and diffusion through global learning. As can be seen, active teaching again took centre stage in establishing the republic and forming citizens. The aim was for each child to work independently. It was no coincidence that the *Lernschule* —school of learning— was replaced by *Arbeitschule* —school of work— without neglecting civic and moral education as well as ensuring religious freedom, respecting Catholic, Protestant, and Jewish schooling.

The French case is different. Under the Third Republic (1870-1940) there was a series of educational changes, from the Viviani Reform led by the pacifist prime minister René Viviani at the start of the First World War, through to the Langevin-Wallon plan (1944-1945) immediately prior to the establishment of the Fourth Republic which had Robert Schuman as president. The Viviani project (1914) was part of the reforms that introduced unitary education and extended compulsory technical elementary education and obligatory post-school training, as well as implementing the principle of free schooling and of democratising secondary and higher education, without ignoring moral and character education. This plan imposed obligatory post-school professional training for boys aged thirteen to seventeen and domestic training for girls from thirteen but only as far as sixteen. On similar lines, the Langevin-Wallon plan aimed to democratise secondary education through comprehensive schooling. Its solution was an integrated, polyvalent, and comprehensive school. This ambitious plan envisaged a school that was unitary and lay, but above all offered moral and civic education.

Alongside these Initiatives that underpinned democracy in schools, a series of notable personalities were involved in the development of the «European spirit» through pedagogy. We refer to the second generation of «pedagogical founding fathers» who, once democracy had been consolidated through education, took a step towards encouraging specifically European citizenship through educational institutions. Stefan Zweig should also be mentioned as a forebear to this generation as in 1932 he insisted on the pedagogical route to cleansing Europe of the ills of the interwar period, a total crisis that was not just economic but also epistemological, political, and philosophical, in other words, a crisis of meaning (Zweig, 2017, pp. 65-84).

In view of the obvious intra-European tensions, Guido Gonella, the Italian Minister of Education under the presidency of De Gasperi called for a return to the unity of European civilisation based on its tradition. Gonella argued for the possibilities of unity without denying plurality. His aim was not uniformity or cultural homogenisation, but rather the rediscovery of the tradition of Europe and its shared civilisation. On these lines, he said in a speech in 1961:

> The European tradition is intellectual thanks to the dignity of a common way of thinking, it is legal thanks to the heritage of a shared legal system, it is spiritual thanks to the internal affinities of a common civilisation. […] Let us then return

> to the three sources of European civilisation: Greek, Roman, and Christian. [...] The unity of Europe rebuilds itself by first restoring the intellectual and social order (Gonella, 1961, pp. 19-20) [Own translation].

The aspiration to rebuild Europe pedagogically and humanistically underlies this project. Thanks to this, Gonella can be regarded as one of the second generation of pedagogical «founding fathers of Europe». Only the cultural path, and with it the educational one, could safeguard European unity. Conscious of the violent conflicts that had overrun the continent, he expressed the urgency of espousing, through schools, active solidarity between citizens and countries. A solidarity that would be based on a new international justice that reconciled the concept of nation with that of humanity, as called for by many of the pedagogical discourses of the first generation (Gonella, 1961, p. 21). Faced with nascent anti-European fascist forces, it was necessary to seek peace through democracy rooted in an Europeanism based on patriotism.

As well as Gonella, Denis de Rougemont deserves a special mention as one of the pedagogical «founding fathers of Europe». The European Centre for Culture was launched in Geneva after the end of the Second World War, and from 1950 it was led by this convinced pro-European. It encouraged cultural exchange, emphasising what was «shared by Europe» and bringing together people and groups with similar roles. The aim of this institution was «to awaken the spirit of European solidarity in public schools, universities, and centres of popular education» (Schneider, 1963, p. 139). Supported by this centre, the AIEE was founded in 1951. This published a *Bibliographie européenne* with the aim of disseminating the achievements and noting problems relating to the unification of Europe.

Rougemont's impetus was decisive for the pedagogical integration of Europe. As director of the European Centre for Culture he undertook a great deal of work training an elite group of pro-Europe politicians and educators. He was aware that a customs union was not enough to achieve a united Europe, and from the founding moment he called for a continental political, social, cultural, and economic federation. In his writing he underlined the importance he gives education for this inter-government understanding.

> To say that everything depends on education is to say that everything depends on educators and their training. The future of the united Europe is at stake in teacher training centres. Until there is an antinationalist and pro-European shift in them, and until the effects of this change are felt in the secondary education of our countries, the very foundations of the union will seem to have developed in step with the demands of politicians and economists. *And so before «making Europe» we have to «make ourselves European»*. And this fundamentally happens in spirits: without a prior «cultural revolution» there can be no revolution in the socio-political institutions, or it will not really get started (Rougement, 1975, p. 72) [Own translation].

In short, beyond the Europe of markets, Rougemont emphasised the need

for a Europe of citizens. It was necessary to forge a European citizenry through education. First of all by training teachers in this way at teacher training colleges, so that, like a chain reaction, this change would be subsequently felt in primary and secondary schools in each member state. Rougemont was aware of the need for a «cultural revolution» to strengthen the European spirit. Education alone, and no other possible means, was the instrument for achieving European unification in the minds of citizens. People had to come to idea of Europe through education, with a sense of pro-European citizenship awakening in each person, freeing them from the chains of nationalism that had led to the two intracontinental wars.

Nonetheless, the decisive push for European education came from Friedrich Schneider, who can be regarded as another of the pedagogical «founding fathers» of Europe. He argued for the need for a discipline called *European education* which as well as being the title of one of his works, was also a curriculum proposal.

The aim of European education was none other than to ensure this European heritage —we call it European civilisation or the European spirit— and make it known as much as possible to many of the members of peoples of Europe; in other words, to form a European feeling in them, a European conscience, is an eminently important task at present. Therefore, as well as political and economic integration, a cultural integration is also required to consolidate these two types (Schneider, 1961, p. 56).

As Rougemont had previously stressed, the European tradition had to be supported through education, that is, training European citizens. Accordingly, he proposed an educational curriculum that contained, among other aspects, a history of pedagogy in the European sense. His intention was, as his predecessors has already stated, to encourage Europeanism through patriotism, always respecting national ties. This is the form a European education had to take; its sense of cohesion could not be at odds with the national community but instead had to be compatible with it. To this end, Schneider examined European educational systems, emphasising what they had in common. Their common features included: the duration of the period of compulsory education (this varied from six to ten years and was an achievement of the first generation of pedagogical founding fathers), the belief in continuous education (beyond primary level and professional training education in European countries continues throughout life), and, finally, education had a tripartite structure in almost all countries with primary, secondary, and higher education. If educational problems, as he himself would find, were shared, the solution also had to be shared by all of the member states of this union. Therefore, pedagogical research also had to be supranational. Ultimately, all efforts should be focussed on seeking out the European spirit, both with regards to its problems and its solutions, neither more nor less.

## 4. In conclusion

Having seen this overview of the origins of Europe, there is no doubt that

efforts have been made since its earliest days to express it as a pedagogical project (Vilanou, Prats, Longares, 2016, p. 17). In accordance with the cultural and spiritual dimension of the old continent, Europe has been an educational reference model, from the German and Swiss proposals to the Austrian and French ones in favour of constructing a supranational state of peaceful coexistence and citizen solidarity. Nonetheless, it is now at a crossroads. In the year of the sixtieth anniversary of its establishment it faces the break-up of its unity with the exit of the United Kingdom and the start of the so-called Brexit process with its possible impacts on the Eurozone. Anticipating its possible decline, Pérez Casado (2017) affirms that faced with the threat of the emerging countries and of its most powerful competitor, especially since the electoral triumph of Donald Trump, the alternative is a bigger and better Europe. It is necessary to rethink it, avoiding technocratic pitfalls and a generalised loss of confidence in its institutions and returning the central role to its citizens. On the same lines, he maintains that «these in-depth reforms require the construction of a democratic pedagogy that involves citizens in its objectives, making them partners in a new stage of European construction» (2017, p. 33). Consequently, the reestablishment of the united Europe or the European Union, respecting and returning to the original principles of cooperation, will go through the educational route. As Jean Monnet would lament: «If I had to do it again, I would begin with culture». Today, more than ever, it makes sense to reread the pedagogical «founding fathers of Europe» who introduced democratic pedagogy and European citizenship, conditions that make integration possible.

In this new Europe that we now find —post-industrial, postmodern, post organic, and multicultural— pedagogical discourse must follow new paths to confront the challenges that affect European reconciliation, achieved during this 100-year journey since the First World War. Therefore, if Europe is one thing now, or will be, it involves the pedagogical and educational project. Javier Solana notes that the European Union is the most innovative and successful process of integration in the history of humankind (2015, p. 9). If we wish to maintain the levels of shared prosperity as well as the freedom and equality of citizens, European integration is vital. Peace, prosperity, the rule of law, respect for difference, solidarity, liberty, democracy, and social justice are the values that today shape European identity and are our «common heritage». As such we must protect them and they must be strengthened through education. Today more than ever, Europe is a pedagogical project.

## Notes

1 The research this article is based on was made possible by RecerCaixa.

2 Voyenne notes that Wilson, an avid reader of Kant, dreamt of the «philosophical project of perpetual peace». The League of Nations, inspired by Wilson, comprised the triumph of law over Germany's aggressive attempts at establishing hegemony in Europe. In other words, the victory of democracy, justice and peace over Germany's ambitions for military dominance in Europe (1965, p. 165).

3 Prior to the attempts at European construction or reconstruction, after the First World War, there

had been a series of works known as literature of crisis. One example of this is *The decline of the West* by Oswald Spengler, who in 1918 denounced the crisis of linear evolutionism and of the progressive designs of social development (Esquirol, 1994, p. 34).

[4] Coudenhove-Kalergi (1923). *Paneuropa*. In Truyol (1972), pp. 81-83. *Paneuropa* was republished in 2010 in Madrid by Encuentro.

[5] Voyenne has stated with regards to this congress: «For the first time, all of the men who were determined to build Europe were together. This resulted in an atmosphere of exceptional enthusiasm. However, after this first contact, it could be seen that two trends, at least, seriously divided the European forces. On the one hand, the unionists remained as solidly opposed to anything that could limit the sovereignty of the states as they had previously been. [...]. On the other hand, the federalists, called for an effective federation, with its own powers» (1965, p. 188).

[6] De Gaulle in his memoirs recounts the successive investments made in France during the period from 1958 to 1962 in trade, agriculture, and electronics, as well as aeronautics and industries relating to gas. All of these processes of modernisation gave a strong boost to the French regions that specialised in certain sectors (1970, pp.183-184).

[7] De Gaulle himself in his memoirs recalls the difficulties of building a European Europe faced with the threat of the Atlantic Trojan Horse that the early integration of Britain would have involved (1970, pp. 202-203).

[8] It should be no surprise that Comparative Education became established as an academic discipline in this period. As Schneider notes, «at the end of the First World War, several circumstances favoured the development of the comparative science of education. States with developed school systems felt the need to submit them to a rigorous assessment; the new states saw education as the essential means for their foundation and consolidation. And, above all, the desire to achieve civic democratic opinions and humanity led them to concern themselves with educational plans» (1966, p. 46).

[9] On the Austrian educational reform, Luzuriaga writes: «The First World War was to stop this development of the new public school and only with the end of the war could it be pursued. Accordingly, the second stage, the 'federal educational institutions' in Vienna were true 'new schools' but these were public and national in character» (2002, p. 53).

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# Teaching structures on Architecture degrees. ICT-based methodology and teaching innovation

## *La enseñanza de las estructuras en el Grado de Arquitectura. Metodología e innovación docente a través de las TIC*

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## Abstract:

The teaching of structures on architecture degrees has traditionally been based on didactic lectures covering theoretical content with exercises solved in class by the lecturer. This very passive teaching style which involves minimal student participation, was accompanied by a high failure rate. Based around calculating unrealistic models by hand, this method is unattractive from a pedagogical perspective, something reflected in low attendance rates. It also creates superficial learning in which concepts are quickly forgotten after finishing the module. This article presents the innovations adopted in the Structures II and Structures IV modules from the Architecture degree at the University of Malaga, which have made it possible to raise the pass rate and attendance, and also aim to give students a closer link to this content through the use of ICT. To do this, flipped learning and PBL methodologies were used along with various ICT tools that also made it possible to check how students follow the module with the aim of evaluating the results of continuous assessment.

The results obtained show a rising trend in the pass rate with an improvement in the quality of the passes and an increase in the number of students who sit the exam in the first assessment period. It can be concluded that the use of the methodology described above leads to students being more involved and motivated by the subject, favouring continuous weekly work, and thus achieving better learning.

**Keywords:** teaching, teaching methods, ICT, PBL, flipped classroom, structures.

## Resumen:

La docencia de las estructuras en el Grado de Arquitectura se ha basado tradicionalmente en la lección magistral de contenido teórico junto a ejercicios resueltos en clase por el profesor. Esta docencia, muy estática y con mínima participación del alumnado, iba además acompañada de una tasa de suspensos elevada. Centrada en el cálculo a mano de modelos poco reales, no resulta atractiva

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desde el punto de vista pedagógico, algo que se manifiesta en el escaso porcentaje de asistencia, generando además un aprendizaje poco profundo cuyos conceptos se olvidan en poco tiempo tras superar la asignatura. El siguiente artículo presenta las innovaciones adoptadas en las asignaturas de Estructuras II y Estructuras IV en el Grado de Arquitectura de la Universidad de Málaga, con cuya aplicación se ha conseguido elevar tanto el índice de aprobados como el porcentaje de asistencia, buscando estrechar además, por medio del uso de las TIC, la relación del estudiante con estas materias. Así, se han utilizado metodologías del tipo docencia invertida o *flipped learning* y ABP, empleando para ello diversas herramientas TIC que, adicionalmente, han permitido comprobar el seguimiento de la asignatura a efectos de valorar los resultados de la evaluación continua.

Los resultados obtenidos ponen de manifiesto la tendencia ascendente en el índice de aprobados, así como en la calidad de estos, consiguiéndose asimismo un incremento en el número de alumnos que se presentan en primera convocatoria. Se puede concluir que el uso de la metodología enunciada conlleva una mayor implicación y motivación del estudiante con la materia, favoreciendo el trabajo continuo semanal, logrando con ello un mejor aprendizaje.

**Descriptores:** docencia, técnica didáctica, TIC, ABP, *flipped classroom*, estructuras.

## 1. Introduction

Owing to its significant theory content the teaching of structures on Architecture degrees, has traditionally been based almost exclusively on the didactic lecture format. In this format, the more purely theoretical content was complemented by exercises the lecturer solved mechanically on the board. In addition, it is worth emphasising the focus on practical work that is present most of the time. This usually comprises exercises that do not have a clear application to reality or have little direct application to the professional practice students will enter after completing their studies. However, it is precisely these theory modules that should have the closest connection to reality (Monedero-Moya, 1998).

This system, based on calculation by hand using unrealistic models, generated a success rate of 35%, and an attendance rate of 25% (Justo Moscardo, 2013). This methodology is so deeply-rooted that, even after the creation of the European Higher Education Area (EHEA) and the introduction of the new Bologna syllabuses, most of the educational innovation initiatives in this area focussed only on reviewing the theoretical and practical materials available to the students. In other words, preparing and publishing module notes or turning them into slide shows (Pomares Torres et al., 2016).

Even with this procedure being the most commonly used methodology, over time different innovation pathways have gradually developed. One of the most common has been to find the underly-

ing transversality of content across related subjects, encouraging cooperative and transversal learning alongside other modules. In the case of teaching on architecture degrees, the logic of architectonic design makes it possible to identify transversal content by creating joint seminars between project-based and technical modules, such as projects, structures, and construction, either vertically across different years (Pérez Carramiñana et al., 2010) or between modules in the same year.

Another pathway explored is to connect the teaching activities performed in the classroom with research, allowing students to learn by experimenting with new structural solutions and systems, either by designing and calculating models (Escrig Pallarés, 1994) or through their own construction work by making prototypes and models (Pérez-Sánchez, Piedecausa-García, Mateo Vicente, & Palma Sellés, 2015). Accordingly, it is of interest to develop interactive models to represent the behaviour of real structures such as Pasco or Mola Structural Kits or hold contests to break structural models of doorways, beams, and grates such as those organised by the Building Materials Laboratory at the Polytechnic School at the San Pablo CEU University or, at an international level, the ones organised by The Institution of Structural Engineers (Lonnman, 2000).

Nonetheless, although the methodologies mentioned above are of great interest, are effective, and deliver good results, Problem-Based Learning (PBL) has the greatest potential and scope for application, especially from the perspective of «Bologna» generation syllabuses. Indeed, PBL has started to be integrated into the new syllabuses, taking advantage of the framework created by the EHEA, with the basic objectives of raising the success rate on technical modules and creating a setting where the student's interest in these subjects increases.

To achieve this, the process starts by presenting a problem to the students, who, generally working in groups, then try to solve it. During the analysis, learning and comprehension of the problem are generated as well as further work on solving the exercise. In this way, the students start by tackling the problem, not the theory they will use to solve the challenges that arise during the process (Barrows & Tamblyn, 1980). The students work autonomously, although they have the support of the tutor who acts as a guide for the process. When designing the problem, it is necessary to ensure that it cannot have one single answer, so that students identify what it is they need to learn to solve the problem. Consequently, depending on their knowledge, they can apply different strategies and gradually reflect on their effectiveness (Hmelo-Silver, 2004).

The main objectives that can be achieved by using this methodology are: more structured knowledge to apply to real settings and cases; developing an effective applied thinking process; creating greater student autonomy through self-directed learning; improvement in the competencies associated with collaborative work; and increasing motivation in the subject (Barrows, 1986). Achieving these objectives is linked to

a series of mechanisms that facilitate knowledge acquisition such as activating and structuring prior knowledge or how information is developed (R. Schmidt, 1983). This type of methodology sets in motion processes that lead to in-depth learning through a particular codification which means that the skills are subsequently recovered with greater ease when the individual encounters similar situations. This last question is not insignificant, as one of the main problems associated with teaching structures is continuity in what is learnt. Indeed, in most cases, students tend to forget most of the material studied progressively and quickly after they have sat and passed the corresponding assessment exam.

## 2. Applying technology to teaching

It is clear that teaching, especially at university level, cannot ignore how technology has become exponentially more important in our lives since the final years of the twentieth century. It has influenced university teaching in two main ways. On the one hand, teaching processes have increasingly integrated technologies. On the other hand, there is the habitual and necessary use of computers applied to the different architectural creation processes, ranging from the facets most closely linked to design, to the techniques associated with calculating structures, installations, and verifying compliance with certain features of building. Throughout this process, the training of teachers in applying ICT to teaching is vital (Tejedor Tejedor & García-Valcárcel Muñoz-Repiso, 2006).

### 2.1. Technology applied in the classroom

Concerning the growing role of technology in teaching, the process has two aspects. In the first, technology has a direct influence on face-to-face teaching through its increased importance in classroom space. The appearance in the classroom of computers and projectors led to the progressive disappearance of the old transparencies and overhead projectors, and also condemned traditional slides to obsolescence. These were all replaced by PowerPoint type slides, reducing the common use of the board in explanations to a bare minimum.

As a result, this apparent digital revolution in the classroom led to teachers bombarding students with excessive slides during their lectures. The students thus became passive receptors of information, something that soon led to expressions like «death by PowerPoint» being coined, reflecting how this methodology bored audiences. The traditional attention curve shows that, if there are no significant changes in the form or the lecturer's discourse, students will generally maintain focus for 10 to 15 minutes with a traditional teaching style (Stuart & Rutherford, 1978). Introducing these new tools has meant that, far from improving and extending students' attention, the maximum attention benchmark has not even remained stable but has started falling. Students could, in effect, at least «entertain» themselves by taking notes in the past (Wilson & Korn, 2007). This has had an inexorable and unavoidable secondary consequence: a drastic reduction in the number of students who regularly attend face-to-face classes.

The prominence of technology in the classroom has grown in recent years, linked to the introduction of technological elements such as interactive whiteboards, although this is not the only course of action. These are ultimately initiatives aimed at improving the lecturer's interaction with students by modifying the dynamic of classes, and so the purely technological additions are complemented by others that affect the very concept of the teaching space, ranging from changes with furniture (Image 1) to the form of its boundaries (Campos Calvo-Sotelo, 2009; Campos Calvo-Sotelo, 2010).

IMAGE 1. Inclusion of interactive whiteboards and modification of classroom furniture during the 2016-2017 academic year in the Higher Technical School of Architecture at the University of Málaga. The image on the left shows the previous rigid distribution of the seating in the classroom.

Source: Own elaboration.

## 2.2. Technology applied to productive processes

Along the same lines, in the field of engineering and architecture, the use of specific computer tools and applications and calculation procedures to streamline and simplify the work of professionals and technicians has become widespread.

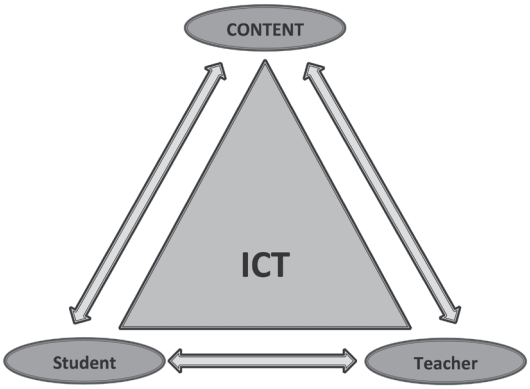
The *softwarization* and *appification* of the work and personal spheres, in other words including Information and Communication Technologies (ICT) in all areas of our lives, has a direct impact on teaching. Teaching methods are often modified to introduce these procedures and systems, often applying them to calculation and so, paradoxically, introducing a distortion. The majority use of computer calculation programs means that students learn to use a particular piece of software while neglecting the theoretical foundations underpinning it and so they lose the ability to analyse the initial problem and the essential skills for interpreting the results, which they accept uncritically.

This is how the dichotomy arises between, on the one hand, teaching computer-based analysis and calculation procedures to train students in technologies they will subsequently apply in their professional life and, on the other, the need to create a solid foundation based on the theoretical knowledge that is needed to understand the phenomena on which they are working.

The integration of ICT in university teaching makes sense in this dual framework. Its ubiquity means it can be introduced naturally as a tool to support teaching and classroom teaching systems to motivate students and enliven teaching tasks. Their involvement is not just focussed on the case of using tools through the virtual campus for the modules, but it also affects the actual use of applications that develop the content and link learning to professional practice.

The gradual integration of ICT has provided fundamental support for the application and development of the different teaching methodologies we have been discussing (Escardibul & Mediavilla, 2016). This has not exclusively been limited to simply publishing the different content areas of the modules online. In contrast, there are many examples that emphasise the positive impact of using ICT resources as learning tools (De Pablos Pons & Jiménez Cortés, 2007; Pérez-Sánchez, Piedecausa-García, Pérez Sánchez, Mora García, & Céspedes López, 2016; Salinas, 2004; Vélez Flores, 2015). One of the most interesting of them is the use of ICT in PBL (Badia & García, 2006; Farnos, 2011). In effect, the possibilities for developing the teaching-learning process through the problem-based learning methodology offered by using ICT are many and varied (Graph 1). On the one hand, these technologies make it possible to establish fluid and dynamic relationships between students and teachers and between the lecturers and the content of the subject to be delivered. Similarly, depending on the type of tools to be used, they give independent support to teachers and students alike.

GRAPH 1. Relationship between ICT and the different factors involved in the teaching-learning process.



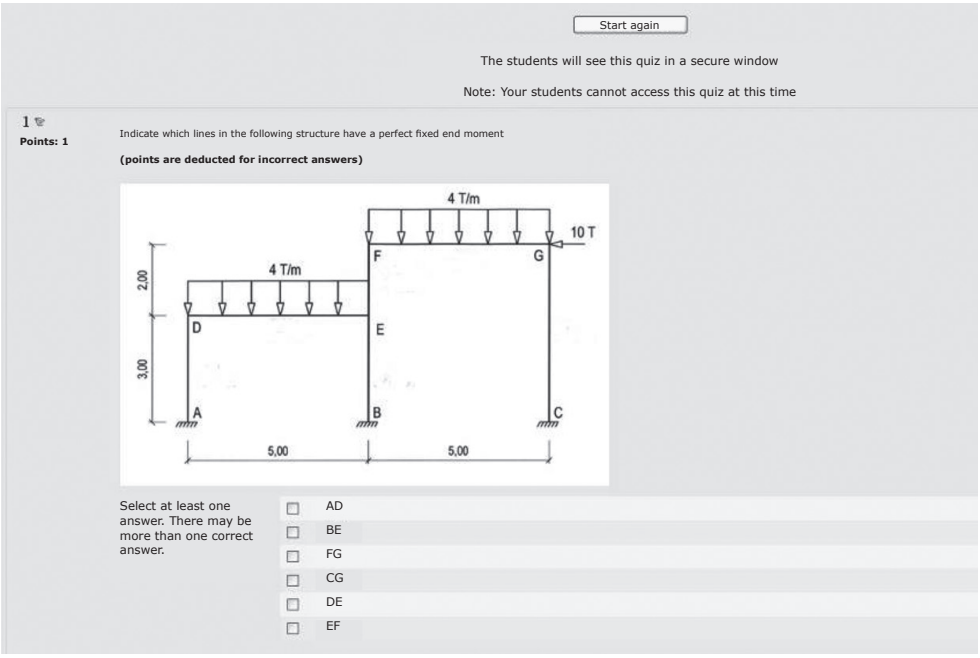

Source: Own elaboration.

## 3. Educational innovation in teaching about structures: application to the module Structures II

### 3.1. Description of the methodology used

Owing to the gradual process of implementation of the new Architecture degree syllabus, delivery of this module started in the 2012-2013 academic year. It is equivalent in credits, face-to-face teaching hours, and its programme to the module from the previous syllabus, the only difference between them being the teaching innovation that is described below, given that the teaching on the previous one was solely based around didactic lectures. Specifically, at the level of content, the teaching programme covers the calculation of forces in framework structures, both in triangulated structures (trusses) and in grid structures (frames). The module is worth 6 ECTS credits, equivalent to 150 hours of work by the student, 60 of these being in class and 90 outside of class. As the semester has 15 teaching weeks, the weekly work load outside class for students is 6 hours.

IMAGE 2. Example of a practical question sheet with time limit included in the module's virtual campus.



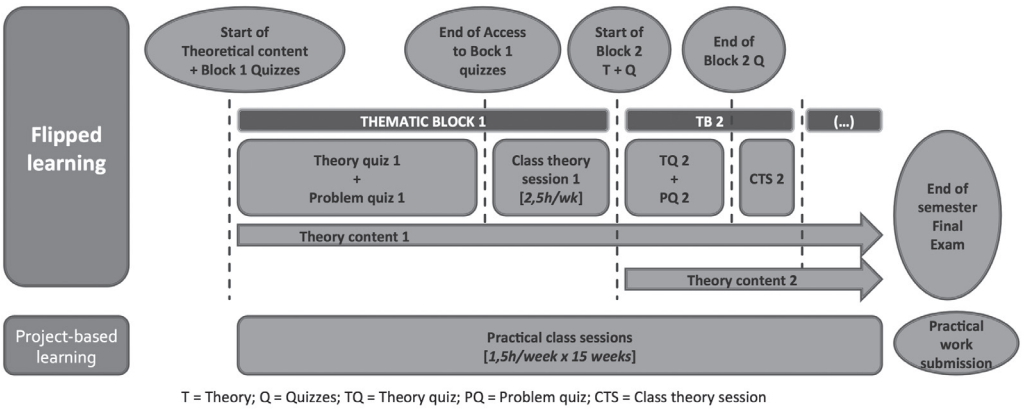

Source: Own elaboration.

At a methodological level, compared with its counterpart in the previous syllabus where teaching was based exclusively on didactic lectures, it features pedagogical innovation. This partly comprises the introduction of a system of continuous assessment that enables and facilitates weekly monitoring of the module's

content. So, through the virtual campus, the student should complete online question sheets every week. These, on the one hand, help revise and reinforce the theoretical content and, on the other, they allow for the exercises and problems to be completed and assessed by applying the theory (Ruiz-Jaramillo, Mascort-Albea, & Vargas-Yáñez, 2015). Consequently, there is one group of question sheets directly linked to the theory content and another group, which despite having a similar function, allows for the monitoring and evaluation of the weekly problems and exercises linked to the theory (Image 2).

As for scheduling during the semester, access to the different types of content, question sheets, and related exercises is programmed weekly to encourage constant interaction with the module. Consequently, the student can only do the exercises for a topic in a specific week. After that, they will have access to the theory content but will not be able to answer the question sheets. This distribution is shown in Graph 2.

GRAPH 2. Outline of the weekly time distribution of the activities planned throughout the semester and the methodology used.




Source: Own elaboration.

All of the blocks of theory in the module are based on the methodology known as *flipped classroom*. In this method, students attend the face-to-face classes having previously reviewed the planned content and once in class, the lecturer emphasizes and/or covers in depth the questions deemed especially relevant, the most difficult ones or ones that the students themselves choose as they are more interesting or complex (Mok, 2014; Uzunboylu, 2015)flipping the classroom appears sound: passive learning activities such as unidirectional lectures are pushed to outside class hours in the form of videos, and precious class time is spent on active learning activities. Yet the courses for information systems (IS).

This methodology means that, in contrast to what happened with didactic lectures that rely on the board and slides, students must play an active role in their learning as they must prepare the topics before the theory classes. This will facilitate their comprehension and enable them to obtain the maximum benefit (Hall & Dufrene, 2016; Ozdamli & Gulsum, 2016; S. M. P. Schmidt & Ralph, 2016).

The planned distribution of hours by classroom and non-classroom activities (Table 1) shows that if they set aside 2 hours per week of non-classroom work in preparation for the final exam, students should dedicate 4 hours per week to preparing for the theory classes and studying the subject. In this plan, it should be noted that a student who duly follows the course could reduce the estimated figure of 30 hours preparing for the final exam, given that this should comprise reviewing/revising what was learnt/covered during the 15 weeks of the semester.

TABLE 1. Plan for student's work on the different activities throughout the semester, assuming a standard length of 15 weeks for the semester for purposes of calculation and estimation.

| **Module** | 6 ECTS credits | 150 hours of student work | 60 hours in class<br>90 hours out of class |
|---|---|---|---|
| 1 ECTS credit → 25 hours of student work | | | |

| **Activities in class** | | **Activities outside class** | |
|---|---|---|---|
| Large group teaching (theory) | 2.5 h/w. (37.5 h). | Preparing for final exam | 2 h/w. (30 h). |
| Small group teaching (practice) | 1.5 h/w. (22.5 h). | Preparing for face-to-face classes *(Theory questions + exercises)* | 4 h/w. (60 h). |
| (*) The anticipated 30 hours would be equivalent to 3 days of work preparing for the exam, as two 5-hour sessions per day. | | | |

Source: Own elaboration.

Although there is ample experience of applying this methodology to teaching in various disciplines (Barreras Gómez, 2016; Gómez García, Castro-Lemus, & Toledo Morales, 2015; Wasserman, Quint, Norris, & Carr, 2017), its use in teaching architecture is not common. The most recent studies indicate that this methodology is especially recommended for professions with a high technical content that must subsequently be applied in professional life (Baytiyeh, 2017), which suggests that its use is especially appropriate for teaching about structures.

As students must have all of the information and resources before the theory class so they can apply them, this system is inextricably linked to the use of ICT (Mendoza, 2015). This is not just a set of tools that allow access to information; it also enables students to evaluate their own progress and performance in the module, making it possible for these activities to be incorporated as continuous assessment, forming part of the final mark for the module.

Regarding *flipped learning*, one matter that should not be ignored is its close link to e-learning teaching (Anderson & Garrison, 2010), this being the platform for much of the methodology used in distance courses using online platforms (Massive Open Online Course-MOOC). Similarly, this type of teaching can be regarded as one of the tools capable of complementing PBL (Tawfik & Lilly, 2015). In effect, in the case of the Structures II module we are analysing, its application to the learning of theory has a supplement based on the PBL methodology used in the practical work that is done throughout the semester.

In this way, completing a piece of practical coursework is introduced in the practical blocks that complement the more theoretical teaching and where students apply holistically what they learn in the theory blocks.

To do this, they take a detached house developed in previous years and integrate the structural system so that it covers both of the structural types included in the course content and then proceed to work out the forces on the structure's different bars.

This process enables the student to visualise clearly the practical utility of the content of the module by applying it to solving design problems in a real structure. The students do this during the weekly practical sessions where the lecturers review the work and answer questions that arise. The type of work, its extension, and its scope, means that it can be done during the 22.5 hours (1.5 hours × 15 weeks) of practical class-based work so that the student does not spend time working on this outside class. In this way, observing the planning of the students' weekly dedication (Table 1), it can be said that this is sufficiently measured in the course as a whole.

The development of this work is, therefore, based on the use of PBL methodology as the practical work directly confronts students with a problem they themselves have raised (an architecture project) which they will work on, modifying it to meet the requirements of the specification. At the start they do not have the necessary competencies to do this; these are acquired during the successive advances both in their own work and in the theory classes, thus connecting the two blocks. Doing the practical work therefore, takes into account the process and basic principles of PBL (Justo Moscardo, 2013).

### 3.2. Evaluation

Regarding evaluation, in addition to the assessments mentioned above, there is a final exam in which students solve similar theory and practice exercises to the ones they do during rest of the course. The value and percentage of the final mark of each of these tests is shown in Table 2.

TABLE 2. Value and percentage of the final mark of each of the evaluation activities of the Structures II module from the degree in Architecture.

| Evaluation activity | Value | % final mark |
|---|---|---|
| Theory question sheets (weekly) | 0.5 | + 5.0 % |
| Problem question sheets (weekly) | 1.0 | + 10.0 % |
| Mid-term exam (triangulated structures) | 0.5 | + 5.0 % |
| Participation (in class, virtual campus forums, etc.) | 0.5 | + 5.0 % |
| Structural design practical work (designing and calculating a detached house) | 0.5 | 5.0 % |
| Final exam (requirement: a minimum of 3.5 points) | 10 | 95.0 % |
| | 13.0 | 100 % |

Source: Own elaboration.

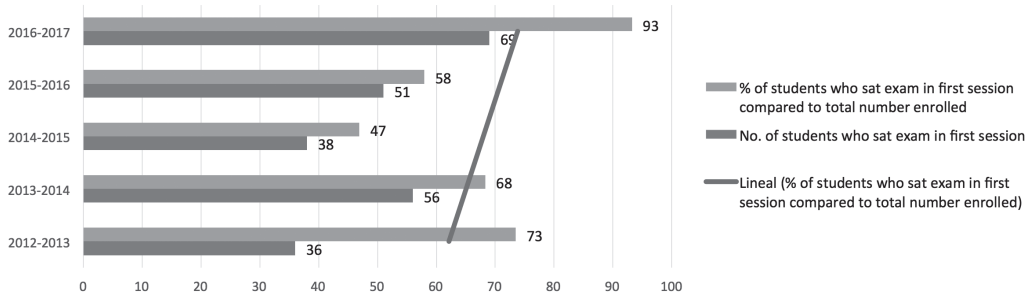
The course practical work and the final exam are the only assessments it is compulsory to submit in order to pass. So, a student who does not wish to do the continuous assessment is not penalised for this and can pass by obtaining the highest mark. However, it is necessary to note that obtaining a minimum of 2.5 points on the final exam —equivalent to 19.2% of the total course evaluation— is a prerequisite. This requirement means that students must show they have acquired minimum knowledge and competences in each of the thematic blocks.

The other assessments are voluntary. The marks from them are extra credit in addition to that obtained in the compulsory tests. So the weekly evaluation question sheets, which include theory and practical exercises (for example, estimating force diagrams), active participation and interest in class and forums, as well as completing a mid-term exam at the end of one of the module's content blocks are suggested as extra points that the student adds and that provide an incentive to follow the course every week. In effect, as can be seen, if a student obtains the minimum mark in the final exam (2.5 points), the continuous assessment exercises allow him or her to pass the module even if the final exam is failed, as with the other weekly exercises and the practicals it is possible to add as many as 3.0 points to the mark from the final exam. Similarly, they make it relatively easy to get a mark of good or excellent.

### 3.3. Results obtained

From the perspective of academic results, the use of this methodology has a double aim: firstly, to increase the success rate at the first attempt, which it does through the significant use of continuous assessment, and secondly to raise the overall success rate. Accordingly, we can see that the percentage of students who take the assessment in the first session has a progressively increasing trend (Graph 3). Indeed, the percentage of people who sat the test in the most recent session was 93%.

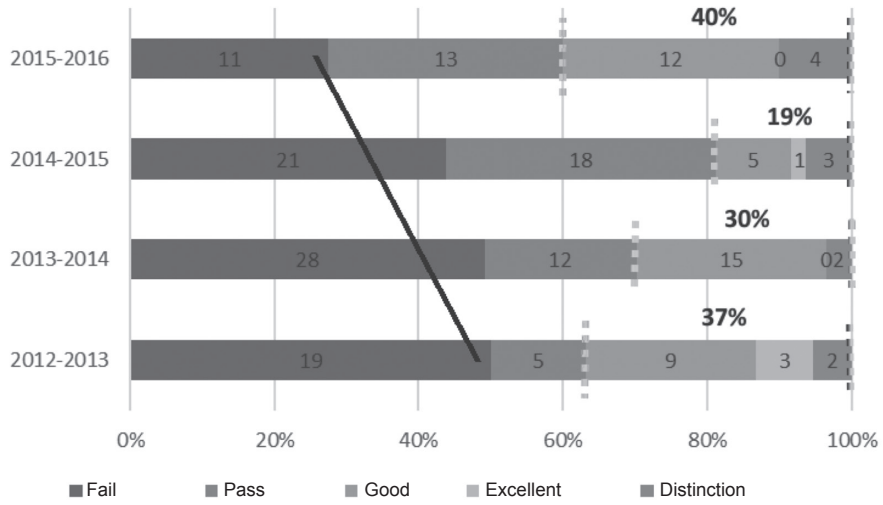
GRAPH 3. Percentage of students who sat the exam for the Structures II module in the first session. The trend line for the percentage of people sitting the exam in the first session is shown.




Source: Own elaboration.

As well as this increasing trend in the number of people per year who sit the exam in the first session, if the total percentage of pass marks per course is considered, Graph 4 shows that this displays a substantial increase from 50% in the first year the module was delivered up to around 73% in 2015-2016.

GRAPH 4. Percentage of different grades obtained in the Structures II module by academic year. The trend line for the percentage of fails is shown. The percentage of students who successfully completed the module with a mark higher than pass is shown.




Source: Own elaboration.

On the other hand, regarding the grades, Graph 4 shows that the average mark of the people passing the module with a grade higher than a pass is 31%. If we compare the trend in both images, it is apparent that in years when more people took the exam (in other words, years when a larger number of students took the module), the percentage of students who obtain a mark of good or better also increases. Therefore, it is possible to conclude that with the proposed methodology there are not just fewer fails; instead the rate of success increases with the percentage of candidates who get a mark higher than pass increasing.

## 4. Educational innovation in teaching about structures: application to the module Structures IV

### 4.1. Description of the methodology used

A similar methodology to the one described above is used in the Structures IV module from the same course. However, while it does follow a similar methodology to the one described, there are some differences in this case. The aim of presenting different procedures is that as these are applied on modules with similar technical content, it is possible to compare the results obtained by using each methodology.

Specifically, the content of this module focusses on the design and dimensioning of steel and reinforced concrete structures based on calculations of stresses resulting from different forces. The learning outcomes are based around knowledge of the specifications contained in the different regulations in force under Spanish and European legislation regarding structural calculations.

In the case that interests us, teaching is structured around a weekly didactic lecture that combines theory and practice, encouraging student participation during the session. Exercises are then proposed in the practical class to complement each of the topics the students have to solve during the class. Unlike in the previous case, the *flipped classroom* methodology is not directly used since, while the students do have the information ahead of the theory class, there is no prior coverage of the subject with the preparatory question sheets.

In this case, ICT resources are used as support for the theory content. To incorporate the work, the students perform outside class into the normal dynamic of the module, a series of activities are prepared with content that varies according to the subject with which they are associated. These range from ordinary online question sheets, for solving exercises or evaluating theory, up to SCORM type presentations. These video format interactive presentations can include questionnaires or activities for revising or reinforcing learning of the content being viewed (Gonzalez-Barbone & Anido-Rifon, 2008; Papazoglakis, 2013) the creation of really reusable, searchable learning objects requires a detailed consideration of metadata, where some institutional aspects may be unclear or not available. This work describes creation

of a first learning object, from software tools installation to final packaging. It aims at a wider perspective than that offered by handbooks or user guides for content generation tools, generally poor or altogether deprived of suggestions on how to go about to achieve reusability, interoperability, durability and accessibility as conceived by the SCORM standard. Only free software and Internet publications are used as references. The creation of a simple SCORM package with the Reload Editor is described step by step, and the package created is then tested using Reload SCORM Player, allowing for the detection of some difficulties and alternatives of solution. Help available and some commented references are afterwards indicated. A list of suggestions finally emerges, to the purpose of solving beforehand most of the uncertainties, defining a consistent learning object creation scheme and reducing training time to master tools and metadata generation. As a conclusion, some limitations found along the work are pointed out, in particular the necessity of adopting or defining a LOM (Learning Object Metadata). They have the additional advantage that they can be viewed on any platform, and so they are easily accessible, for example, on mobile devices such as telephones or tablets.

As well as these online resources for free revision of the subject, explanatory videos are also prepared to cover concepts/solve exercises (Guo, Kim, & Rubin, 2014).

To complement the theory blocks, the students have to do practical coursework in groups of 3 where they progressively apply the concepts presented in class. This practical work makes it possible to apply the PBL methodology described above. Each of the work groups has to operate as a small consultancy entrusted with calculating the structure of the project chosen from the range proposed by the lecturer. For example, during the 2016-2017 academic year, a set of paradigmatic dwellings representing 20th century architecture built with steel structures was used as the theme for the work. Monitoring of practical work partly takes place face-to-face in the small group classes, as well as during the tutor hours and also happens continuously and outside class using ICT tools such as the specific forums for each group.

### 4.2. Evaluation

In this case, the evaluation was based on the different tests performed during the year. The value and percentage of the final mark of each of these tests is shown in Table 3.

TABLE 3. Value and percentage of the final mark of each of the evaluation activities of the Structures IV module from the degree in Architecture.

| Evaluation activity | Value | % final mark |
|---|---|---|
| Mid-term exam on Steel structures | 1.5 | 15.0% |
| Mid-term exam on Concrete structures | 1.5 | 15.0% |
| Structural design practical work (structural design, calculating action, and calculating combinations and enclosures) | 1.0 | 10.0% |
| Final exam (requirement: a minimum of 1.0 point in each of the content blocks) | 6 | 60% |
| | 10.0 | 100% |

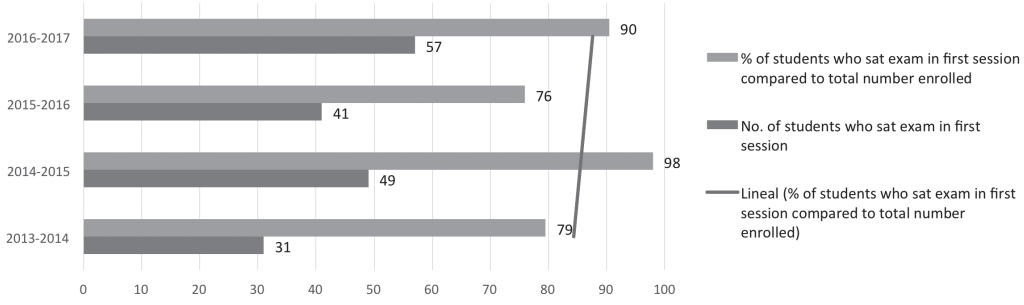
Source: Own elaboration.

This is the most important difference compared with the Structures II module. Here, the continuous assessment is based on two mid-term exams during the semester, each of which is about one of the blocks from the list of topics. The mark from these exams, which are worth 15% of the final mark, is kept until the second ordinary exam session (September). This provides additional motivation for the student to follow the module weekly. On the other hand, as in the Structures II module, it is specified that students must attain a minimum mark in the final exam to show that they have acquired minimum levels of knowledge and competencies in each of the thematic blocks.

## 4.3. Results obtained

Analysis of the number of students who sat the exam in the first session in the different years that this module has been delivered (Graph 5) shows that progression has a slight upward trend although it could not be considered especially low in any of the years.

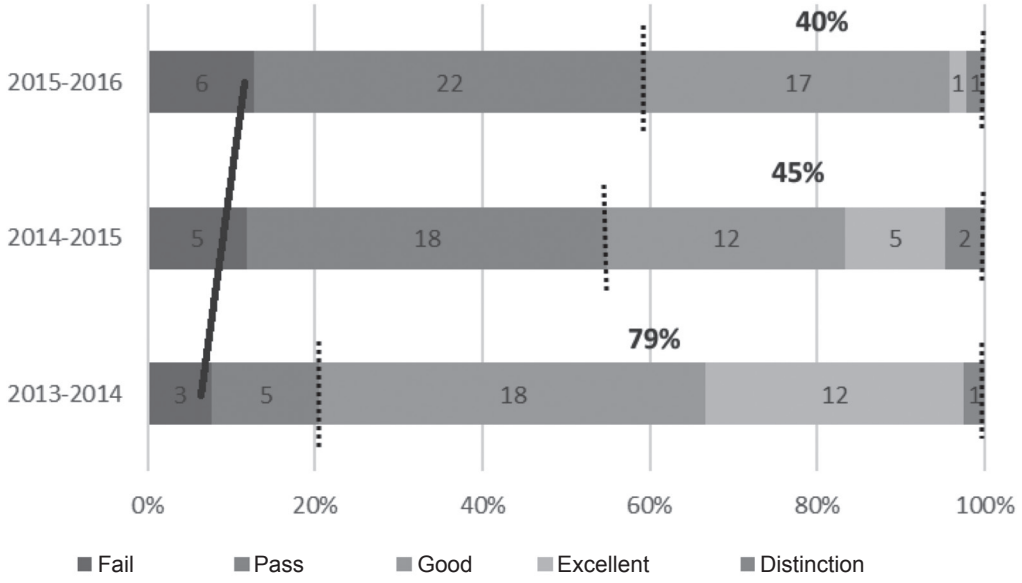
GRAPH 5. Percentage of students who sat the exam for the Structures IV module in the first session.




Source: Own elaboration.

From the point of view of qualifications, Graph 6 shows both the percentage of fails in the years completed since the start of this module and the percentages of other grades (pass, good, excellent, and distinction), and also shows the percentage of students obtaining a grade of good or above.

GRAPH 6. Percentage of different grades obtained in the Structures IV module by academic year. The trend line for the percentage of fails is shown. The percentage of students who successfully completed the module with a mark higher than a pass is shown.




Source: Own elaboration.

As is apparent, there is a slight increase in the percentage of fails, from 7.7% in 2013-2014 to 12.8% in 2015-2016. Likewise, a fall in the number of students who get a mark higher than a pass can be seen, going from 79% to 40%, with the outcome that the percentage of students who successfully complete the module with a pass mark increases.

## 5. The beneficiary of innovation: the student perspective

From the perspective of ICT use, to evaluate students' views of the innovations included in the respective modules, a question about the use of the different resources and media in face-to-face lessons and in the various activities offered through the virtual campus has been included in the student opinion surveys. From the different answers it is possible to infer that

the innovations implemented —such as videos, SCORM presentations, and online questionnaires— are all very highly appreciated, although the inclusion of a large amount of material in the virtual campus is sometimes seen as a lack of organisation. In contrast, it is interesting to note that presentations with slides are not particularly well valued, while using a similar medium like the board is highly valued.

As for the use of PBL, the opinion surveys that students completed for both modules give practically identical results: it gives students considerable motivation as they see how the knowledge they acquire can be applied to real situations. However, they believe that the effort of doing the practical work is not adequately reflected in the final mark, given that its weight in the evaluation is somewhat lower than the weighting for the final exam.

## 6. Conclusions

The results obtained make it possible to conclude that the methodology of continuous assessment through weekly evaluations combined with the use of the *flipped classroom* technique make it easier to follow the module during the semester and also enable students to easily reach the minimum standards required to complete the module successfully without increasing their workload. This is shown by the increased number of students who take the exam in the first session. Furthermore, from the point of view of results, increases in the absolute number of passes per year and in the percentage of students who obtain a mark higher than good can be seen. In other words, compared to using a more static or traditional methodology, flipped learning combined with continuous assessment through ICT and PBL leads to more pass marks and these are also of a higher quality.

This increase in performance is also accompanied by the students' own perception of the improvement in learning as a result of the innovations introduced. Consequently, the use of the PBL methodology by applying the knowledge being acquired to a real structure leads to high levels of motivation, although, in the opinion of the students, the dedication required should be reflected by an increase in its weighting in the final mark. In addition, using ICT increases students' motivation in the subject, although during face-to-face classes the use of resources such as the board turns out to be more popular than the technological innovation of presentations with slides.

With this in mind, we can conclude with a reflection. As we are caught up in the multitude of changes linked to the speed at which our lives progress, will screen fatigue lead us to combine our dependence on them with a return to the «old, manual, slow activities, from our grandparents' era»? (Bueno, 2017)[1].

## Notes

[1] This document was prepared in the framework of the educational innovation project called «New teaching frameworks: ICT applied to problem-based learning in the teaching of technical

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# Book reviews

**Gargallo López, B. (Ed.) (2017).**
*Enseñanza centrada en el aprendizaje y diseño por competencias en la Universidad. Fundamentación, procedimientos y evidencias de aplicación e investigación [Learning-centred teaching and designing for skills in the university: foundations, procedures, and evidence for application to research].*
Valencia: Tirant Humanidades. 338 pp.

A university lecture theatre viewed from the back rows: a long blackboard at the front on a white wall, on the left a door, also white, above which hangs a large analogue clock. Anyone entering through that door will immediately find themselves facing a lectern for addressing people below, a university audience in wooden seats that are neatly arranged, rigid, and immovable. A classroom without windows, intended for a large audience as many seats are visible and more can be surmised. An aseptic or even clinical atmosphere, despite the wooden slats forming part of the chairs. An aseptic environment for didactic and possibly dull lectures. This is the provocative photograph on the cover of this book which is dedicated specifically to a new methodology and philosophy of university teaching.

Is a methodological renewal possible in this setting, in one of the typical lecture theatres of our higher education? Therefore, we are confronted by a major question like a challenge even before opening the book.

Three major sections await us. Answering this question-challenge, and other related ones that arise, means listening carefully at three points that consistently provide enough clues to support the proposal. This is what the table of contents seems to offer, a coherent statement of intent, starting with the theoretical foundations: the underlying philosophy and framework of the argument that gives meaning to and seeks meaning from the proposals for change. This is followed by a detailed outline of the methods, starting with what is intended, and then moving on to how this is to be done. On its own,

this would be enough, but the editor and authors go further; they do not settle for this and include a third part with the message of «look; it really does work.» This is the empirical demonstration phase, the phase of the arguments that test this new thinking.

What does a proposal like this entail? Something apparently as basic as asserting that the focus of attention is learning. The university world, in the areas of teaching, must shift its focus from the teacher towards the student, from teaching to learning, as the aim of all this is not for the person who teaches to shine and feel satisfaction, or at least not just this. The aim, of course, is that anyone who is there to learn will really learn. This obliges the higher education institution to focus all of its efforts and energies on this very basic objective that is so meaningful and so obviously true.

Learning-centred teaching goes hand in hand with competency-based learning, something that, after years of implementation of the Bologna reforms, has relatively frequently become a mere formality, no more than an exercise to please bureaucrats. What is proposed here, instead, is to go beyond reified and empty formulas to fully address a fundamental question that is still pending: this question is the great challenge that universities still face, their great lacuna, something this book aims to settle, at least in part. A large and important part, we would add. All that would remain is its dissemination and inclusion in everyday practice.

This task, as we said above, starts with a first section providing a theoretical grounding. This section is not especially long to tell the truth, as there are many books that have been dedicated to this, but its brevity does not make it any less important, nor has it been shortened carelessly; instead, its two chapters successfully and clearly combine and synthesise the outline of the theoretical arguments that support the student centred learning (SCL), or learning paradigm, with the aim of going beyond the limits of the teaching focussed model, or instruction paradigm. In the first chapter, Gargallo offers a historical overview of the SCL model and the relationship that has developed between this and the Bologna university reforms. The constructivist epistemology is latent here. According to which the learner actively builds meanings to truly shape knowledge, and this is done using frameworks that are created and recreated by the learner in a process in which collaboration, joint participation, and cooperation with other learners are not just a piece of trivia; they are the true source of knowledge. Learning must, therefore, be meaningful and based on participatory cooperation, both with the teacher and with other students in a community of joint interests. And so in the setting on the book's cover, the teacher, upon entering, must not only, or not so much, «explain a topic or give a class/seminar, as play a team game» (p. 20). However, is it possible to play a team game in a setting like the one in the photograph? The question remains.

In this first section where the foundations are laid we are probably not in a position to respond. The truth is that the desire of the editor and the authors to seek a mooring point in experience, a «rocky ground» as the phenomenologists would put it, is already apparent from the first chapter. For example, a piece of work is mentioned that was sponsored by Education International and The European Students' Union under the auspices of the European Commission as a solid reference for the SCL model and as a valuable tool for implementing it as well as addressing the perceptions and experiences of students in relation to this focus.

In an interesting footnote, the editor recognises the difficulties facing this model starting with something that is a burden in the university as we know it: the scourge of departmentalism, segregation, and hyper-specialisation that, at a practical level, often occurs as departments struggle for shares of power according to particular interests, sometimes on the margins of educating students. But this is the university we have in part and against which we must unite forces, thinking firstly of students' education and secondly of the very aim of the university as a social institution involved in knowledge and in advancement at all levels: scientific and technical, but also humanistic, in a desire to approach ever more pressing social and global problems from an interdisciplinary focus, problems that call for and demand the joint vision (action) suggested in the book. This joint vision of the mission of the university involves examining in greater depth the controversial concept of «competences» as a crucial element in the design of the academic curriculum. M. A. Jimenez, the author of the second chapter, recognises and faces up to the controversy regarding the competences model, but accepts it as a model that fits in with SCL in particular.

The second part considers in greater depth the appropriate methods or pathways for effectively implementing the SCL model. In the classroom, the change to a model that encourages meaningful learning requires the use of participatory lectures (Piedad Sahuquillo), cooperative learning (Pedro Garfella), questions as a pedagogical tool (Bernardo Gargallo), the case study method (Eloïna García and Isabel Morera), the method of carrying out projects (Cruz Pérez) which might open the door to service-learning projects, experiential learning (Noelia Martínez), learning corners and contracts (Miguel A. Jiménez and Noelia Martínez), student portfolios (Eloïna García and M. Salomé Moreno), the dialogic educational discussion (Irene Verde), learning diaries (Carmen Campos), role-playing, the simulation technique and film forums (Juan A. Giménez), concept maps (Eloïna García), and finally the use of posters (M. Salomé Moreno and Eloïna García).

Each of these chapters follows a similar structure and almost all of them, after describing their method and its phases, feature a reflection on the role of teachers and students and a system of evaluation linked to the method covered. To facilitate practice, each chapter includes a section dedicated to giving examples

of the method in different subjects from different undergraduate or postgraduate degrees. This second part is, in effect, a methodological compendium with the aim of laying a good base for its subsequent in-depth consideration and application by those who are seriously committed to university reform in line with the SCL model, as well as stimulating the reader's interest.

The third and final part, which offers empirical evidence from educational research for the operation of these methodologies is perhaps the one that makes an original contribution and includes a closing of ranks around the desirability of the SCL model. Learning focuses and strategies, attitudes towards learning, the development of the student's competences-abilities-skills, and the evaluation of the learning environment based on specific and validated questionnaires are evaluated.

Having reached this point, the question arise of whether there be educational innovation in higher education in classrooms designed and built for the traditional didactic lecture. After reading this thorough and much-needed book, it follows that, insofar as far as we understand it, partly yes. Or partly no. Yes in that the reform must come from within, from inside the classes on specific subjects; it must take shape essentially in the teaching staff, in the people responsible for turning established syllabuses around and incorporating relevant new focuses, including in spaces with rigid desks that unavoidably point at the lecturer. The participatory didactic class is an excellent example of this possibility. As is the use of the question as a pedagogical technique, or many other methods that do not require a radical restructuring of the space to be applied and made effective. What is true is that besides questions of space and furnishing, the change must start now, from the base, with the dedication of the responsible academics and university management. The traditional classroom makes this difficult, but it does not make it impossible. It would be reckless to neglect our role as teachers in the university of the 21st century and wait to for all conditions, including architectural ones, to be in place before applying the model. Nonetheless, analysing these conditions, especially the architectural ones, might be a matter for another study of as much interest and importance as the one reviewed here.

**Vicent Gozálvez** ■

## Ballester, L. & Colom, A. (2017).

*Epistemologías de la complejidad y educación [Epistemologies of complexity and education].* Barcelona: Octaedro. 198 pp.

Complexity is presented here as the basis of a new epistemology, a new narrative concerning knowledge of reality. The content of this book approaches the idea of complexity, accepting the methodological and epistemological implications it entails. In its pages, the authors aim to unpick the complex and paradoxical intersection that appears when speaking of complexity, in which it is important to note that being complex is not the same as being complicated: it is the opposite

of independent, while the complicated is not complex but instead the opposite of the simple. The authors note that when writing this book, they were only interested in theories of complexity that have clearly expressed pedagogical applications. The first section is dedicated to the genesis of theories of complexity, then from parts two to eight there is a historical overview and a brief biography of some authors and their works which in recent years have further strengthened the outlook on complexity as a new grammar for explaining reality. In these seven chapters alone over 100 bibliographical references are mentioned, and for each of them Ballester and Colom link the theories presented to education, schools, or learning. Finally, the authors present a novel chapter which shows that the question of complexity increasingly has an impact on aspects of education and learning processes.

In the first chapter the authors approach the crucial origins of complexity, illustrating and highlighting that the principles of science deriving from Newton are challenged by the discovery of entropic (Carnot, Clasius) and homeostatic (Cannon) phenomena. Following on from this, the authors set out General Systems Theory (GST), starting with the biologist Bertlanffy and showing how this idea is present in various disciplines and concluding the chapter with other focuses on systems and complexity such as cybernetic systems.

Chapter two refers to the particular contribution by Gregory Bateson who is recognised as a crucial forerunner of what is now called complexity thinking. The authors note that Bateson does not cover any branch of science or discipline in isolation as he always integrates any question into a broader body of thought, and always presents an interlinked vision of reality that means his thinking tends towards epistemological explanations. Bateson proposes a holistic and at the same time systemic rereading of current thought.

The next chapter focuses on David Bohm and quantum complexity. This physicist is a key figure for understanding quantum physics, specifically for understanding experiments on the Einstein-Podolski-Rosen paradox. The authors synthesize the vision of complexity of Bohm's holographic paradigm and state that his contribution implies a metaphysics of reality and a quantum concept of humankind, and so both subatomic physics and the great human manifestations —thought, consciousness, or creativity— are interlinked and comprise an intricate whole that aims to explain, under a single paradigm, both human reality and the reality of nature. They conclude this chapter by identifying some aspects that show that the holographic principle would also be fulfilled in pedagogy.

Chapter four is dedicated to «Ilya Prigogine and chaotic systems». The authors' presentation of the creator of the notion of dissipative structures (as opposed to structures in equilibrium) is very interesting, as it opens up the complexity of systems towards new perspectives such as uncertainty and unpredictability. The authors note that Prigogine's work has made it possible to show that ordered systems create order from disor-

der —the chaotic perspective— thus proposing a vision of reality based on uncertainty and not equilibrium; providing a conception of total complexity that introduces randomness, disorder, and chance into systems, in other words, chaotic situations.

The fifth chapter covers Niklas Luhmann, regarded as one of the most important renovators of systems theory in sociology. The authors show how Luhmann aimed to describe and understand the functioning of contemporary society based on the different subsystems that form it and the interactions that take place within in. While summarising the systems theory of this German sociologist, they also show the risk and danger of systems, contemporary societies as complex systems, and they end the chapter by referring to the educational system.

In chapter six, the authors raise the work of Humberto Maturana and circular complexities. They introduce the concept of autopoiesis, they present the other operational domain of the relational dynamic marked by culture, love, and human training, and they conclude the chapter with some texts by Maturana on the mission of education. In the next chapter, the authors briefly mention Fritjof Capra and the ecological paradigm. This author is of interest for two reasons: his ecological paradigm (his major contribution to the field of complexity) and his interest in education through his ecological proposals, resulting in an educational proposal for ecological-environmental conservation.

The eighth chapter has the title «Edgar Morin or the complexity of complexity» and receives special treatment from the authors as he is one of the exponents of the highest levels that the topic of complexity has achieved. This approach comprises four parts: Morin's theoretical-anthropological contribution, the concept of complexity, his theory as an educational epistemology, and a fourth part where his educational proposal is considered in seven fundamental points.

1. The blind spots of knowledge: error and illusion.
2. The principles of relevant knowledge.
3. Teaching the human condition.
4. Teaching earthly reality.
5. Confronting uncertainties.
6. Teaching understanding.
7. The ethics of the human race.

Construction in Morin transcends curricular and school reform as it entails constructing a human being who is aware of its bio-physical, psycho-cultural, earthly, and cosmic sides, parallel with the one he sets out in his anthropological theory.

The authors conclude this book with a ninth chapter called «Towards a complex understanding of educational processes: social and expanded cognition and online learning». Here they state that theories of learning and socio-educational change have accepted the importance of social interactions, and hence of complexity in diverse settings (family, local community, school, peer group, long-distance social networks, etc.). They conclude by stating that considering educational interaction from an extended situational perspective

provides a perspective for analysing the impact of the social changes introduced by ICT in educational culture and in the organisation of the teaching and learning process. The situational and extended perspective of the experience of individuals and groups changes the logic of intervention by educators in their role as meaningful mediators. Educators no longer only work with representatives from the local community but must also integrate the cognitive references introduced by delocalisation.

**Carlos Alberto Pabón Meneses** ■

## Monarca, H. & Thoilliez, B. (Eds.) (2017).

*La profesionalización docente: debates y propuestas [The professionalisation of teaching: debates and proposals].* Madrid: Síntesis. 146 pp.

To say that the prospects of Teacher Professional Development (TPD) are worrying does not involve saying anything new, except, obviously, for those who have spent years unwilling to see and listen. I sincerely believe that the current situation is not rosy. The delicate state of TPD has been analysed in famous pieces of research and essays that are reference points, which everyone is familiar with to a greater or lesser extent or has analysed in detail. This reality is not just unpromising, but also gives us cause for concern. Not all of us, of course, only those of us who still believe in something similar to what George Steiner wrote in his Lessons of the Masters, namely that «there is no craft more privileged»; at least for those of us who still believe that being a teacher is much more than knowing how to deploy a list of technical and instrumental skills, at least, for those who at this stage in proceedings still think that the lucky professionals to whom Steiner referred are called upon to change lives in the most profound meaning of both words.

But there is not enough reason to lose hope, especially because green shoots sometimes appear. How satisfying it is to come across one of them. This book is a green shoot, and one of the good ones. Two enthusiastic devotees of education, Héctor Monarca and Bianca Thoilliez, have undertaken the task of bringing together qualified and dedicated voices to analyse TPD to show us the state of play with clarity and in depth, and no less importantly, to dot the i's and cross the t's. Reading this book confronts the reader with the challenge of achieving a dual objective. The editors, with the collaboration of Javier M. Valle, state this at the end of the introduction. On the one hand, it aims to «make us more aware of the paradoxical weakening that the teaching profession is experiencing as a consequence of the various aspects covered in the debates on TPD analysed in each chapter». And on the other, it aims to «improve our capacity for critical resistance, in-depth reflection, and imagining new horizons and ideas for training teachers». The editors, as they confirm in this introduction, hope that the book will «at least» achieve these aims. They should not worry; it works for these important questions, and very well indeed.

The book is divided into ten independent chapters, all of which are of interest and all with their own focus and all with much to contribute to TPD. That said, with all due humility, I will take the liberty of presenting in a different order to how they are listed in the table of contents. I have grouped some of them together, namely the ones that, in my opinion, have a certain relationship and that could perhaps be consulted together. This is not one of those books that has to be read cover to cover to understand anything. It has the virtue of being a forest of ideas without a marked path, a map where the reader forges her own route in accordance with her interests, wishes, and needs. Having said this, chapter 1, by Enric Prats and Ana Marín, compares the system of initial teacher training and the rate of changes affecting current school systems. This topic is interesting, especially because it is assumed that one of these things (teacher training) should not fall out of step with the other (school life); above all because we firmly believe that the teacher of today must be prepared for what might happen out there in the classroom and not be side-lined. This chapter could be complemented by chapter 8, written by Jesús Manso himself. This chapter presents the demands current reality imposes on TPD, focussing in particular on initiation into the educational profession. This chapter once again recalls, and a good thing it is too as this can never be repeated enough, that initial teacher training has a deep effect that shapes everything that might come later.

Chapter 2, written by Paul Standish, takes us into the philosophy of education, a field that feeds and disrupts and which no teacher should ever ignore. This chapter considers the idea of otherness, insofar as the teacher establishes an absolute and humanising relationship with the student, and the idea of intensity, insofar as educational practice is an authentic experience that leaves nobody unmoved. I would go so far as to say that both questions are absolutely fundamental for TPD. In addition to this text, we could mention the one by Fernando Gil (chapter 6) where he draws attention to the need for teachers who have pedagogical convictions, professionals who do not fall into the quagmire of moral relativism, in short, solid teachers for fluid times. This also depends on acquiring theoretical knowledge, proven educational speculation that teachers must know to be able to confront educational reality with a minimum of guarantees. It is odd we find it so hard to convince ourselves of the importance of the things are that are, so pertinently presented in this chapter. David Reyero (chapter 9) contributes more ideas to the philosophical debate opened in Standish's chapter and the chapter by Gil, namely the importance of the curricular knowledge transmitted in teacher training for reflection on the aims of education. It is certainly difficult to conceive of a teacher who does not propose such aims or who leaves them in the hands of passing opinions or ideas of the moment. And yet, it is easy to find this harsh reality, with teachers who educate without keeping aims in sight, without a moral compass worth following. Tania Alonso (chapter 7) continues along the philosophical path that has been laid down, delving into the personal identity of teaching staff, something

which is essential for understanding the role a teacher must perform. She does so following the example of Charles Taylor, one of our most important living philosophers and a true international reference point in precisely that area, identity and authenticity.

Chapter 3 is written by one of the book's editors, Héctor Monarca, and it presents a very interesting matter that is often overlooked. I refer to the huge disparity of ideas, concepts, differences, and vicissitudes concerning what is said and done in the area of TPD. It is worth pausing to reflect on this topic. Contradictory discourses and opinions that cannot be reconciled can greatly hinder the task of education. The next chapter is also written by one of the editors, Bianca Thoilliez. This chapter praises what teaching really is and critiques the current abuse suffered by this practice, human par excellence and humanising by obligation. It is a text that should be read by any teachers who feel themselves getting dispirited and who want to continue devoting themselves in body and soul to the privileged profession of which Steiner speaks. This chapter has a link to the one that follows it, written by Geo Saura and Noelia Fernández-González. Here (chapter 5) the perverse effect of the neoliberal ideology on TPD is examined. Reading this is strongly recommended to prevent us from losing sight of the environment we find ourselves in, and so we do not forget what tools we have to work with. Chapter 10, by Inmaculada Egido, presents an interesting reflection on the teaching practices or placements trainee teachers do. As has been argued throughout this book, a good placement programme can be very beneficial for TPD and for schools, and more specifically, for the practising teachers who host those who dream of teaching.

In conclusion, TPD matters, but instead is the heart of formal education, of that mysterious and fantastic process that on every day and at every hour of the school week takes place in our primary and secondary schools. This book cover this topic, and reading it is not just a good idea but is strongly recommended. Here the reader will not find the answers a utilitarian mind would want; here questions are raised, criticisms presented, ideas put forward. In other words, there is a reasoned and passionate reflection on better education, on the fact that another education is possible.

**Francisco Esteban Bara** ■

## Balduzzi, E. (2016).

*Narrazione educativa e generatività del perdono [Educational narration and the creation of forgiveness].*
Milan: Mimesis Edizioni. 182 pp.

The book reviewed here studies the link between narration and forgiveness from an educational perspective. Emanuele Balduzzi, a teacher at the Instituto Salesiano at the University of Venice (Italy), introduces this text with a reference to his direct experience of oral narration that is worth mentioning:

> I can clearly remember that wonderful educational experience when my grandmother Lina, with unique skill and exper-

> tise, wove a marvellous world of meaning with the delicacy and love of her words, her gestures, and her presence […]. And I must insist that now, despite the great diffusion of the digital media, when I think of my narrative imagination from an educational perspective, the image of my grandmother Lina telling me a story, her own living and distinctive story, always comes to mind first […] (p. 9).

The proposed study is part of a pedagogy of virtue and is aimed at an audience of university students. In this framework, three key elements are analysed in its pages, namely:

1) Narration as a communicative expression linked to orality.
2) Narration and its connection to forgiveness, both in the person who requests it and the person who grants it.
3) The pedagogical implications arising from forgiveness analysed under the concept of generativity.

The first chapter examines the educational value of oral narration. Once narration's essential characteristics —order, coherence, distinctiveness, originality, harmony, and others— have been presented it goes on to consider the distinction between information and narration. In effect, these elements are distinguished in an educational field where narration offers impersonal and supposedly neutral content, such as a news story, where the key thing is that it be accurate, fast, and effective. In other words, the information requires the separation of the communicating subject from the communicated content. Something different happens with oral narrative. This seeks to develop the child's imagination and sense of fantasy and it requires the people present at the narrative act to get involved. «I am not just going to listen to a story, but a story by an especially loved person» (p. 24).

What implications does narration have for education? It should be noted, firstly, that it strengthens the educator-learner relationship, a relationship that should be guided by the pedagogical principle that students should be able to manifest their own inner self and this must be welcomed, heard, safeguarded, and preserved. In this way, the figure of the educator has a most delicate task: to be the custodian of the pupil's narrative. Secondly, it makes it possible to create new stories together. So, both the educator and the learner are bearers of different stories that are not always easy to reconcile. In this encounter the possibility of an opening arises, a new narrative that enables the creation of a third intimate and interpersonal story, fashioned together in a unique and special relationship. According to Balduzzi: «The great educational contribution of narration is its capacity to transfigure, to go from a simple listing of communicative content to an authentic experience of an interpersonal encounter» (p. 35).

The second chapter covers the link between the word and narration. The author analyses the importance of words in narrative discourse and offers the interpretative keys that an educator can consider to understand the sense and meaning of a student's narrative. Here he underlines the importance of the cultural context in which each person develops and how narrations of stories are a key element that brings together the development of

the members of a community, something that is of crucial value for education since narratives act as a sort of bridge between one generation and another. So, there are numerous examples that could be cited in the world of Western literature of narratives that acted as an educational basis for educating new generations. On these lines, the author notes that:

> Humankind has a natural tendency to narrate, a sort of narrative instinct that manifests itself in a natural ability to tell stories. In a society with a wide range of people, characters, ways of being, lives, what draws them together and shapes them in their being historically is narrations, narrations that make it possible for each individual to identify with the identity of a people. [...] from an educational perspective narratives are not just a decisive factor for personal growth, but also a powerful vehicle for interpersonal encounters and construction (p. 51).

In light of what has been set out, other educational aspects that are relevant to narration arise. The first lies in the need for active participation by the subjects involved in the narrative act. The second is the decentring of the narrator, as in the oral style no ideal audience is kept in mind to be addressed but instead specific people who listen to her, and so she must adjust her narrative to the audience before her. The last aspect is its intimate nature. In other words, it opens itself up to any form of private communication. This is also one of the characteristics of the educational relationship.

> The intimacy and interdependence of oral narration are updated in pedagogical love, a love that is manifested in the educators when they are dedicated to the good of the people who trust in them and their growth, and when the narrator can safeguard and care for the stories that the students tell (p. 59).

Chapter three studies the relationship between narrative and asking for forgiveness. It makes it clear that the act of forgiving is a phenomenon that is living and integral to human beings and enables them to grow and mature. In this framework, certain characteristics of requesting forgiveness appear: firstly, the existence of an insult or affront —physical, psychological, or moral— that one person makes to another; secondly, the offender's remorse for the act committed, in other words, an inner malaise in her conscience that affects the free development of her psychological-moral life; thirdly, a feeling of guilt (pp. 89-90); fourthly, repentance (p. 95); and fifthly, the decisive act of asking for forgiveness (p. 97). One particularly interesting element noted above is the feeling of guilt, which not only has a psychological character but also a moral one, and, on the one hand, involves pain and sorrow for the wrong unjustly done to another person, and on the other hand, the singular and marvellous possibility of personal achievement and growth. The presence of this pain opens the doors to repentance and the hope for a change in life. Accepting liability for the act committed and wishing to make amends for it implies a rebirth, a new inner aim for the person.

In addition, it is worth adding that forgiveness can never cancel or nullify the gravity of the affront committed (p. 125), but the potential for forgiveness can change the meaning and the sense the offence had and turn it into an opening and something liberating for both the victim and the offender. In so doing it disconnects the offence from the past and renews the desire that gives meaning to forgiveness: the renewed desire to do and practise good (p. 126).

Once the relationship between narration and asking for forgiveness has been covered, chapter four approaches the problem of forgiveness and the meaning of the narrative. The author states that humankind has a desire for purification, for liberation from guilt, that only the act of forgiving can create in it. In this way it transfigures humankind and revives in it the sense of its existence (p. 127). But this transformation implies a difficulty that is both psychological and ethical. In effect, forgiveness cannot, as an authentic and sincere act by the person, be reduced to the merely logical-intellectual dimension; instead it involves the entirety of the human being, her emotions, all of her feelings. And in this direction, the act of forgiving also assumes the ethical-moral dimension of the person. The willingness to ask for and grant forgiveness implies a moral desire for redress, openness to a renewed horizon for doing good. «Forgiveness,» Balduzzi writes, «requires narration to be meaningful […]. Narration shows forgiveness in all its grandeur. And forgiveness can be regarded as a renewed narrative …» (p. 136).

Finally, chapter five provides a fruitful reflection on the generative character of forgiveness. In other words, this section analyses the fruit of a true act of forgiveness: its transfigurative dimension, or as the author puts it, its generativity. In this work, generativity is defined as «the person's capacity to create dispositions towards their own good and others' in their family, community, and social relationships» (p. 150). On these lines, the author refers to the generative educator (p. 152), characterising this as a person who has an educational presence, a good attitude and patience, respect for students, the ability to create invigorating encounters, to do and uphold good, among other qualities.

> Generativity is imprinted in the dimension of personal action […] and agrees to thinking and directing one's own actions towards a horizon that is not restricted to one group of people but is potentially broad and open to a whole group (p. 137).

Accordingly, forgiveness has an essentially generative character, as it makes it possible to renew a horizon of meaning and of recreating broken interpersonal relationships or mending the offense done within a person. Forgiveness, thanks to the fruitfulness of its generative character, offers the person the possibility to grow and mature in her humanity.

There are many and very valuable elements that enrich this great work by Balduzzi and it is not possible to summarise and list them in a brief review. However, it is to the author's great credit that, brave-

ly and with argumentative skill, he has chosen to offer an updated perspective on the Western humanist educational tradition. Analysing the link between forgiveness, narration, and generativity from an educational perspective means regarding the student as a person again, as a human being, and regarding education as the key social factor that must care for full personal and collective growth.

**Mauricio Bicocca** ■

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# Call for papers

## «Educational and civic-penal responses to antisocial behaviour»

The Editorial Board of the **revista española de pedagogía** (Spanish Journal of Pedagogy) has decided that the monographic issue of the year 2019 will focus on analysing the *«Educational and civic-penal responses to antisocial behaviour»*.

It is evident that there is widespread discomfort towards current methods as to how society responds to antisocial behaviours. On the other hand, the direction of developments in terms of making the application of punishments for antisocial behaviour more humane in the most advanced societies, is leading to the adoption of different methods of applying these to minors, young people and adults. In fact, these different strategies aim, in their most recent versions, to place a greater emphasis, on the one hand, on the victims, their pain and the consequences of the criminal act experienced, as well as their more active and continuous participation in the entire legal-penal process, and, on the other, on the perpetrators seeking to complement the usual punitive measures with others that can raise civic awareness of the damage caused and, therefore, the desire to steer their future in a different direction.

It is important not to forget that the educational method of responding to antisocial behaviour must be not only responsive but, perhaps most importantly of all, preventive. It is therefore necessary to present the fundamental pedagogical actions that generate family and school-based educational styles which dissuade individuals from antisocial behaviour, by taking the educational exercise of school discipline seriously, due to its immediate and current implications, by understanding how to reconcile the best interests of the child within the circumstances, by reinforcing good educational practices among children and young people, by substantiating the purpose of penal and educational mediation, etc. All this can be achieved by evaluating the results of the current solutions to this problem.

This monographic issue aims to combine the two proposed approaches and invites all specialists to send in their work, always with a special emphasis on the pedagogical perspective, around, primarily, the following topics:

— Restorative justice, therapeutic justice, restorative justice in schools.

— The best interests of the child with regard to antisocial behaviour.

— Good practices in educational-penal intervention programmes with minors and young people.

— Penal and educational mediation.

— Analysis of current national and international crime data. Dominant antisocial behaviours in childhood and youth.

— How to pedagogically tackle juvenile justice.

— Pedagogical analysis of the Child Protection Act.

— The role of schools in managing antisocial behaviour.

— How to deal with new cybercrimes through education.

The deadline to submit papers, on the proposed topics or on others that are also considered of interest within the planned monograph, is 30 October 2018. Interested authors should send their articles according to the established rules, which can be found in any recent issue of the magazine or at https://revistadepedagogia.org/normas-editores.