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Training in Decision Making and Cross-cutting Competencies in Higher Education: A Case Study at the University of Murcia

Formación para la toma de decisiones y desarrollo de competencias transversales en Educación Superior. Un estudio de caso en la Universidad de Murcia

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Abstract

In a social context characterized by constant transformation and a multiplicity of options, decision-making emerges as a key transversal competency for addressing the challenges of both the present and the future. Building on this premise, a training intervention was designed for university students enrolled in two courses within the Bachelor's Degrees in Primary Education and Pedagogy at the University of Murcia, in which the decision-making process was addressed alongside other transversal competencies. Once this training proposal is developed, this study aims at three specific objectives: to analyze students' satisfaction with the intervention focused on the development of the decision-making skill, to discern its impact on other transversal competencies, and to examine the relevance they attribute to learning decision-making skills. To this end, a questionnaire was administered at the beginning and at the end of the intervention for subsequent comparative analysis. Although 427 participants completed the initial questionnaire, the final sample consisted of 214 students who responded to both instruments. The results indicate a high level of student satisfaction with the experience and underscore the importance of

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receiving training in decision-making, as well as a substantial development of transversal competencies. The study concludes by offering several suggestions for training in decision-making and other transversal competencies in higher education, with the aim of enhancing employability and improving the transition-to-work process for future graduates.

Keywords: higher education; decision making; soft skills, university student

Resumen

En un contexto social caracterizado por la constante transformación y la multiplicidad de opciones, la toma de decisiones se configura como una competencia transversal esencial para afrontar los desafíos del presente y del futuro. Desde esta premisa, se plantea una intervención formativa dirigida a alumnado universitario de dos asignaturas de los títulos de Grado en Educación Primaria y Grado en Pedagogía de la Universidad de Murcia, en la que se aborda el proceso de toma de decisiones junto con otras competencias transversales. Una vez desarrollada dicha propuesta, esta investigación persigue tres objetivos específicos: analizar la satisfacción del alumnado con la intervención formativa centrada en el desarrollo de la toma de decisiones, conocer el impacto en el desarrollo de otras competencias transversales e identificar la relevancia que le conceden al aprendizaje de la toma de decisiones. Para ello, se aplica un cuestionario al inicio y al final de la intervención con la finalidad de realizar un análisis comparado. Pese a que el cuestionario inicial lo cumplimentan 427 participantes, la muestra final se compone de 214 estudiantes que participan en ambos cuestionarios. Los resultados indican un alto grado de satisfacción del alumnado con la experiencia y de la importancia de recibir formación en toma de decisiones, así como un importante desarrollo de competencias transversales. Se concluye planteando algunas sugerencias para la formación en toma de decisiones y otras competencias transversales en la educación superior, con el fin de promover la empleabilidad y mejora del proceso de inserción laboral de futuros egresados y egresadas

Palabras clave: educación superior; toma de decisiones; competencias transversales, estudiante universitario

Introduction

Beyond training in a set of technical and subject-specific skills relevant to a particular university degree and professional profile, higher education must make an effort to develop students' cross-cutting competences. In this paper, a cross-cutting competence is understood as the set of attributes (knowledge, skills, attitudes) that are transferable to various contexts (personal, social, academic and professional) throughout one's life, shared across all degree programmes and widely applicable to different tasks and situations. At European level, various terms are used, such as 'soft skills', 'basic skills' or 'core skills', but all refer to a cross-cutting concept of competence that is established as the foundation for success in today's labour market (Hart et al., 2021). Therefore, the

acquisition and continuous improvement of these types of competences is one of the key elements in promoting graduates' employability in both the short and long term, as they facilitate adaptation to the demands of a changing labour market (Succi and Canovi, 2020; Van den Beuken et al., 2025). Among all these, decision-making emerges as a key cross-cutting competence in a society characterised by constant change and a wide variety of available alternatives. Uncertainty and the vast array of opportunities—but also the challenges posed by an uncertain future—give this competence greater prominence, both during periods of academic and professional transition and throughout one's professional and personal life. In many cases, the difficulties faced by thousands of young people during times of transition are due, amongst other reasons, to a lack of training in making decisions based on reflection and autonomy (Blanco, 2025).

To better understand the process underlying this competence, constructivist theories of career development – notably Savickas's (2012) 'life design' model and Krumboltz's (1979) social learning model for decision-making – have come to the fore in the 21st century, consolidating a paradigm that places decision-making at the heart of the construction of professional and life projects. According to Savickas (2012), academic and professional trajectories today are characterised by leaps and interruptions, where it is essential to link together a series of continuous and interdependent decisions, many of which are shaped by the environment and individuals' subjective experiences. For his part, Krumboltz (1979) highlights the significance of learning experiences in career development, emphasising the importance of developing the skills that enable people to cope with constant decision-making.

These decisions are never made in a vacuum or out of context, but are accompanied by a series of factors that influence the decision-making process. Whilst these factors are many and varied (Sánchez-Sandoval and Verdugo, 2024), and their influence is equally diverse, the Social Cognitive Theory of Career Development (Lent et al., 2016) focuses on both personal factors (self-efficacy, outcome expectations and interests) and environmental factors (support and barriers) to explain the decision-making process. Within this latter category, the family context is of particular relevance (Martínez Serrano et al., 2022), as it influences not only the guidance that students receive from their families, but also the discourses, attitudes and prejudices regarding perceived self-efficacy and the prospect of achievement in decision-making (De Prada et al., 2024). In the national context, the proposal by Álvarez-González and Rodríguez Moreno (2006), with its comprehensive approach to decision-making in secondary education, focuses on three main dimensions to explain the elements that define this process: a) cognitive, which includes information and knowledge of the possible alternatives and their consequences; b) the social dimension, encompassing all aspects relating to the support received from one's environment and family in the various decisions; and c) the emotional dimension, which is increasingly prominent in research, referring to the emotional management and intelligence demonstrated throughout the process.

Other studies conducted in the field of higher education advocate a distinct dichotomy, in which emotional factors are prioritised over rational ones (Nelson et al., 2018), whilst Taber's study (2013) presents a different and interesting approach to the analysis of decision-making. According to this author, this process does not depend solely on present circumstances and factors, but also attaches value to past experiences and expectations for the future. Thus, not only relational, personal (emotional) and environmental factors come into play, but also temporal ones, adding a further layer to the complexity that accompanies decision-. Furthermore, other research links this process to competence-related factors, with cross-cutting competencies having the greatest potential impact on its development (Delgado-Villalobos et al., 2021; García-Peñalvo et al., 2025), such as self-awareness, frustration tolerance, and the capacity for analysis and critical thinking when faced with different alternatives. All these cross-cutting competences can be grouped under *the umbrella* of 'self-management skills', which enable individuals to reflect on their own abilities and potential in order to make the most of them (Hart et al., 2021).

Decision-making and its relationship with other cross-cutting skills

Contributing to the development of cross-cutting skills such as communication, decision-making and self-management has an impact on various aspects of university students' lives, such as academic success, social and professional integration, and an improved atmosphere of coexistence within the educational context (Delgado-Villalobos et al., 2021). These authors highlight the significant relationship between mastery of emotional skills and decision-making, particularly in the university setting, which can in turn influence students' retention in their chosen courses and help prevent drop-out rates in higher education.

Another cross-cutting competence closely linked to decision-making in this context is teamwork. Recent research highlights the direct link between group work and improved decision-making skills, as well as its connection to the development of other cross-cutting skills such as leadership, interpersonal skills, adaptability and flexibility (De Prada et al., 2022; Sibbald et al., 2023). Ethics in the university setting and critical thinking are further examples of cross-cutting skills related to decision-making, which take on particular relevance in today's university context for addressing the social, educational and professional realities arising from the development of generative Artificial Intelligence tools (García-Peñalvo et al., 2025). In this new landscape, making ongoing decisions about what kind of information is extracted from AI requires an ethical, reflective and conscious approach that must be addressed within university classrooms. The World Economic Forum (2025) highlights ethical and civic engagement as an essential cross-cutting competence enabling individuals to function effectively in a complex, AI-mediated work environment. Thus, decision-making is not confined solely to the personal

sphere, nor is it limited solely to moments of transition and integration into society and the workplace. Throughout their university education, students face a vast number of decisions they must resolve in order to progress and build their own knowledge; the acquisition and mastery of this competence is therefore essential for their academic and professional future.

Furthermore, Abdinoor and Ibrahim (2019) demonstrate the relationship between decision-making and family support, self-esteem and perceived self-efficacy. Whilst some of these factors are addressed in theoretical models of decision-making and career development, from a competence perspective, particular importance is attached to students' ability to regulate their emotions and stress, alongside healthy self-esteem and improved self-confidence. All those cross-cutting competences related to personal development—sometimes defined as intrapersonal competences—form an intrinsic part of the decision-making process. In the early stages, it is crucial for individuals to be able to explore themselves and their environment effectively (Álvarez-Justel and Ruiz-Bueno, 2021; Law and Watts, 2003) in order to approach decision-making in an autonomous, reflective and context-sensitive manner. It is therefore difficult to separate decision-making from other cross-cutting skills that influence its development. Its impact and influence on higher education reflect a growing demand which these institutions must address in line with European recommendations and the Sustainable Development Goals (UNESCO, 2015).

Educational proposals for the development of decision-making in higher education

The academic and scientific literature contains various examples of educational proposals that focus on developing decision-making as a cross-cutting competence. In many cases, these examples centre on the field of secondary education (Álvarez-Justel, 2020; Álvarez-Justel and Ruiz-Bueno, 2021) and, with a focus on both periods of academic transition (Mata-Correas et al., 2025) and on preventing early school leaving (Cahuc et al., 2021). In the field of higher education, interventions are proposed relating to the development of socio-emotional skills – including decision-making – through the use of technological strategies and tools (Cejudo et al., 2020) and active methodologies such as gamification (Latorre-Cosculluela et al., 2025) or learning based on solving real-life cases (Vázquez-Calatayud et al., 2024).

Recognising the importance of this competence in the holistic education of university students, a specific intervention has been designed for two modules at the Faculty of Education, University of Murcia. The starting point is the catalogue of cross-cutting competences established by the university itself, supplemented by the guidelines of the World Economic Forum (2020), which also identifies decision-making as an essential competence, alongside others such as creativity, resilience and problem-solving. This training proposal is structured into five distinct phases:

- Initial design: A literature review is carried out and objectives are formulated, with the active participation of the teaching staff responsible for the courses involved: Tutorial Support and Research (Bachelor's Degree in Primary Education) and Educational and Career Guidance (Bachelor's Degree in Pedagogy).
- Development of materials: A specific worksheet is designed for the analysis of the decision-making process, which is used in all the different practical activities undertaken by students in the modules associated with the project. The common structure of this worksheet includes a qualitative section for reflection and a more quantitative analysis of the development of elements of decision-making competence. In the latter case, students are presented with a Likert-type scale from 1 to 10 (with 10 being the highest score) featuring various items relating to their ability to define the problem, gather relevant information, identify possible alternatives or overcome obstacles, amongst other analytical tasks. All these specific tasks correspond to elements of the decision-making competence that students must assess, both in terms of the progress made whilst carrying out the practical work and in terms of the level of proficiency demonstrated by the group of students undertaking the work collectively. With regard to the more qualitative assessment, this form presents the same elements of the competence, but with the option of open-ended responses so that students can express and reflect, through narrative, on their experience of the decision-making process they undergo in each practical session of the module. In addition to this analysis sheet, initial and final questionnaires are also designed ad hoc to gather information as part of the project's assessment. Some of the results of this assessment are presented in this paper.
- Training seminar: During the first week of term, when the purpose of this learning experience is outlined, the teaching staff involved deliver an introductory session within their respective modules focused on the decision-making competence, explaining the process and its relevance in both academic and professional contexts. Collectively, the teaching team involved uses the same presentation, which has been developed specifically for this training session. It explains what decision-making is, why it is considered a cross-cutting competence for working life, but also for the social and personal development of any citizen today, and how it relates to other equally important competences such as ethical commitment, communication and critical thinking. Although this session is based on a lecture, it is interspersed with reflective questions that invite students to consider whether they are truly making their own decisions and how they go about this process. Examples from everyday life are presented, drawing on very different academic backgrounds, so that students can identify various

alternatives in decision-making processes which, on many occasions, occur in an intertwined manner.

- Activity design: Throughout the course, activities requiring decision-making were incorporated into each module, enabling students to apply the knowledge they had acquired to specific situations. For example, one of the first decisions students must make in the subject is which classmates they wish to form a working group with; from there, they are placed in situations where they must make various decisions relating to each of the activities proposed by the teachers. In the case of the Educational and Career Guidance module, students must decide which databases and resources are most suitable for carrying out a practical assignment, or determine which roles each group member will take on when producing a video podcast on the role and skills of a guidance counsellor in different intervention contexts. Although these are just a few examples of group decisions, students are also given the opportunity to reflect on this process individually when deciding which optional activities to undertake within the module or what steps they have taken to choose the degree programme they are currently studying.
- Reflective assessment: At the end of each activity, students complete an analysis sheet that guides them in critically reflecting on the decisions made, their rationale and consequences, in a clear exercise to identify the stages and the process itself

Whilst the aim of this proposal is to explore in greater depth the development of decision-making as a cross-curricular skill – understood as key to students' academic, professional and personal futures – this study pursues a threefold objective:

- a) To assess the students' level of satisfaction with the training programme.
- b) To explore students' perceptions of the relevance of learning decision-making to their university education.
- c) To identify the impact of the intervention on the strengthening of other cross-curricular skills.

Method

Design

This study employs a quasi-experimental pre-test–post-test design with a single group and no control group. This approach was chosen to assess the impact of a training intervention under natural classroom conditions, whilst respecting the existing curriculum structure. The design allows for a comparison of students' assessments before and after the intervention, with the aim of identifying possible changes in their perception

of decision-making competence and their mastery of other cross-curricular competences; for this assessment, the lists of cross-curricular competences specified by the University of Murcia and the World Economic Forum (2020) are used. This assessment of students' perceived mastery of cross-curricular competences is based on the concept of interdependence in the development of decision-making competence, which depends on and is related to elements such as information management, creativity, etc.

Participants

The sample comprises students from two modules at the Faculty of Education, University of Murcia: 'Tutorial Support and Research' (first year of the Bachelor's Degree in Primary Education) and 'Educational and Career Guidance' (third year of the Bachelor's Degree in Pedagogy), selected via convenience sampling, all of whom were enrolled in modules related to guidance and tutorial support. The initial questionnaire was completed by 427 students, whilst the final questionnaire was completed by 349. The final sample, comprising those who took part in both assessments, totalled 214 students. The inclusion criteria were: being enrolled on one of the two courses in question and having completed both questionnaires. Cases with incomplete or inconsistent responses were excluded. The breakdown by degree programme and gender is shown in Table 1.

Table 1

Participants

	Educational and Career Guidance (Bachelor's Degree in Pedagogy)	Tutorial Support and Research (Bachelor's Degree in Primary Education)	Total
Men	8	64	72 (33.64%)
Women	30	111	141 (65.89%)
NS/NC	0	1	1 (0.47%)
Total	38 (17.76%)	176 (82.24%)	214

Instruments

An ad hoc questionnaire was designed for data collection, comprising two scales:

- A scale for assessing learning in decision-making skills, comprising seven items that evaluate aspects such as perceived usefulness, impact on employability, self-awareness and achievement of objectives. Each item is rated on a Likert scale from

1 (very low rating) to 10 (very high rating).

- Transversal skills mastery scale, comprising 17 items based on the skills framework defined by the University of Murcia and the World Economic Forum (2020). This scale includes dimensions such as critical thinking, creativity, teamwork, resilience, leadership, use of technology and professional ethics, which, according to recent reports by the World Economic Forum (2025), are closely linked to decision-making competence. Each item is rated on a Likert-type scale from 1 (very low rating) to 10 (very high rating).

The questionnaire has been reviewed by a panel of eight experts in pedagogy and educational guidance to ensure its content validity, and they have expressed their agreement regarding both its clarity and its relevance. The scores given by this panel of experts are above four for all items assessed on a scale of 1 to 5. Subsequently, an exploratory factor analysis with Varimax rotation was carried out to identify the underlying structure of the cross-curricular competences scale, as well as a reliability analysis using Cronbach's alpha.

Procedure

The training programme takes place during the second term of the academic year and includes an introductory seminar on decision-making, practical activities integrated into the modules, and guided critical reflection using analysis sheets explained in the introduction to this paper. Students must complete a questionnaire at two distinct points in time: at the start of the programme (following the introductory session) and at the end of the training process. This instrument is administered via an institutional digital platform, ensuring anonymity and voluntary participation. Finally, data analysis is carried out and conclusions are drawn for this study.

Data analysis

The data are processed using SPSS statistical software (version 27). Descriptive statistics (mean, standard deviation) are calculated, and non-parametric tests — the Mann-Whitney U test, the Wilcoxon test and the Friedman test — are applied due to the ordinal nature of the scales and the lack of normality in the data distribution, as verified by the Kolmogorov-Smirnov test. A significance level of $p < .05$ is set for all tests.

Results

Firstly, the responses to the initial and final assessments of the cross-curricular competence scale, comprising 17 items, were analysed. To this end, an exploratory factor analysis was carried out using the principal component extraction method and Varimax rotation. Table 2 shows the factor loadings of the different items and the composition of

the various subscales, as well as the results of the reliability analysis using Cronbach's alpha.

Table 2

Factor analysis. Varimax rotation

	INITIAL				FINAL			
	CyP	IyT	E	C	CyP	IyT	E	C
1. Be able to express oneself correctly in Spanish				.757				.593
2. Understanding and expressing oneself in a foreign language, particularly English				.784				.774
3. Being able to manage information and knowledge, including knowing how to use basic ICT tools		.795				.716		
4. To regard ethics and intellectual integrity as essential values of professional practice			.842				.766	
5. Be able to apply knowledge, abilities and skills to promote a society based on the values of freedom, justice, equality and pluralism			.664				.637	
6. Ability to work as part of a team and to interact with others from the same or different professional fields	.418						.719	
7. Developing introductory skills in educational research		.538				.583		
8. Analytical thinking and innovation	.503				.522			
9. Active learning and learning strategies	.572				.442			
10. Complex problem-solving	.742				.725			
11. Critical and analytical thinking	.643				.771			
12. Creativity, originality and initiative	.657				.535			
13. Leadership and social influence	.696				.639			
14. Use, monitoring and control of technology		.834				.754		
15. Technology design and programming		.823				.851		
16. Resilience, stress tolerance and flexibility	.402				.450			
17. Reasoning, problem-solving and ideation	.615				.655			
Percentage of variance explained	37.3	9.44	7.55	6.54	35.9	9.43	6.92	6.10
Alpha subscale	.804	.817	.669	.471	.848	.779	.657	.306
Alpha Scale	.885				.876			

Note: Cognitive and Personal (CyP); Research and Technology (IyT); Ethics (E); Communication (C)

The factor analysis of the scale in its initial and final applications shows very similar results, with a four-factor structure. Only one of the items, relating to teamwork, behaves differently in the initial and final scales; it was therefore decided not to include it in the configuration of the subscales based on the factor analysis. The reliability analysis using Cronbach's alpha shows positive results for both scales and the various subscales, with the exception of the scale we have termed 'communication', which comprises only two items relating to the Spanish and English languages; this appears to explain the low reliability in both measurements.

Next, the results of the scales based on factor analysis are analysed comparatively, beginning with a comparison between them, which is summarised in Table 3.

Table 3

Subscale scores

	INITIAL		FINAL		Impact		Wilcoxon test
	M	SD	M	SD	M	SD	Z (cont.)
Cognitive and personal	7,473	0.927	8,210	0.752	0.726	0.871	-9,488 ($<.000$)
Research and technology	6,940	1,206	7,869	0.985	0.941	1,171	-9,233 ($<.000$)
Ethics	8,082	1,164	8,629	0.946	0.523	1,195	-5,796 ($<.000$)
Communication	7,305	1,255	8,097	1,132	0,747	1,053	-8,774 ($<.000$)
Friedman	129.817		129.817		129,247		
Z (df) Sig	(3) $<.000$		(3) $<.000$		(3) $<.000$		

Friedman's non-parametric test reveals, first of all, significant differences in the scores on the various subscales, both at the initial and final measurements, and even in the differences between these measurements. The subscale with the highest level of proficiency is that relating to Ethical Competences, whilst the one showing the lowest level of proficiency, in both the initial and final measurements, is that relating to Research and Technology. However, it is precisely this latter subscale that shows the greatest increase between the two measurements. Furthermore, the Wilcoxon test indicates that there is a statistically significant positive increase across all scales; in other words, the participating students have increased their perceived mastery of the four types of competences analysed.

Delving deeper into the data, a comparative analysis by gender was carried out using the Mann-Whitney U-. Table 4 shows the data for the subscales in which significant differences ($p<.05$) were found.

Table 4
Gender differences

		Male		Female		Mann-Whitney U-xml-ph-0000@deepl.internal (Sig.)
		M	DT	M	DT	
INITIAL	Ethics	7,907	1,105	8,156	1,135	10,011.000 (.016)
FINAL	Cognitive and personal	8,117	0.709	8,332	0.755	7,514,000 (.019)
FINAL	Research and technology	7,785	0.918	7,985	0.989	7,820,000 (.050)
FINAL	Ethics	8,343	1,032	8,818	0.846	6,280.500 (<.001)

In the four cases where significant differences are found, it is the women who achieve a higher proficiency score. The ‘Ethical Competences’ dimension is particularly noteworthy, with differences appearing in both the initial and final assessments, whilst in the dimensions relating to ‘Cognitive and Personal Competences’ and ‘Research and Technology’, differences only appear in the final assessment. The differences between students on the two courses participating in the study are also analysed; these data are shown in Table 5.

Table 5
Differences between subjects. Mann-Whitney U test

		Educational and Career Guidance		Tutorial Support and Research		Mann-Whitney U (Sig.)
		M	DT	M	DT	
HOME	Communication	6,878	1,408	7,471	1,318	8,234 (<.000)
FINAL	Research and technology	7,528	0,933	7,992	0.964	3,893.5 (.002)
FINAL	Communication	7,571	1,564	8,204	0.986	3,916.5 (.015)

The Mann-Whitney U test reveals differences in the final application of the dimension relating to research and technology skills, with higher scores from students in the Tutorial and Research programme, as well as in both measurements within the dimension relating to communication skills. Due to the low reliability, we found in this sub-

dimension—, which may indicate that they are functioning differently—we applied the test to each of the two elements separately, finding significant differences only in the case of English proficiency ($p<.05$). It is the students on the first-year module of the Bachelor's Degree in Primary Education who demonstrate the highest level of proficiency in both the initial assessment ($M=6.340$, $SD=1.876$ compared with $M=5.085$, $SD=2.205$) as in the final assessment ($M=7.211$, $SD=1.599$ compared with $M=6.214$, $SD=2.090$). With regard to this specific competence, two considerations must be borne in mind: one of the participating groups is bilingual, and the fact that students on the Primary Education degree programme undertake a specific English language module throughout their first year (Oral and Written Communication in English for the Primary Classroom).

Finally, a comparative analysis is carried out of teamwork competence, which it was decided not to include as part of the subscales. Analysis using the Mann-Whitney U test reveals differences ($p<.05$) in the final level of proficiency in this competence, both by gender and by the subject studied by the participants. Women ($M=8.979$, $SD=1.000$) demonstrate a higher final level of mastery of this competence compared to men ($M=8.685$, $SD=1.029$); this, combined with the fact that no differences were observed in the initial measurement, may indicate that women are more responsive to the intervention in terms of improving their perceived mastery of teamwork competence. With regard to differences between courses, it is the students on the first-year course ($M=8.955$, $SD=0.955$) who demonstrate a higher perceived level of mastery than the participants on the third-year Pedagogy course ($M=8.452$, $SD=1.383$).

Following the analysis of the cross-curricular competences scale, the assessment of learning in the area of decision-making competence is analysed, both in the initial and final assessments, as well as the final assessment of satisfaction with the training intervention, as shown in Table 6.

Table 6

Assessment of decision-making learning

	Initial		Final		Impact		Wilcoxon
	M	SD	M	SD	M	SD	Z (cont.)
Usefulness for learning	9,528	0.803	9,408	0.965	-0.014	1,102	-1,500 (.134)
Employment	9,458	0.837	9,241	1,055	-0.090	1,096	-2,457 (.014)
Job search	9,308	0.898	9,276	0.973	-0.190	1,168	-0.312 (0.755)
Improved self-awareness	9.364	0.913	9,321	0.939	-0.005	1,133	-0.195 (0.845)

Improved understanding of my environment	9.019	1.037	9,057	1,045	-0.014	1.102	-.727 (.467)
To help me achieve my goals	9,439	0,900	9,433	0.885	0.057	1,125	-0.200 (0.841)
Learning other cross-curricular skills	9.324	0.933	9,251	0.904	0.019	1,131	.1,190 (.234)
Fisher							
Chi-squared (degrees of freedom) P-value	84.751 (6)	<.001	58.030 (6)	<.001	6.988 (6)	.322	
Overall satisfaction with the intervention			8.609	1,240			

Analysis of the table reveals that participants rated decision-making training highly; all items received an average score above 9, with no significant differences between the pre-test and post-test. Fisher’s exact test does, however, reveal significant differences in the ratings of the seven elements, in both the initial and final assessments: in the initial questionnaire, the element with the highest score was ‘Usefulness for learning’ (9.528), whilst the one with the lowest score was ‘Improved knowledge of my environment’ (9.019). As for overall satisfaction with the intervention, which is measured only in the final questionnaire, a very high score was also obtained (8.609). These data demonstrate the importance that students attach to these interventions and to decision-making training, as well as their impact on learning, job-seeking and entry into the labour market, and their influence on the development of other cross-cutting competences

These assessments are then compared taking into account the participants’ gender, using the non-parametric Mann-Whitney U test, the results of which are presented in Table 7.

Table 7
Assessment of decision-making skills. Gender

		Men		Women		Mann-Whitney U (z) p-value
		M	SD	M	SD	
INITIAL	Usefulness for learning	9,317	1,174	9,598	0.695	11,092.500 (-2,082) 0.037
	Employment placement	9,160	1,195	9,570	0.704	9,856.000 (-3,532) .000
	Job search	9,069	1,185	9,379	0,878	10,681.500 (-2,383) .017
	Improved self-awareness	9,020	1,263	9,418	0.895	9,992.000 (-3,222) .001

	Improved understanding of my surroundings	8,710	1,395	9,080	1,093	10,511.000 (-2,408) .016
	To help me achieve my goals	9,150	1,192	9,550	0.797	10,131.000 (-3,180) .001
	Learning other cross-curricular skills	9,109	1,199	9,383	0.841	11,050.000 (-1,905) 0.057
	Usefulness for learning	9.188	0.910	9,490	0.944	7,416,500 (-3,468) .001
	Employment placement	9,115	1,014	9,345	0.949	8,284,000 (-1,886) 0.059
	Job search	9,149	0,994	9,347	0.907	8,214,000 (-1,640) .101
FINAL	Improved self-awareness	9.253	0.838	9,409	0.906	8,160,000 (-2,049) .040
	Improved understanding of my surroundings	8,750	1,016	9,179	0.970	6,988.000 (-3,721) .000
	To help me achieve my goals	9,168	0.930	9,544	0.826	7,109,000 (-3,676) .000
	Learning other cross-curricular skills	9,063	0.954	9,401	0.806	7,436.500 (-3,117) .002
	Overall satisfaction	8.313	1,371	8,810	1,077	7,384.500 (-3,375) .001

Although both men and women place great value on learning decision-making skills, the analyses reveal significant differences in almost all assessments, including the final satisfaction rating, with women achieving higher scores. These differences between men and women may indicate the importance of taking a differentiated approach when supporting men and women in decision-making processes.

When comparing the groups of students from the two modules participating in the experiment, significant differences were found only (Mann-Whitney $U = 4,638.5$; $Z = -2.452$; $p = .014$) in the final assessment of the element 'Facilitating the achievement of my goals', with students on the Tutorial Support course ($x = 9.488$) giving a higher rating than those on the Educational and Career Guidance course ($x = 9.064$)

Discussion and conclusions

This study leads to a series of interesting conclusions based on the results obtained following the implementation of the training intervention with university students. Firstly, the participants in this programme expressed a high level of interest in and appreciation for

the development of decision-making competence in relation to the various elements presented to them (learning, social and labour market integration, self-awareness and awareness of their environment, etc.). These scores remained consistent in both the initial and final assessments and are in line with the findings of Palacios Parrales (2026), who advocates the incorporation of active methodologies to promote evidence-based decision-making in higher education. Participants also expressed a high level of satisfaction with the intervention in the final questionnaire. These results indicate that this type of initiative is very well received by students, who appear to be aware of the importance of developing decision-making skills for their present and future, both academically and professionally. This is also evident in other studies in which university students (González-Morga and Martínez-Clares, 2020) and employers (Succi and Canovi, 2020) highlight the need to prioritise this competence alongside other cross-cutting competences, although this is not always reflected at an institutional level. The research by Martínez-Clares et al. (2024) highlights the lack of specificity regarding this competence in the teaching guidelines for undergraduate degree programmes at the University of Murcia, both in the planning of modules and in the development and delivery of activities.

A comparative analysis of participants' gender reveals significant differences, with female participants scoring higher in this task on both the initial and final scales. This finding contrasts with the work of De Prada et al. (2022), in which no differences were detected between men and women in decision-making, but is consistent with the study by Garzón et al. (2020), which links procrastination at university to a male student profile characterised by a low capacity for decision-making. If we consider studies on vocational decision-making in secondary education, there are other pieces of research, such as that carried out by Álvarez-Justel (2020), which do indicate a disparity in the decision-making process based on the students' gender as a variable of analysis. In this case, girls give higher scores to the cognitive and social dimensions of decision-making, whilst, for the emotional dimension, the highest scores are given by male students. However, in all these studies, significant gender differences are evident. Similarly, studies focusing on the development of this competence among adolescents (Feraco and Meneghetti, 2023) show that girls demonstrate a greater predisposition to learn how to manage their tasks, set goals and make decisions compared to their male counterparts.

On the other hand, a comparison between students in the two subjects reveals no significant differences, with the exception of the element relating to decision-making to facilitate the achievement of goals, where first-year students give higher ratings. This may be linked to the recent decisions first-year students have had to make during their academic transition to university, with this decision having a much more immediate impact on their short-term goals. This transition from secondary to higher education represents a significant moment of change, from which adolescents plan their futures (Carey et al., 2023), defining their goals which they modify based on their aspirations and fluctuating perceptions of the world around them (Mata-Correas et al., 2025).

The scores for the four subscales obtained following the factor analysis indicate differences between them in the initial and final assessments, with ethical competences being those that pupils perceive as having the highest level of mastery, whilst the subscale relating to Research and Technology reflects the lowest score. Other studies also highlight the underdevelopment of this latter set of cross-curricular competences, in which research and related tasks consistently show a lower level of mastery among pupils (González-Morga and Martínez-Clares, 2020). The same applies to technological competences which, although numerous studies highlight their particular relevance in contemporary education or 'Education 4.0' (Cejudo et al., 2020; Hu and Chan, 2024), there remains considerable scope for improvement in their mastery by students (Herrera-Lillo and Urrejola-Contreras, 2024) and by teaching staff (Román-Graván et al., 2024) in higher education. With regard to the participants' gender, there are some notable significant differences in the subscales analysed, with women scoring higher in ethical competences in the initial assessment, whilst in the final assessment, these differences were found in the following areas: cognitive and personal competences; research and technology; ethics; and teamwork. According to these results, it is female students who appear to develop these competences to a greater extent, as well as achieving a more notable improvement following the proposed intervention in the relevant modules. In other cases, the gender variable also reflects differences in the development of cross-curricular competences at universities (Martínez-Clares and González-Lorente, 2025), with a particular focus on organisational skills, perseverance and teamwork, with female students consistently demonstrating greater mastery of these areas.

It is also interesting to note that, following the training programme, students consider that their proficiency in all skills has increased, with significant differences across the four sub-scales when comparing initial and final assessments. It can be concluded from this result that the implementation of training interventions in higher education that prioritise the decision-making process can contribute to the development of other cross-cutting competences included in the holistic development of university students, according to their own perception. These findings are consistent with previous theoretical findings in other studies (García-Peñalvo et al., 2025; Sibbald et al., 2023), which highlight the close relationship between decision-making and other cross-cutting competences such as teamwork, resilience, flexibility and problem-solving.

When comparing results by subject, some differences emerge in relation to the Communication and Research and Technology subscales. In this case, it is first-year students who demonstrate a higher level of proficiency in these skills, in contrast to the findings of other studies (De Prada et al., 2022), where students in higher years rate their proficiency in cross-curricular skills more positively. According to De Prada et al. (2022), this difference may be influenced by the experience students gain over the course of their education at higher education level. Another study that differs from the results obtained

here is that presented by Álvarez-Justel and Ruiz-Bueno (2021), which focuses on the development of decision-making skills in secondary education. This study identifies differences in this skill depending on the students' year group, determined both by their experience and maturity and by the different life and academic stages they are facing. We recognise that, in the present study, we are not only dealing with different year groups but also with two distinct degree programmes; indeed, it is the first-year students who, whilst participating in the proposed intervention, are simultaneously studying three modules closely related to the competences measured by these two subscales (Educational Resources and ICT; Oral and Written Communication in Spanish; Tutorial Support and Research), which is the main reason that may underlie these differences between year groups, in contrast to what is reported in the reviewed literature.

Undoubtedly, the differences in the profile of the participating students themselves – who come from two different degree programmes and years of study, with all the implications that this may entail – constitute one of the main limitations of this study. The results of the analysis are limited to the experience and case study carried out at a specific faculty of a Spanish university. Looking ahead, this training proposal could be extended to other universities to include students from different fields of study and from all academic years, from first to fourth year, in order to consolidate the conclusions presented here. Furthermore, the proposed scale of cross-curricular competences could be expanded to incorporate other international studies and reports that provide an up-to-date overview of the latest trends in the competences that will be in demand in the near future. This would address another limitation of this study, namely that the list of cross-curricular competences is currently confined, primarily, to the proposal put forward by the University of Murcia.

Decision-making, understood as a cross-curricular competence, has a direct impact on personal autonomy, employability, civic participation and psychological well-being. Furthermore, its teaching cannot be limited to theoretical or decontextualised approaches. It requires active methodologies, real or simulated scenarios, and an assessment that evaluates both the process and the outcome. Only in this way can meaningful and transferable learning be achieved. Ultimately, integrating this competence into the curriculum means committing to an education that not only informs but also transforms; that not only prepares students to pass exams but also to live, make decisions and contribute to a constantly changing world.

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