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Editoriale

Editoriale

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This is the last issue of 2024. Throughout the last years the IJET editorial team has been working hard on several important improvements to the journal. So, we take the opportunity of this Editorial to share some journal updates with you.

Firstly, we are pleased to announce that Albert Sangrà Morer from the Universitat Oberta de Catalunya has joined the team of editors. We are confident that his expertise and leadership will provide a significant boost to the internationalization of the journal. It is truly an honor to collaborate with such a distinguished scholar.

Secondly, we are excited to inform you that IJET has a new publisher: Firenze University Press (FUP), which is a well-established academic publisher. We hope their support will help increase the overall quality of the journal.

Moreover, the composition of the Journal International Editorial Advisory Board has been strengthened and internationalized with the addition of some prominent members from prestigious institutions worldwide.

In parallel, we have also established a Journal Management Board comprising several colleagues from our Institute whose invaluable contributions support the journal in many ways. We take this opportunity to express our gratitude for their assistance.

This Editorial is also an opportunity for us to thank our authors, reviewers and readers for their ongoing support and dedication to the journal, and to invite scholars from all over the world to contribute to the journal life by submitting their papers, enrolling as reviewers and registering to its submission system in order to receive its calls for papers and new issue alerts.

In this issue we publish five papers tackling topical aspects of the Educational Technology research field. Within the variety of the topics addressed by these papers, we notice most of them have to do with the role of games and gamification in learning. This confirms that playful approaches are still attracting attention not only at school level, but also in higher education, and – more generally, in adult education.

In particular, the first paper, by Marinensi and colleagues, investigates Gamified Flipped Learning (GFL), a pedagogical approach that combines the methodology of flipped learning with gamification techniques. The authors propose a systematic literature review of this approach within the context of higher education, aiming to understand how GFL is implemented and with what results.

The second paper, by Ragusa and colleagues, investigates the effectiveness of gamification in enhancing leadership and teamwork abilities among Italian and Portuguese Master's degree students. In their study the authors propose the use of the "Leadership Quest" game and assess the impact of the game on interpersonal skills development.

In the third paper, Fogliata and colleagues focus on the integration of Information and Communication Technologies (ICT) tailored for motor education in teacher training at university-level sports science education. Specifically, the Synchrony methodology is used to combine theoretical understanding with body-awareness-based learning. The paper also introduces a validation approach through the Delphi method and the compliance with European Union educational guidelines.

In the fourth paper, Coluzzi and colleagues investigate the intersection of humanistic management and digital skills in higher education, shaped by the COVID-19 pandemic and the rise of AI. Focusing on Spain and Italy, it identifies a gap in educators' digital competencies and emphasizes the crucial role of soft skills like emotional intelligence and critical thinking. Using LEGO Serious Play in the Bricks x Tips Lab as a case study, the study illustrates how experiential learning fosters these skills, ensuring a human-centric approach to education. The findings advocate for comprehensive AI education policies and targeted training to balance technology with human engagement in learning.

The fifth and last contribution, by Sardo and Thibault, belongs to the set of papers submitted in response to the call for papers on "board and videogames in education", to be published in the first issue of 2025. This has been a very successful call, so much so that the accepted papers will unlikely fit into one issue only. For this reason, even if this paper conceptually belongs to that special issue, its publication has been brought forward to this issue. The paper investigates the perceptions of stakeholders in the educational/teaching area concerning the educational use of Assassin's Creed Odyssey: Discovery Tour. This qualitative study is intended to reveal what teachers, educators and other informants believe about possible educational uses of this game, after having played the game first-hand. Although this game was not designed with educational purposes, its immersivity, impressive graphic and carefully designed content were positively judged by the study informants, who almost generally regarded it as a powerful educational tool, provided that teachers carefully plan its use within a broader educational intervention.

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From theory to practice: A systematic literature review of Gamified Flipped Learning in higher education

Dalla teoria alla pratica: una revisione sistematica della letteratura sul Gamified Flipped Learning nell'istruzione superiore

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ABSTRACT Gamified Flipped Learning (GFL), a pedagogical approach that combines the methodology of flipped learning with gamification techniques, has gained increasing attention in recent years, particularly within the context of higher education. This systematic literature review aims to provide educators and researchers with a comprehensive understanding of how GFL has been implemented and with what results. Following the PRISMA guidelines, 26 studies were selected and analysed. The findings indicate that this research field is still evolving and exhibits a high degree of diversity, both in terms of implementation approaches and research methods. This high level of variability is indicative of the flexibility of the approach, but it also presents a challenge for educators wishing to implement it. In light of the aforementioned findings, a set of design principles derived from the analysis is proposed to guide effective GFL practice and assist educators in successfully adopting GFL strategies.

KEYWORDS Teaching/Learning Strategies; Gamification; Game Elements; Active Learning.

SOMMARIO Il Gamified Flipped Learning (GFL), ossia l'approccio pedagogico che combina la metodologia del flipped learning con le tecniche di gamification, ha guadagnato una crescente attenzione negli ultimi anni, in particolare nel settore dell'istruzione superiore. Questa revisione sistematica della letteratura intende offrire a educatori e ricercatori una visione d'insieme di come il GFL sia stato implementato e con quali risultati. Seguendo le linee guida PRISMA, un totale di 26 studi è stato selezionato e analizzato. I risultati indicano che questo campo di ricerca è ancora in evoluzione e presenta un alto grado di diversità, sia in riferimento alle modalità di implementazione che ai metodi di ricerca. Questo alto livello di variabilità è indicativo della flessibilità dell'approccio, ma rappresenta anche una sfida per gli educatori che desiderano implementarlo. Alla luce di questi risultati, vengono quindi proposte delle linee guida per supportare gli educatori ad adottare con successo il GFL.

PAROLE CHIAVE Strategie di insegnamento/apprendimento; Gamification; Elementi di Gioco; Apprendimento Attivo.

1. Introduction

The Bologna Declaration and the establishment of the European Higher Education Area (EHEA) have been the driving forces behind the significant changes occurring in the university environment in recent years, creating the conditions for a radical rethinking of teaching and learning practices (López, 2017). This process is closely intertwined with another ongoing revolution, digital transformation, driven by the increasingly pervasive diffusion of digital technologies and network applications in all organisations. This transformation has been slow in universities, often favouring traditional forms of teaching, until the advent of the COVID-19 pandemic which, by forcing the sudden overcoming of these resistances, has highlighted the crucial role that digital technologies can play in teaching and learning processes (Rodríguez-Abitia & Bribiesca-Correa, 2021).

However, people, particularly students and teachers, and not technologies, remain the pivotal element in the digital transformation process ongoing in Higher Education Institutions (HEIs) (Gaebel et al., 2021). Therefore, digital technologies should be experimented with in terms of their ability to support more student-centred approaches and active learning strategies. Among the various active learning strategies (Misseyanni et al., 2018), flipped learning and gamification have been widely applied at university level (Baig & Yadegaridehkordi, 2023; Pelizzari, 2024) and have often been combined together to originate what is known as gamification enhanced flipped learning or gamified flipped learning (GFL). The COVID-19 crises further accelerated the adoption of these approaches, due to the fact that the transition to online learning highlighted the need for strategies that could foster student engagement and motivation in virtual environments (Collado-Valero et al., 2021; Divjak et al., 2022).

1.1. Gamified flipped learning

Flipped learning, a pedagogical approach in which students' initial exposure to new theoretical content occurs at home through self-paced learning, while class time is devoted to collaborative learning activities such as problem solving, discussion, and creative tasks (Bergmann & Sams, 2012; Brame, 2013; Talbert, 2017), has become increasingly popular among educators due to its alignment with the preferences of contemporary learners and its potential to foster deeper engagement and understanding (Bergmann & Sams, 2012; Talbert, 2017).

At the same time, gamification, the integration of game elements into non-game contexts, has gained attention as a way to motivate students and promote positive learning behaviours (Deterding et al., 2011; Landers, 2014) especially at the Higher Education (HE) level (Irwanto et al., 2023; Pelizzari, 2024). The design and evaluation of gamified learning interventions are frequently grounded on the Self-Determination Theory (SDT) (Krath et al., 2021).

Several research studies have explored the combination of flipped learning and gamification (Choi & Choi, 2021) reporting encouraging results, such as the positive impact of gamification on student engagement in both out-of-class (Huang & Hew, 2018a) and in-class activities (Zainuddin, 2018); the positive impact on the level of students' learning outcomes (Hung, 2017; Yildirim, 2017) and on their overall perceptions of the course (Hung, 2017).

1.2. Previous review studies

Two literature reviews have been conducted to systematise the existing findings in the field of GFL. The first one was conducted by Ekici (2021), analysing a total of 22 research articles published in aca-

demic journals between 2016 and 2019. This review encompassed GFL experiences implemented across all educational levels. The second systematic literature review was conducted by Smith et al. (2022), which examined 92 papers from journals and conferences indexed in the Scopus database and published between 2015 and April 2021. This review had a broader focus, incorporating both flipped learning experiences augmented with games and those utilising gamification techniques.

1.3. Purpose of the study

Although both literature reviews made valuable contributions to enhancing researchers' and practitioners' understanding of GFL, it is important to acknowledge certain limitations. Firstly, the inclusion of studies conducted across all educational levels presents challenges in assessing the effectiveness of the approach within specific educational settings and understanding its impact on distinct target audiences. Additionally, the review conducted by Smith et al. (2022) encompassed studies that examined both the combination of flipped learning with games and the combination of flipped learning with gamification. However, designing and implementing an educational game or a gamified intervention requires different activities, efforts, and expertise from the teachers' perspective. Furthermore, the experience of students also differs depending on whether games or gamification techniques are employed.

Hence, this literature review aims to narrow its focus on studies conducted exclusively within the HE level, specifically examining the integration of flipped learning and gamification (excluding studies involving serious games, commercial games, etc.). The ultimate objective is to provide researchers and educators in HEIs with a comprehensive understanding of the implementation and outcomes of GFL thus far. The review seeks to highlight the encountered challenges and derive valuable insights from the existing literature. By doing so, it aims to offer guidelines for instructors interested in adopting this approach and to researchers who aim to further advance knowledge in this field.

2. Methodology

The process adopted to carry out this systematic review was based on the recommendations of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) 2020 statement (Page et al., 2021). The PRISMA guidelines, through a 27-item checklist, establish an optimal process to guide the researcher in conducting a systematic literature review. Accordingly, the systematic review process applied in this study consisted of the following steps: Definition of research questions; Specification of eligibility criteria and sources of information; Identification of search strategies; Study selection process; Data extraction and synthesis.

2.1. Definition of research questions

Besides identifying the general characteristics of the analysed studies, the following Research Questions (RQ) were defined to guide this literature review:

- (RQ1) Which game elements are implemented in GFL in HE?
- (RQ2) What are the challenges faced by HE teachers in the implementation of GFL?
- (RQ3) Which guiding principles can be derived from the analysed empirical studies to inform the design of a GFL intervention in HE?

2.2. Specification of eligibility criteria and sources of information

For the selection of the studies to be included in the analysis, the following Inclusion Criteria (IC) and Exclusion Criteria (EC) were specified:

- (IC1) Studies published in English (but not necessarily conducted in English).
- (IC2) Original research.
- (IC3) Studies that specifically used gamification in conjunction with flipped learning and are based on empirical evidence.
- (IC4) Studies conducted at the HE level.
- (EC1) Articles published in the proceeding of a conference or in non peer-reviewed journals, literature reviews, short papers, position papers or panels.
- (EC2) Full papers not available.

Taking into account the multidisciplinary nature of gamification, and in light of other recent mapping and systematic reviews on educational gamification and flipped learning (Akçayır & Akçayır, 2018; Bredow et al., 2021; Kalogiannakis et al., 2021; Krath et al., 2021; Manzano-León et al., 2021; Smith et al., 2022) the scientific databases searched in this review included those identified as relevant to psychology, education, gaming, technology, and social science: ACM Digital Library; EBSCO (Business Source Complete, Communication & Mass Media Complete, Teacher Reference Center); IEEE Xplore; Science Direct; Scopus; Web of Science.

2.3. Identification of search strategies

Having checked and tested the specific syntax required by each database selected, the following search string was created through the combination of two basic boolean operators ("AND" and "OR"), the parentheses and using "*" as a wildcard: "gamif* AND ((flipped OR inverted) AND (class* OR learning OR education OR instruction OR teaching))".

A decision was made to manually filter for the targeted level of education rather than include a direct reference to 'higher education' in the search string, to ensure that studies which were relevant, but did not explicitly mention 'higher education' in their titles, abstracts, or keywords, were not overlooked.

The search string was employed for title, abstract, and author keywords search, without any chronological filter. The search was conducted between March 1st and March 15th, 2023.

2.4. Study selection process

The initial search in all databases produced a total of 496 results. A first screening process was carried out and resulted in 315 papers, after duplicates were removed with the help of CADIMA software. The next stage of this review process was the removal of papers considered not relevant, according to the inclusion and exclusion criteria previously mentioned. An initial screening was conducted by four researchers who independently reviewed titles and abstracts. Before starting the selection process, a consistency check was performed using the CADIMA software to measure inter-rater agreement. Each researcher assessed the same 30 titles and abstracts independently, and the level of agreement was deemed 'fair,' with a kappa value of 0.41. Then, each title and abstract was reviewed by two researchers independently and if inconsistencies in the rating decisions occurred, the respective reviewers were notified by the CADIMA software and they had to resolve those conflicts. This process led to the

Table 1. List of selected papers.

#	Authors (Year)	Journal	Country
1	Ahmed & Asiksoy (2021)	Sustainability	Cyprus
2	Anane (2022)	Frontiers in education	UAE
3	Asiksoy & Canbolat (2021)	International Journal of Engineering Pedagogy	Turkey
4	Aşıksoy (2018)	Quality & Quantity	Cyprus
5	Chen et al. (2022)	Sustainability	China
6	Durrani et al. (2022b)	Contemporary Educational Technology	UAE
7	Durrani, Al Naymat, et al. (2022a)	International Journal of Management Education	UAE
8	Elzeky et al. (2022)	BMC Nursing	Egypt
9	Forndran & Zacharias (2019)	European Journal of Psysics	Brazil
10	Gómez-Carrasco et al. (2019)	Education Sciences	Spain
11	Gündüz & Akkoyunlu (2020)	SAGE Open	Turkey
12	Huang et al. (2019)	Interactive Learning Environments	Hong Kong
13	Huang & Hew (2018a)	Computers and Education	Hong Kong
14	Huang & Hew (2018b)	Computers and Education	Hong Kong
15	Hung (2018)	ELT Journal	Taiwan
16	Hung (2017)	Interactive Learning Environments	Taiwan
17	Kim & Kim (2022)	Healthcare	Korea
18	Ng & Lo (2023)	Education Sciences	China
19	Ng & Lo (2022)	Sustainability	China
20	Ozer et al. (2018)	International Journal of Emerging Technologies in Learning	Cipro
21	Recabarren et al. (2023)	Interactive Learning Environments	Chile
22	Ruiz (2021)	Journal of Spanish Language Teaching	Singapore
23	Sailer & Sailer (2021)	British Journal of Educational Technology	Germany
24	Yllana-Prieto et al. (2021)	Sustainability	Spain
25	Zainuddin et al. (2022)	Interactive Technology and Smart Education	Indonesia
26	Zamora-Polo et al. (2019)	Education Sciences	Spain

exclusion of 160 articles. Two researchers assessed the full text of 155 remaining articles and discarded another 130 articles.

Hence, 25 papers were included for data extraction, however, one of the papers encompassed two separate studies, resulting in a total of 26 studies to be analysed (Table 1). The selection process is illustrated in the following flow diagram (Figure 1).

2.5. Data extraction

Four researchers examined the data from all 26 studies included at the end of the selection process. The analysis was performed by coding the data and assigning them to various categories. These categories were initially established by two of the authors, drawing upon existing literature. For instance, the classification of game elements in the selected studies was based on the game element taxonomy proposed by Toda et al. (2019). Subsequently, the categories were presented and discussed among the entire research team to ensure validation and refinement. In the process of analysis, additional categories were introduced as deemed necessary.

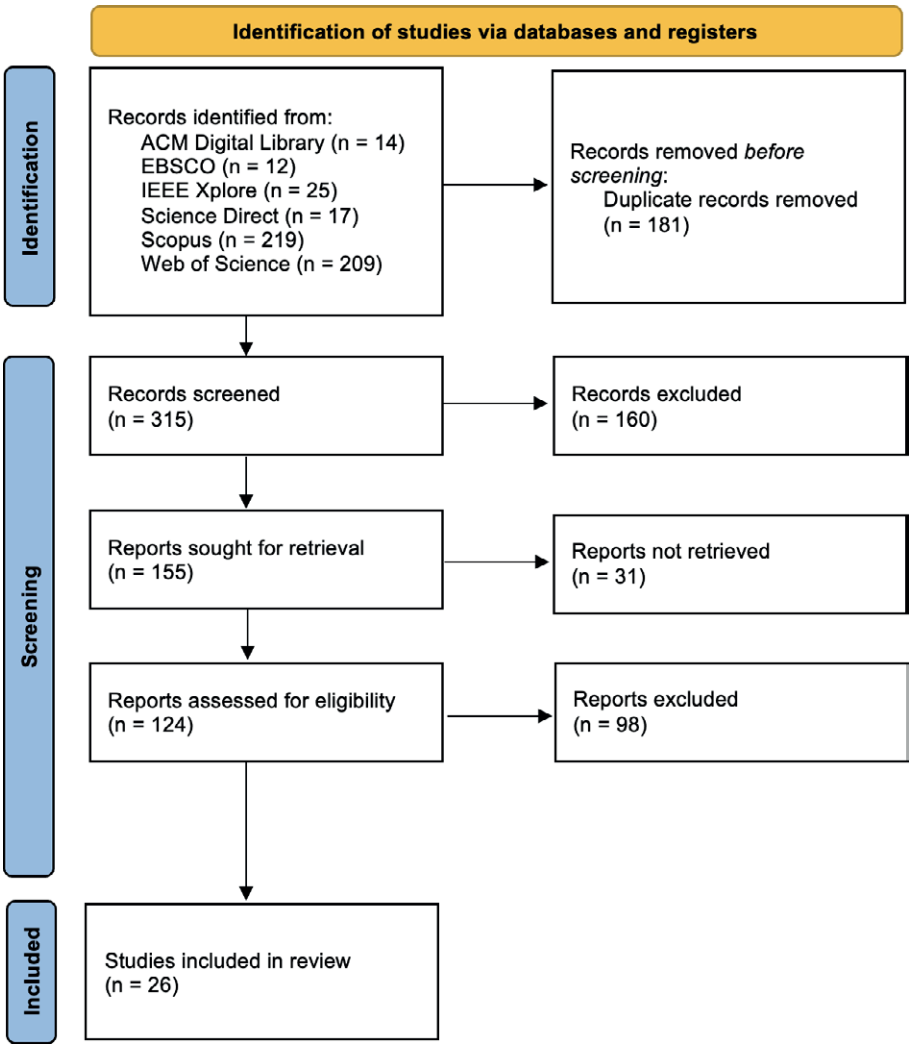

Figure 1. Flow diagram of the article search and selection process.

3. Results

3.1. General characteristics of the analysed studies

Although the search in academic databases was not limited to a specific time frame, it is noteworthy that most of the studies have been published after 2020 (Figure 2).

Most of the studies reviewed (16 out of 26) were carried out in undergraduate programmes (Figure 3).

The rationale for favouring undergraduate courses is likely attributable to their usually larger student population, as these allow researchers to have sufficient participants for their investigations, especially in the context of quantitative and mixed methods research, the only methodological approaches adopted among the selected studies. Indeed, half of the selected studies employed a mixed-methods approach, while the other half used a quantitative approach.

In most of the studies (18 out of 26), the course was delivered in blended learning mode (Figure 4). Blended learning can be defined as a combination of teaching strategies that incorporates digital technologies into teaching practices, occupying an intermediate position between fully online and ful-

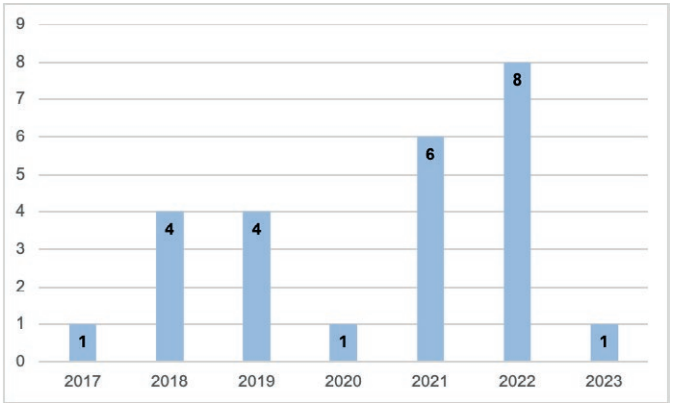

Figure 2. Distribution of the studies per publication year.

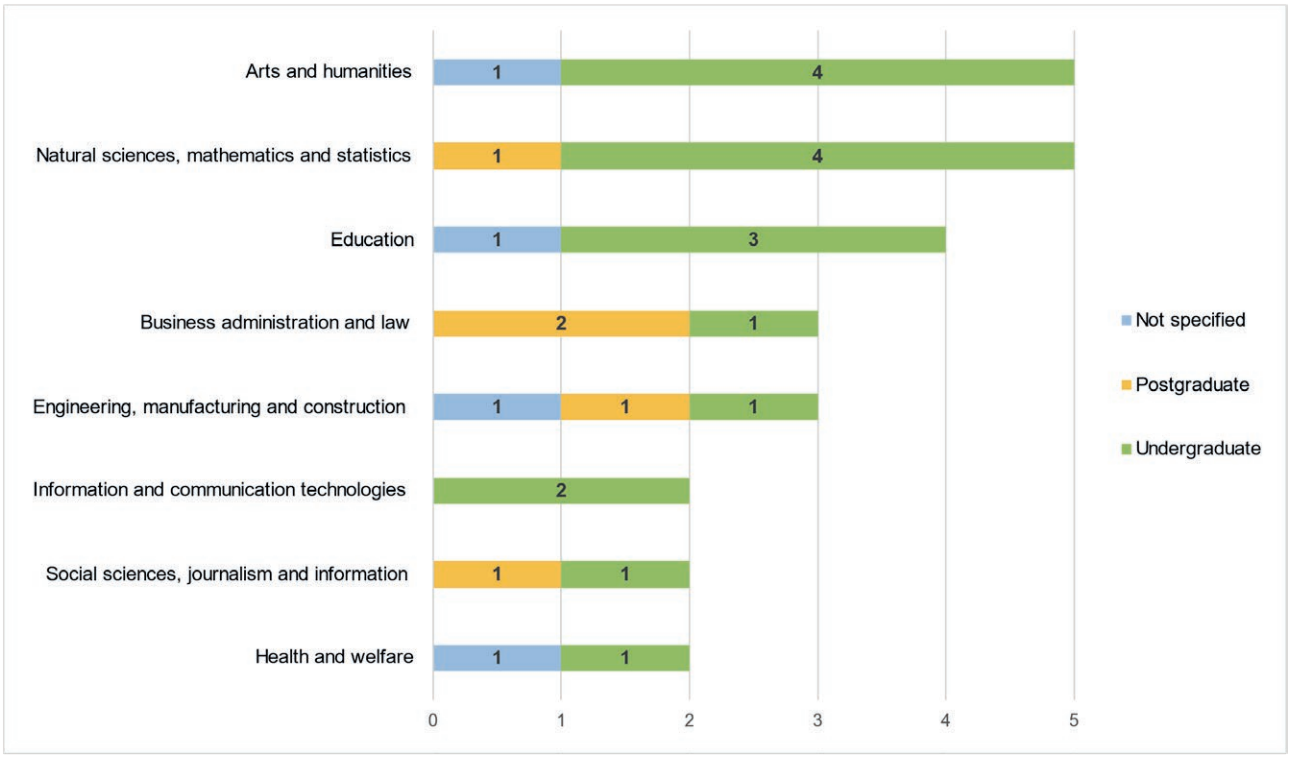

Figure 3. Distribution of the studies per course level and subject area.

ly face-to-face delivery modes (Wang et al., 2015); instead, hybrid learning happens when online and in-person learning are offered at the same time and learners can choose to attend online or in-person (Marey et al., 2022). The fully online delivery mode (7 studies out of 26, 26.9%) was the only one adopted during the pandemic, due to the restrictions imposed by the authorities.

Regarding how gamification is used, most of the analysed experiences apply gamification only to specific course activities (21 out of 26) instead of applying it to the entire course structure (5 out of 26) (Figure 5).

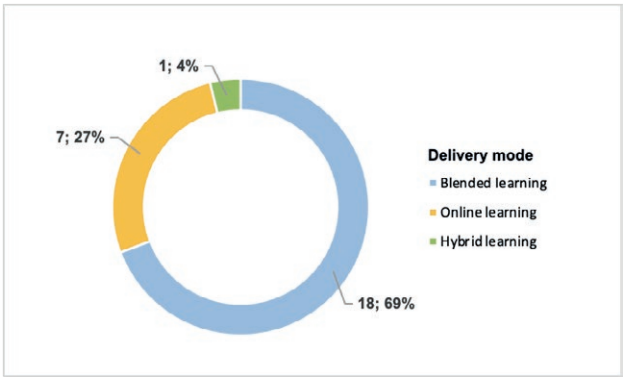

Figure 4. Courses' delivery mode.

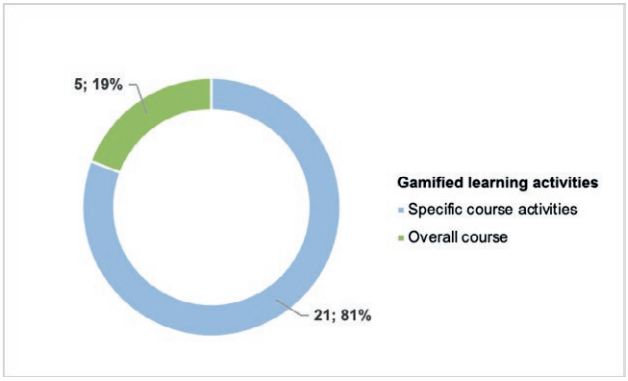

Figure 5. Gamified learning activities course coverage.

Table 2. Reported results of the GFL interventions.

Reported results	Definition		# of studies
Positive	Improvement in the observed(s) as a consequence of implementing GFL		21
Negative	Adverse impact of GFL on the observed variable(s)		0
Mixed	variable Improvements in some variables and adverse effects on others	mostly positive	4
		equal positive and negative	1
		mostly negative	0
No effect			0

This review also focused on highlighting the variables on which the effect of the gamified learning intervention was observed across the 26 included studies. An initial list of variables based on the literature (Ekici, 2021) was adopted as a reference, but the final list was defined through basic coding and discussion among researchers. The most frequently measured variables were motivation (n=14), learning achievements (n=14), engagement (n=12) and perception (n=11).

From the analysis of the studies, a synthesis of the reported results was also drawn (Table 2), based on the categories adopted by Smith et al. (2022) and Luo (2022).

3.2. RQ1 – Game elements implemented in GFL

To identify the most used game elements in the selected studies, it was first necessary to select a taxonomy of game elements to be adopted as a reference. Indeed, game elements have been classified in many ways by different authors, but taking into account the context of this study, it was decided to adopt the taxonomy provided by Toda et al. (2019), which was defined with the specific aim of standardising the naming and the definition of game elements employed for educational gamification.

Based on this taxonomy, the most frequently used game elements in the analysed studies are points (n=23) and competition (n=22), specifically referring to the use of leaderboards, followed by acknowledgements (n=11), in the forms of badges and trophies (Table 3).

Moreover, in many of the studies analysed, researchers adopted ready-to-use tools to implement gamification, in particular gamified student response systems (such as Kahoot!, Socrative, Quizalize), instead of designing an ad hoc gamified solution.

Table 3. The most used game elements in GFL interventions.

Game elements	# of studies
Point (e.g., experience points)	23
Competition. (e.g., player versus player battles, leaderboards)	22
Acknowledgement (e.g., badges, medals, trophies)	11
Cooperation (e.g., co-op missions, group challenges)	8
Progression (e.g., progress bars, maps, steps)	6
Level (e.g., character levels, skill level)	6
Time pressure (e.g., countdown, clock, timer)	6
Objectives (e.g., quests, missions, milestones)	6
Stats (e.g., health bar, magic bar, skills)	2
Rarity (e.g., limited resources and collectables)	2
Economy (e.g., a virtual currency to be used for transactions)	2
Social pressure (e.g., peer pressure, guild missions)	2
Reputation (e.g., titles, status, ranking)	2
Puzzles (e.g., actual puzzles, cognitive tasks, mysteries)	2
Sensation (e.g., visual and sound effects)	2
Storytelling (e.g., animated scenes, audio queues or text queues)	2
Chance (e.g., elements of randomness or probability)	1
Interactive narrative (i.e., choices or performances in the system that influence the progression of the story and its ending)	1
Imposed choices (e.g., judgements, forced choices)	0
Novelty (e.g., changes, surprises, updates)	0
Renovation (e.g., extra life, boosts, renewal)	0

3.3. RQ2 – Challenges faced in GFL implementation by the HE teachers

Throughout the analysis, the researchers identified and categorised specific references to challenges encountered at various stages of the implementation process and affecting either the teachers or the students. These challenges were organised into five categories, initially formulated based on existing literature (Akçayır & Akçayır, 2018; Lester et al., 2023; Lo & Hew, 2017), and subsequently refined during the data extraction phase (Table 4).

3.4. RQ3 – Guiding principles informing the design of GFL

To address the challenges described in the selected studies, and to offer guidance to the teachers, some design principles can be derived both from the theories underpinning flipped learning and educational gamification and from the studies carried out so far. For each challenge, the corresponding guiding principles, either related to one of the components of GFL (flipped learning and gamification) or to the overall design, are listed in Table 4 and then described below.

Offer flexibility. Allow students to access individual space at any time and any place and study theoretical content at their own pace, and if possible, provide access to alternative materials to study the same content, enabling them to choose what best suits their learning style, needs and level of mastery (Akçayır & Akçayır, 2018; Bergmann & Sams, 2012).

Strive for wider appeal. Implementing a gamified system based only on a limited amount of game elements, such as points, badges and leaderboards, can feel like a safe option for inexperienced gam-

Table 4. Challenges faced in the implementation of GFL.

Challenge category	# of studies	Example Quote
The same solution is not equally effective for all learners	12	"Girls perceived a greater effect of the program on motivation than boys, just as they thought they had learned more and that they valued the strategies employed more positively than their male peers" (Gómez-Carrasco et al., 2020, p.11)
Class management issues	10	"The instructor introduced these rules at the beginning of the course. However, he did not actually ensure that each student understood the rules clearly. As a result, some students were confused about the rules for earning the game elements (e.g. how to earn the quality-based badges). Their engagement in the initial weeks was thus impaired." (Huang et al., 2019, p.17)
More time-consuming and difficult to design than a traditional course	9	"[Teachers] must prepare much more digital instruction and video than traditional instruction" (Ng & Lo, 2023, p.13)
Lack of digital skills	5	"All participants (i.e., teachers, teaching assistants and students) mentioned the need for technical support" (Ng & Lo, 2023, p.13)
Higher student workload compared to a traditional course	3	"FL requires active participation both inside and outside the classroom. Consequently, it requires more time and effort than what is required in traditional learning methods" (Kim & Kim, 2022, p.8)

Table 4. Guiding principles.

Challenges	Guiding principles		
	Flipped learning	Gamification	General
The same type of solution is not suitable for all types of learners	Offer flexibility	Strive for wider appeal	
Class management issues	Design a cohesive learning experience	Favour collaboration over competition	Communicate openly
More time-consuming and difficult to design than a traditional course	Mix created and curated content		Provide feedback
Lack of digital skills			Do not overcomplicate technical aspects
Higher student workload compared to a traditional course	Ensure manageable workload	Design an overall pleasurable and fun experience	

ification designers. However, including more game elements can be a better option to appeal also to learners who are less motivated by these specific game elements (Marczewski, 2018; Werbach & Hunter, 2012).

Design a cohesive learning experience. To prevent student confusion, the connection between the contents provided in the individual space and the activities foreseen in the group space should be explicit and meaningful. Individual space and group space activities should support each other as part of the complete flipped classroom design (Hwang et al., 2019).

Favour collaboration over competition. Competition can lead to class dynamics that are difficult to manage, so it may be preferable to implement cooperative rather than competitive gamification (An,

2020), or to implement intergroup competition to try to combine the benefits of both competition and cooperation (Morschheuser et al., 2019).

Communicate openly. The teacher should provide students with a clear overview of how a gamified flipped learning course works and what is expected from them and keep an open dialogue with the students throughout the course (Hwang et al., 2015).

Mix created and curated content. To reduce the time and effort needed when preparing a new flipped learning course, a viable strategy is to combine the creation of new content and the curation of good quality open educational resources already available (Bergmann & Sams, 2012; Talbert, 2017).

Provide feedback. A gamified flipped learning course should be designed to provide as many opportunities as possible to give individual feedback to students on their learning progress (Bergmann & Sams, 2012; Kapp, 2012; Sakulprasertsri, 2017). Rewards in a gamified system (such as badges, achievements, trophies, and points) should be intended as a way of giving feedback on users' performance (Marczewski, 2018).

Do not overcomplicate technical aspects. Learning technologies implemented in both the individual and group space of a gamified flipped course should be easy to use and should not be a barrier for either students or teachers (Vanduhe et al., 2020).

Ensure a manageable workload. Students should not perceive that the adoption of the flipped learning approach resulted in an increase in study time and/or workload associated with the course (Akçayır & Akçayır, 2018).

Design an overall pleasurable and fun experience. The whole point of gamifying a course is to leverage the power of games in an educational context and to create a more game-like experience (Kapp, 2012). Therefore, interacting with a gamified system should be perceived as pleasurable and enjoyable, since perceived enjoyment has been considered as an intrinsic motivational driver (Davis et al., 1992).

4. Discussion

As with the preceding systematic reviews on GFL (Ekici, 2021; Smith et al., 2022), all the studies included in the present review were published after 2016, showing that GFL is a relatively young research area. Findings also highlighted that in less than a decade the interest in this approach has risen significantly, receiving further impetus during, and in the aftermath of, the Covid-19 crises (14 out of the 26 retrieved studies were carried out between 2020 and 2022). Most of the studies reviewed (16 out of 26) were conducted in undergraduate programs. The most common subject areas for the GFL interventions included Arts and Humanities (19.2%), Natural Sciences, Mathematics, and Statistics (19.2%), and Education (15.4%).

Notably, under the same umbrella term of GFL, a wide range of solutions has been developed. The interventions described in the selected studies were indeed distributed between blended (69%) and online delivery modes (27%); foresaw the implementation of game elements in out-of-class activities (27%), in-class activities (38%), or both (35%); applied gamification to a limited number of learning activities (81%), or adopted a more structural approach, gamifying the entire course (19%).

This level of variability testifies to the inherent flexibility of GFL. Indeed, as with flipped learning itself (O'Flaherty & Phillips, 2015), GFL appears to be adaptable to diverse contexts, learning requirements, and course subjects and levels. At the same time, this flexibility represents a challenge for teachers, who are burdened with the complex and time-consuming task of translating the multifaceted concept of GFL into practice (Durrani et al., 2022; Hung, 2017; Kim & Kim, 2022; Ng & Lo, 2023; Sailer & Sailer, 2021; Zamora-Polo et al., 2019).

When analysing the game elements which are implemented in GFL in HE (RQ1), despite the numerosity of game elements that could be deployed in gamified system, it is evident that the experiences based on the use of points, acknowledgements and competition are still predominant; even in light of the literature identifying this kind of gamification as controversial and of limited effectiveness, especially in motivating users in the medium and long term (Dicheva et al., 2018; Nacke & Deterding, 2017; Toda et al., 2018; Werbach & Hunter, 2012). Moreover, many of the studies relied on ready-to-use tools and applied gamification solely to specific course activities instead of attempting to achieve a more organic integration between instructional design and gamification design. An explanation can be found when analysing the challenges faced by HE teachers in the implementation of GFL (RQ2). Indeed, it appears that designing a GFL intervention is considered a time-consuming activity by many authors (35% of the selected studies), especially when they approach this method without previous knowledge of either flipped learning or gamification. In addition, introducing GFL can result in issues in the management of the class, and requires giving students precise instructions on the game elements introduced in order to avoid misunderstanding, which may result in students becoming frustrated over the method, or even the course itself (Huang et al., 2019). These challenges may be what motivate many teachers to adopt a basic gamification approach or resort to ready-to-use tools. Consequently, the progress "*from points/badges/leaderboards to other features and aspects of game design*" observed by Nacke & Deterding (2017) in gamification research, has yet to happen in GFL research.

Among the main challenges of GFL, one of the most critical challenges of flipped learning reported in the literature is notably absent (Akçayır & Akçayır, 2018), namely the problem of students coming to class unprepared. Hence, it appears that introducing gamification in flipped learning does have a mitigating effect on this challenge.

Despite the previously highlighted limitations, the reported results of GFL interventions are generally positive and encouraging. The implementation of this approach contributes to fostering students' motivation, learning achievements and engagement. Moreover, this approach seems to be generally well received by the students and its implementation has also been reported to improve the students' overall perception of the course.

Nevertheless, it is important to highlight that one of the most frequently mentioned challenges in the analysed studies is the inherent variability in students' responses to specific game elements. Thus, offering a diversified gamified system may prove to be a more effective strategy to meet the needs and expectations of the collective class cohort, as underscored by other researchers in the field of gamification (Kocadere & Çağlar, 2018; Manzano-León et al., 2021). In addition, the growing field of research focusing on the integration of gamification and artificial intelligence to design adaptive gamified learning environments is very promising and could shortly offer interesting solutions to address this specific problem (Lavoué et al., 2019; Oliveira & Bittencourt, 2019; Serna et al., 2023).

5. Conclusions

This literature review focused on analysing studies conducted within HE that examine the integration of flipped learning and gamification. What emerged from the analysis of the selected studies in this relatively young and still expanding research field is that it is characterised by a wide variety of implementation approaches. This variety appears to be a strength (indicating the flexibility and adaptability of GFL) but also a weakness (requiring time to be properly designed and implemented).

Drawing from the insights that emerged from previous experiences and the promising outcomes they have reported, future educators inclined towards implementing this approach may find value in pursuing a more organic integration of gamification and flipped learning (Kocadere & Çağlar, 2018; Manzano-León et al., 2021). Moreover, a more nuanced and deliberate selection of game elements for implementation could be considered in order to overcome the limitations of the different responses each specific game element may elicit from different students (Dicheva et al., 2018; Nacke & Deterding, 2017; Toda et al., 2018; Werbach & Hunter, 2012).

Finally, the current evolution of gamification research, exploring the potentiality of artificial intelligence, could also provide beneficial insights and solutions to be applied in GFL.

6. Study limitations

In this review, specific keywords and criteria to search the scientific databases and identify relevant studies for examination were employed. This approach ensured that the final selection of studies on GFL in HE was highly representative. However, it is important to note that 31 of the 155 papers selected after the title and abstract screening could not be retrieved. Additionally, utilising different search criteria may yield slightly different data. For instance, if conference papers were included in the analysis, the reported results could vary. Therefore, further research is warranted, using alternative selection criteria, to gain a more comprehensive understanding of how, and with what impact, GFL has been implemented at the HE level.

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Levelling up leadership: Harnessing gamification to cultivate soft skills in Italian and Portuguese master's students

Potenziare la leadership: massimizzare la gamification per coltivare le competenze trasversali negli studenti di master italiani e portoghesi

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ABSTRACT This research investigates the effectiveness of gamification in enhancing leadership and teamwork abilities among Italian and Portuguese students pursuing a Master's degree in Business and Accounting Management through the "Leadership Quest" game. Employing a comprehensive data analysis methodology encompassing t-tests and ANOVA, the study assesses the game's impact on developing interpersonal skills. The results demonstrate significant enhancements in communication, strategic decision-making, and conflict-resolution skills following participation, with no discernible gender disparities. Additionally, the study delves into the differing emphasis on interpersonal skills within the educational frameworks of Italian and Portuguese institutions, highlighting opportunities for cross-border knowledge exchange and the sharing of best practices. The findings underscore the potential of gamification in bridging the divide between theoretical knowledge and the practical application of skills, cultivating an interactive and supportive learning environment. Recommendations include systematically integrating interpersonal skills training, promoting inclusive learning environments, and strengthening partnerships between universities and industries.

KEYWORDS Gamification; Leadership Skills; Higher Education; Soft Skills Development; Cross-Cultural Analysis; Curriculum Design; Educational Technology.

SOMMARIO Nel panorama educativo contemporaneo, l'integrazione di elementi di gioco in contesti non ludici, nota come gamification, è emersa come una strategia trasformativa per migliorare le esperienze di apprendimento. Questo studio indaga l'efficacia della gamification nello sviluppo delle competenze di leadership e teamwork tra studenti italiani e portoghesi iscritti a un programma di Master in Business and Accounting Management attraverso il gioco "Leadership Quest". La ricerca impiega un approccio di analisi dei dati 'multifacettato', inclusi t-test e ANOVA, per valutare l'impatto del gioco sullo sviluppo delle competenze trasversali. I risultati indicano miglioramenti significativi nelle competenze comunicative, nel processo decisionale strategico e nella gestione dei conflitti dopo la partecipazione, senza differenze di genere rilevanti. Inoltre, lo studio esplora la diversa enfasi posta sulle competenze trasversali nei curricula dei sistemi educativi italiani e portoghesi, rivelando opportunità di apprendimento transnazionale e scambio di best practices. I risultati sottolineano il potenziale della gamification nel colmare

il divario tra conoscenza teorica e applicazione pratica delle competenze, promuovendo un ambiente di apprendimento supportivo e coinvolgente. Le raccomandazioni per i progettisti di curriculum, gli educatori e i responsabili delle politiche includono l'integrazione sistematica della formazione sulle competenze trasversali, la promozione di ambienti di apprendimento inclusivi e il rafforzamento delle partnership tra università e industria. Questa ricerca contribuisce al discorso più ampio sul ruolo dei giochi nell'educazione, evidenziando la loro capacità di trascendere i confini tradizionali e promuovere l'apprendimento lungo tutto l'arco della vita in contesti diversificati.

PAROLE CHIAVE Gamification; Competenze di Leadership; Istruzione Superiore; Sviluppo delle Competenze Trasversali; Analisi Cross-Culturale; Progettazione Curriculare; Tecnologia Educativa.

1. Introduction

In the field of education, gamification – i.e. integrating game elements into non-game contexts - has emerged as an effective strategy for engaging learners and cultivating positive traits such as commitment, teamwork, and enjoyment (Deterding et al., 2011; Gomez et al.., 2016). This shift in perspective has revitalised the role of play to create effective learning environments across various educational settings, including universities and adult education. The widespread influence of new media and technology has profoundly transformed instructional approaches, facilitating the rise of game-based learning initiatives (Nesti, 2017). Drawing from scholarly research and historical pedagogical practices, the educational benefits of play extend through various stages of human development, highlighting the significant impact of games on cognitive, communicative, and relational skills. The intersection of technological advancements and evolving educational paradigms has led to a generation of digital natives characterised by dynamic learning behaviours and a preference for personalised, peer-oriented knowledge acquisition and sharing. This cultural shift emphasises the need to reassess and adapt educational practices to accommodate diverse learning styles and tailor learning experiences.

The intentional integration of game-based educational tools has demonstrated an ability to enhance motivation, engagement, and cognitive development, facilitating a state of "flow" where learning intersects with intrinsic satisfaction and optimal performance (Bruner, 1980; Csikszentmihalyi, 2014). Implementing gamification in education aims to innovate teaching methods and foster increased student engagement and active participation.

This study concentrates on developing soft skills related to leadership among Master's students from Italy and Portugal. Prior research indicates that the incorporation of soft skills training within University Master's programs in these countries lacks standardization and largely depends on the discretion of program coordinators (Caggiano et al., 2020, p. 110). Despite variations in teaching methodologies, there is a growing interest in soft skills training in Italy and Portugal. Analysing the curriculum design and learning methods employed in these countries offers valuable insights for developing strategies akin to those seen in video games. The following text emphasises the significance of conducting a comparative analysis to understand the perceptions and experiences of Master's students in Italy and Portugal regarding the development of video game skills. This analysis seeks to reveal potential cultural differences and inform best practices for curriculum design.

The implications of this study extend to curriculum designers, educators, and policymakers, as it will provide a deeper understanding of the strengths and weaknesses in the current approach to soft skills development, thereby facilitating the integration of effective pedagogical strategies.

Moreover, the study highlights the importance of considering cultural and contextual factors when designing curricula, ensuring that Master's programs address the diverse needs of students from various cultural backgrounds. The research aims to enrich the literature on soft skills development by

exploring the experiences of Italian and Portuguese Master's students. The study seeks to enhance educational practices that nurture these vital competencies by identifying the similarities and differences in developing soft skills. Ultimately, the goal is to equip Master's students for leadership positions in their respective fields, regardless of their cultural backgrounds.

2. A novel approach to learning: embracing video games as educational tools

The past century has seen a notable connection between learning and formal education. However, advancements in information technology are fundamentally challenging this relationship. Modern technologies provide individuals with access to extensive libraries simply through a wireless Personal Digital Assistant, while vast social networks are readily available to anyone with a cell phone. This unprecedented access enables individuals to create personalised learning paths by integrating various resources. Despite this, traditional classrooms still need to evolve. The conventional theories of learning and instruction remain deeply embedded in educational systems and require modernisation to remain relevant today (An, 2018). While some educators and leaders advocate for adopting new technologies and methods, others feel disheartened by the widening gap between traditional schooling and the demands of a postindustrial, global, high-tech society.

Consequently, many students now perceive school as increasingly irrelevant beyond the elementary grades. When envisioning the future of learning, it is crucial to move beyond traditional educational environments and explore the potential of video games. These games are significant as they immerse players in simulated worlds that mirror social practices and diverse ways of thinking. Playing video games enables players to participate in valued communities of practice, enhancing their cognitive abilities and deepening their understanding of various disciplines (Anderson & Hilton, 2015).

When assessing video games' origins and educational value, it is crucial to consider their potential benefits for students. For instance, the U.S. Army is developing games to expose civilians to diverse perspectives. At the same time, initiatives in other sectors employ games in health, history, engineering, and mathematics for educational purposes.

Nonetheless, many educational games need a coherent learning theory or research foundation. It is vital to understand how commercial games create immersive virtual worlds and how these environments foster knowledge and skills (Bayeck, 2020, p. 421).

By recognising the impact of video games on developing effective social behaviours and understanding complex systems, we can leverage this insight to create games that encourage diverse perspectives. Beardsley et al. (2021) highlighted the potential of video games to transform education. Delving into the fundamental questions within this context enables us to utilise video games to transcend traditional academic boundaries and foster an innovative learning approach through immersive experiences in virtual environments.

This educational journey will prepare individuals for meaningful engagement in our technology-driven, post-industrial society.

2.1. Gamification and curriculum innovation in Master's Education

Amid rapid technological progress, evolving economic landscapes, and complex socio-political challenges, it is crucial to strategically shape university education qualifications and curriculum

designs to ensure that graduates possess the skills and competencies necessary to thrive in a multifaceted and dynamic society (Meyer, Norman, 2020, p.15). Curriculum design approaches vary across countries and institutions, reflecting diverse educational curricula and objectives. Italian Master's programs generally emphasise structured, academically focused curricula prioritising acquiring theoretical knowledge. In contrast, Portuguese programs tend to adopt a more flexible and interdisciplinary approach, highlighting the importance of practical application and problem-solving skills through project-based learning and real-world case studies. These differing methodologies significantly influence the development of both theoretical and soft skills.

Incorporating gamification into university curricula can enhance various curriculum design approaches by fostering student engagement and improving practical skill development. By incorporating game elements such as challenges, collaborative activities, and rewards, gamification creates an engaging and dynamic learning environment that can facilitate theoretical knowledge acquisition and nurture the development of essential soft skills, such as effective communication, collaboration, and adaptability. This integration presents an opportunity to bridge the gap between theoretical knowledge acquisition and practical skill development, better preparing students to meet the demands of the modern workforce.

Moreover, it is becoming increasingly crucial for curriculum designers to address the demand for interdisciplinary knowledge and skills. By integrating interdisciplinary approaches into Master's programs, students can broaden their comprehension across various disciplines and develop the ability to integrate and apply knowledge from diverse areas (Schleutker et al., 2019, p.135). Additionally, fostering global citizenship and intercultural competence is crucial for preparing students to navigate the complexities of our interconnected world. Universities can meet this challenge by incorporating international experiences, such as study abroad programs, international collaborations, and cross-cultural projects, into the curriculum, enriching students' global perspectives and intercultural abilities.

Faculty members are instrumental in implementing innovative teaching strategies, integrating soft skills into the curriculum, and staying abreast of the latest developments in their fields. Overall, strategic enhancement of university education qualifications and integration of innovative educational tools, such as gamification, into diverse curriculum design approaches are essential in addressing this multifaceted challenge.

2.2. The role of technology in soft skills development

Incorporating soft skills into the accounting curriculum is increasingly essential to meet the evolving demands of the profession. International accounting organisations have historically stressed the need to revamp accounting education to make it more practical and to produce more well-rounded accountants (Baswara et al., 2020, p. 37). Employers now look for accounting graduates proficient in technical skills and a wide array of soft skills, including communication, strategic decision-making, and conflict management (Molenaar et al., 2019). Recent technological advancements have further highlighted the importance of integrating soft skills into accounting education. Using Learning Management Systems (LMS) has enabled innovative teaching methods that enhance student engagement and improve the learning experience (Helfaya, 2019).

The shift to online education during the COVID-19 pandemic has highlighted the need for better preparedness among educational institutions and faculty to effectively impart essential skills in a virtual setting (UNESCO, 2020).

Moreover, research highlights the significance of personalised learning in creating an adaptive learning environment and promoting digital learning approaches (Molenaar et al., 2019). This approach involves integrating various levels of automation in personalised learning to enhance student engagement. Additionally, a combined human-system regulation is essential to ensure that technology complements rather than replaces the human aspects of education (D'Mello, 2021).

The transition to remote learning prompted by the pandemic has necessitated educators to swiftly adapt by integrating online activities that positively impact student engagement, attitudes, and performance (Lim, 2020). Despite the challenges, LMSs such as Microsoft Teams, Blackboard, and Moodle, offer valuable tools for virtual interaction, including live or recorded lectures, chat functions, online exams, quizzes, and assignments (Helfaya, 2019). These platforms can be particularly effective in delivering prompt feedback, which is essential for continuously enhancing teaching and learning methods (Mihret et al., 2017).

The rapid transition to distance learning posed significant challenges for higher education institutions, particularly regarding technical infrastructure. Institutions in low-and middle-income countries observed that some students lacked Internet access due to financial constraints. On the other hand, institutions in high-income countries grappled with the economic implications of investing in LMSs (UNESCO, 2020a). This shift highlighted unequal access to learning opportunities among students, with some having robust access to LMSs, while others lacked it. Additionally, educators found that distance learning required more time than traditional teaching, as it involved integrating online activities to enhance student engagement, attitude, and performance (Bastos, De Oliveira, 2019, 2021). The effectiveness of distance learning varies across different fields of study, with practical disciplines like medicine and laboratory-based courses facing significant challenges. The success of these disciplines heavily relies on reliable online learning technologies (Brâncoveanu, 2020). While the flexibility of e-learning has led to its widespread adoption, the lack of interpersonal interaction between students and educators remains a significant criticism. The abrupt transition to e-learning could have unintended consequences that may impact students' future professional opportunities (Aguguom et al., 2020). With the digitalisation of the accountancy profession, universities must update their teaching methods to impart the necessary skills for the profession's future. Accountants must quickly adapt to new business practices and processes while upholding accounting principles. The profession faces various challenges in digitalisation, including Big Data, Cloud Computing, Artificial Intelligence, and Blockchain (Moore & Felo, 2021).

The ongoing changes are prompting educational systems to transition towards digitisation, which in turn is reshaping accountants' approaches to their work and necessitating the acquisition of new skills (Gulin et al., 2019). Formative assessments have increased significantly during the pandemic, offering valuable insights into students' learning needs. According to a survey by UNESCO (2020b), various countries have implemented diverse strategies for end-of-semester examinations, including rescheduling and adopting alternative assessment methods such as home-based exams and online testing. In restructuring the education system and envisioning the future, embracing the concept of blended learning is crucial. Nations should be prepared to adopt hybrid schooling models that combine in-person and remote learning (OECD, 2021). Including soft skills in the accounting curriculum is vital to prepare graduates for the challenges of the digital era (Ntoung et al., 2019). By incorporating innovative teaching methods and fostering collaboration between academia and industry, educational institutions can equip students with the necessary skills to thrive in their professional careers. The ongoing digital transformation of the accounting profession requires a curriculum that provides technical knowledge and develops the soft skills essential for effective practice in a rapidly evolving landscape.

3. Soft skills development behind video games. The applied research with Italian and Portuguese master students

This research investigates the effectiveness of gamification in enhancing leadership and teamwork abilities among Italian and Portuguese students pursuing a Master's degree in Business and Accounting Management through the "Leadership Quest" game.

Games like "Leadership Quest" create realistic scenarios that necessitate the application of communication, teamwork, and problem-solving skills, ultimately leading to more engaging and effective learning (Deterding et al., 2011, p. 121).

In our study, the 'Leadership Quest' game served as an interactive platform, incorporating competitive and collaborative tasks that closely mirrored real-world organizational dynamics. The use of such structured environment was aimed to foster essential skills such as communication, negotiation, and strategic decision-making, while simultaneously promoting meaningful interactions among students and educators. Ultimately, the initiative aimed to foster meaningful interactions among students and educators, enriching the overall educational experience and amplifying engagement.

3.1. Context and participants

The 'Leadership Quest' video game involves teams competing in various business missions and leadership challenges, creating an environment resembling real-world organisational dynamics. The study included 150 students enrolled in the Master's programme at the Rome Business School, with an equal split of 75 participants from Italy and 75 from Portugal.

Among the Italian participants, there was a higher representation of female students, with 67% females and 33% males. In contrast, the gender distribution among Portuguese participants was equal, with 50% males and 50% females. The average age of the Portuguese students was 27 years, while the average age of the Italian students was slightly lower at 25.

The study included participants with diverse academic backgrounds. Approximately 30% were from business and economics, 25% from humanities and social sciences, 20% from engineering and technology, and 15% from natural sciences, with the remaining 10% from other disciplines such as arts and communication.

Similarly, the Portuguese participants had various academic backgrounds and pursued a master's in business and accounting management. Regarding work experience, 20% of Italian participants had experience in business, 25% in engineering, and 30% in humanities and social sciences. Meanwhile, 25% of Portuguese participants had prior work experience in business, 20% in engineering, and 25% in humanities and social sciences.

Notably, 30% of Italian participants showed an entrepreneurial career orientation, compared to 25% of Portuguese participants.

This diverse composition aimed to capture a wide range of perspectives and experiences, enriching the insights gained from the study. The balanced distribution between Italian and Portuguese participants helped provide a comprehensive understanding of the impact of gamification on leadership skills development within a culturally diverse group.

The purposive sampling allowed for the inclusion of individuals deeply engaged in their Master's program, enhancing the depth and breadth of the findings.

3.2. Method and tools

As already mentioned, this study aimed to explore the effectiveness of the 'Leadership Quest' gamified learning initiative in enhancing leadership and soft skills among Master's students from Italy and Portugal.

The primary research questions guiding this inquiry were:

1) How does participation in the 'Leadership Quest' video game impact the development of leadership effectiveness, communication skills, and team management abilities among students?
2) Are there significant differences in the improvement of these skills when comparing Italian and Portuguese participants?
3) What demographic factors (age, gender, academic background, and work experience) influence the perceived effectiveness of gamified learning in developing soft skills?

To gather robust data, the study employed a meticulously designed questionnaire, aimed at measuring leadership effectiveness, communication aptitude, and team management abilities.

The questionnaire was meticulously designed to capture a comprehensive range of insights into participants' awareness and understanding of various soft skills, including leadership, and their perceptions of teaching methods and learning experiences related to video games. It was distributed online from November to December 2023, ensuring a convenient and efficient data collection process through a secure link for participants.

To assess the impact of gamification on life skills, including teamwork, leadership, and strategic communication, the study utilised the questionnaire before and after the students participated in the "Leadership Quest" game. This instrument measured leadership effectiveness, communication aptitude, and team management abilities while providing insights into participants' teamwork skills.Statistical analyses were conducted using SPSS software, employing both t-tests and ANOVA to evaluate the impact of the gamified learning experience on leadership and teamwork skills. The analysis aimed to evaluate whether the data supported the initial hypotheses regarding the expected improvements in soft skills.

To develop a well-rounded profile of the participants, we first conducted a descriptive analysis of sociodemographic variables such as age, gender distribution, educational background, and work experience. This analysis aimed to uncover potential demographic differences between Italian and Portuguese Master's students, enriching our understanding of the sample's diversity.

4. Results

Given that our investigation was guided by three primary research questions, we report the results accordingly.

RQ1 - How does participation in the 'Leadership Quest' video game impact the development of leadership effectiveness, communication skills, and team management abilities among students?

The results demonstrate a significant improvement in leadership and teamwork skills following participation in the 'Leadership Quest' game. As illustrated in Table 1, the average score for effective communication increased from 2.5 to 4.2, and the average score for leadership orientation rose from 2.8 to 4.6. These substantial enhancements indicate that the gamified learning environment effectively fosters the development of critical competencies. The t-tests conducted yielded very low p-values

(<0.001), confirming the statistical significance of these improvements. This suggests that the immersive and interactive nature of the game not only engages students but also equips them with practical skills necessary for real-world applications in leadership and teamwork contexts. The significant gains in conflict management (from 2.3 to 4.1) and team management (from 2.7 to 4.0) further emphasize the game's effectiveness, as students learned to navigate complex scenarios that required negotiation, collaboration, and strategic decision-making. Such skills are crucial in today's dynamic workplace, where the ability to work effectively in teams and manage conflicts is often a determinant of success.

RQ2 - Are there significant differences in the improvement of these skills when comparing Italian and Portuguese participants?

The analysis of variance (ANOVA), as detailed in Table 2, revealed noteworthy differences between the two participant groups—Italian and Portuguese students. For instance, the effective communication scores for Italian participants improved from 2.4 to 4.1, while Portuguese participants experienced an increase from 2.6 to 4.7. This indicates that, although both groups benefited from the gamified learning experience, Portuguese students exhibited a slightly higher average improvement in communication skills.

The ANOVA results indicated significant differences in leadership skills, with Italian students showing an increase from 2.7 to 4.4 compared to the Portuguese students' rise from 2.2 to 4.6. This suggests that while both groups gained from the experience, the Portuguese students may have responded more positively to the gamified approach in enhancing their leadership capabilities.

Understanding these cultural nuances is crucial, as it implies that educational strategies may need to be tailored to different demographic backgrounds to maximize their effectiveness.

RQ3 - What demographic factors (age, gender, academic background, and work experience) influence the perceived effectiveness of gamified learning in developing soft skills?

The demographic analysis revealed that various factors, including age, gender, academic background, and prior work experience, significantly influenced students' perceptions of the effectiveness of the 'Leadership Quest' initiative. The diverse academic backgrounds of the participants enriched our insights, highlighting how students from different disciplines exhibited varying levels of engagement and skill development.

For example, as reported in Table 2, both groups expressed high appreciation for teaching methods such as case studies and gamification, with similar mean scores (Italian: M=4.25; Portuguese: M=4.30). However, there was a notable disparity in the ratings for lectures and seminars, with Italian students scoring this method significantly higher (M=4.68) than their Portuguese counterparts (M=2.97), although this difference was not statistically significant (p=0.29). This variation suggests that Italian students may have a greater affinity for traditional teaching methods, while Portuguese students may find more value in interactive learning experiences, such as gamification. The correlations observed between leadership and teamwork skills among both Italian and Portuguese students reinforce the interconnectedness of these competencies.

For instance, Italian students exhibited correlations of r=0.30 for communication and leadership skills, and r=0.52 for teamwork and leadership skills, while Portuguese students demonstrated even stronger correlations (r=-0.46 for communication and leadership; r=-0.72 for teamwork and leadership). These findings indicate a strong relationship between the development of these skills, which is vital for fostering effective collaboration in professional settings.

Table 1. Test Analysis of Leadership and Teamwork Skills Before and After "Leadership Quest" Game.

Soft Skills	Mean bef.	Mean aft.	Mean Diff	p-value
Effective communication *	2,5	4.2	1,7	<0.001
Leadership Orientation	2.8	4.6	1,8	<0.001
Conflict Management	2.3	4.1	1.8	<0.001
Team management	2.7	4.0	1.7	<0.001
Collaboration with others	2.4	4.1	1.6	<0.001

Table 2. ANOVA Evaluation for Soft Skills and Teaching Methods between Italian and Portuguese Groups.

Soft Skills/Teaching Methods	Italian		Portuguese		p-value
	Italian Mean Before (M)	Italian Mean After (M)	Portuguese Mean Before (W)	Portuguese Mean After (W)	
Effective communication *	2,4	4.1	2.6	4.7	<0.001
Leadership Orientation	2.7	4.4	2.2	4.6	<0.001
Conflict Management	2.2	4.0	2.4	4.2	<0.001
Team management	2.3	4.2	3.1	4.4	<0.001
Collaboration with others	2.1	3.9	2.9	4.1	<0.001
Case Studies	4.2	4.2	4.3	4.3	0.57
Gamification	4.3	4.4	4.4	4,5	0.03
Lectures and Seminars	4.6	4.7	4.6	2.9	0.29

5. Discussion and conclusion

As a result, students improved their communication, negotiation, and strategic decision-making abilities while learning to manage limited resources and deal with the consequences of their actions. Combining elements of competition and collaboration, 'Leadership Quest' effectively increased student participation and motivation, strengthening their problem-solving skills, adaptability, and creative thinking. Furthermore, aside from nurturing leadership skills, the initiative facilitated meaningful interaction among students and teachers, enriching the overall teaching and learning experience and boosting engagement. Ultimately, this initiative highlighted the potential of gamified learning as a powerful tool for academic institutions looking to enhance the leadership training of Master's students.

The study on gamification for leadership skill development at the Rome Business School yielded significant results. Participants in the "Leadership Quest" game exhibited notable improvements in leadership and teamwork skills, with their average scores reflecting a substantial increase after engaging in the game; this indicates the effective development of these competencies. Notably, there were no significant differences between male and female participants, suggesting that both genders can equally benefit from the game in enhancing their leadership skills. These findings indicate that gamification can be an effective tool for developing leadership skills, particularly among students with diverse academic backgrounds. Consequently, this study provides a solid foundation for further research into gamification to cultivate leadership and teamwork skills.

The results underscore the critical importance of soft skills development in higher education, as these competencies are essential for preparing students for the challenges of the modern workforce

(Kieu & Singer, 2020, p. 24). Communication, teamwork, problem-solving, and adaptability are crucial for effective leadership and success in professional settings. A comparative analysis of Master's programs in Italy and Portugal revealed similarities and differences in the emphasis on soft skills. While both countries recognised the importance of these skills, variations were observed in their integration within the curriculum and the pedagogical strategies employed. These distinctions provide opportunities for cross-country learning and the exchange of best practices.

Despite the significant findings, this research has limitations. The study's sample size may not fully represent the broader population of Master's students, potentially limiting the generalizability of the results. Additionally, the reliance on self-reported data from the questionnaire could introduce bias, as participants may have overestimated their skills or the effectiveness of the gamified learning experience. Furthermore, the study did not explore the long-term retention of the skills acquired through the "Leadership Quest" game, nor did it account for external factors that may influence students' development of soft skills.

Despite these limitations, in our view, the findings suggest several recommendations for improving soft skills development in Master's programs. First, a more systematic approach to integrating soft skills into the curriculum is essential. This can be achieved by incorporating soft skills training into core courses and providing dedicated modules focused on these competencies. Second, creating a supportive and inclusive learning environment is vital for promoting the acquisition of soft skills. Collaborative projects, group discussions, and experiential learning opportunities can encourage students to actively engage and practice these skills (Malavasi, 2022, p. 65). Third, strengthening partnerships between universities and industries is crucial to ensure that the soft skills developed align with job market demands. Involving industry professionals in curriculum design and offering internships and mentorship programs can bridge the gap between academic learning and practical application.

Moreover, the research emphasises the importance of adaptability and flexibility in leadership roles. Leaders must skillfully navigate and adjust to changing circumstances, a competency that can be cultivated through targeted educational interventions. The Italian Master's students exhibited significantly higher levels of theoretical knowledge acquisition than their Portuguese counterparts, suggesting varying curriculum designs that prioritise traditional lecture-based methods in Italy and active, participative learning approaches in Portugal.

The successful integration of the "Leadership Quest" game underscores the potential of gamified learning in cultivating leadership and soft skills. The game involved teams competing in diverse business missions and leadership challenges, creating a setting analogous to real-world organisational dynamics. This approach enhanced students' communication, negotiation, and strategic decision-making abilities, fostering interaction between students and educators while strengthening the overall teaching and learning experience.

Additionally, integrating gamification into university curricula can complement various curriculum design approaches by improving student engagement and fostering practical skills development. By incorporating game elements such as challenges, collaborative activities, and rewards, gamification creates a dynamic learning environment that facilitates theoretical knowledge acquisition while nurturing essential soft skills such as effective communication, collaboration, and adaptability. The growing need for interdisciplinary knowledge and abilities presents a significant challenge for curriculum designers. Introducing multidisciplinary approaches in Master's programs enables students to comprehend multiple disciplines and integrate knowledge from diverse areas (Schleutker et al., 2019, p. 135).

Furthermore, nurturing global citizenship and intercultural competence is crucial for preparing students to navigate the complexities of a globalised world. Universities can address this challenge by

integrating international experiences such as study-abroad programs, international collaborations, and cross-cultural projects into the curriculum, enriching students' global perspectives and intercultural competencies. Faculty members can play a pivotal role in implementing innovative teaching strategies, integrating soft skills into the curriculum, and staying updated on the latest developments in their fields.

In conclusion, strategic advancements in university education qualifications and the innovative use of tools like gamification are essential for addressing the multifaceted challenges faced by global society, ultimately preparing students for success in the contemporary workforce. By implementing the recommendations outlined, universities can enhance the educational experiences and qualifications of Master's students, better preparing them for the demands of a global society. This research represents a step forward in addressing the existing challenges faced by society regarding university education qualifications and the strategic development of organisations and institutions in the humanities, legal economics, and socio-political sciences. Emphasizing soft skills development in Master's programs can significantly contribute to preparing graduates with the necessary competencies to stand out in the rapidly evolving global landscape.

Moreover, conducting a comparative analysis of the perceptions and experiences of Master's students from Italy and Portugal regarding developing video game skills yield valuable insights into potential cultural variances. These insights can inform the establishment of best practices for curriculum design. Effective pedagogical strategies can be integrated by understanding the strengths and weaknesses of current approaches to soft skills development. It is essential to consider cultural and contextual factors in curriculum design to ensure that Master's programs cater to the diverse needs of students across different cultural settings.

In essence, this study aims to contribute to the existing literature on soft skills development by examining the experiences of Master's students from Italy and Portugal. By identifying commonalities and differences in the development of soft skills, we can shape educational practices that foster the growth of these indispensable skills. Ultimately, the objective is to prepare Master's students from all cultural backgrounds for leadership roles in their respective fields.

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Innovative didactics and ICT in the Sports Science Degree: An integrated approach for university teacher education

Didattica innovativa e TIC nel corso di Laurea in Scienze Motorie: un approccio integrato per la formazione universitaria degli insegnanti

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ABSTRACT In the field of university sports science education, the integration of Information and Communication Technologies (ICT) can provide added value to teacher training. This study explores compatibility of movement learning with innovative teaching methodologies. Utilizing the Synchrony methodology and through careful analysis, strategies have been proposed to merge theoretical learning with proprioceptive learning, via activities in eLearning, for the development of practical motor skills. The investigation emphasizes the importance of interdisciplinarity, highlighting the need for an educational approach that increasingly adapts to the contemporary needs of students. By activating ICT specifically designed for motor education, the authors aim to ensure that students acquire both a solid theoretical foundation and the ability to apply this knowledge in personal practice, thereby preparing them more effectively for professional contexts of the future. This approach could offer a richer and more up-to-date educational experience, as confirmed by the Delphi, supported by European Union guidelines.

KEYWORDS Education; Innovative Teaching; Information and Communication Technologies (ICT); Motor Sciences; Teaching.

SOMMARIO Nell'ambito dell'educazione alle scienze motorie universitaria, l'integrazione delle Tecnologie dell'Informazione e della Comunicazione (TIC) può rappresentare un valore aggiunto per la formazione degli insegnanti. Questo studio esplora la compatibilità dell'apprendimento nel movimento con le metodologie didattiche innovative. Attraverso l'utilizzo della metodologia Sincrony e di un'attenta analisi, sono state proposte strategie per unire l'apprendimento teorico a quello propriocettivo, attraverso attività di eLearning, per lo sviluppo di competenze pratiche motorie. L'indagine sottolinea l'importanza dell'interdisciplinarità, evidenziando la necessità di un approccio educativo che si adatti sempre di più alle esigenze contemporanee degli studenti. Attivando delle TIC specificatamente studiate per l'educazione motoria, gli autori vorrebbero garantire agli studenti sia l'acquisizione di solide basi teoriche sia la capacità di applicare queste conoscenze nella pratica personale, preparandoli in modo più efficace ai contesti professionali del futuro. Questo connubio potrebbe offrire un'esperienza formativa più ricca e aggiornata, come confermato dall'indagine Delphi, sostenuto dalle linee guida dell'Unione Europea

PAROLE CHIAVE Educazione; Didattica Innovativa; Tecnologie dell'Informazione e della Comunicazione (TIC); Scienze Motorie; Formazione.

1. Introduction

The use of Information and Communication Technologies (ICT) in education – commonly referred to as eLearning – reconfigures the educational experience by influencing some fundamental aspects of training, including space and time (Tardini & Cantoni, 2021). ICT has transformed educational activities, influencing both traditional face-to-face teaching and fully online and blended approaches (Bates & Poole, 2003).

Although distance learning has not been introduced by digital technologies – just think of the different forms of communication, such as writing, which over time have facilitated the exchange of ideas – ICTs have nevertheless brought about substantial improvements, especially regarding synchronous modes. These technologies have made flexible content delivery possible and have enhanced distance learning thanks to their multimedia and interactive capabilities. So, ICT has undoubtedly transformed educational content delivery, particularly through live video lectures and other synchronous activities, while also facilitating asynchronous learning methods.

When it comes to content and objectives related more to know-how ("skills"), in some cases – when it is mainly about verbalizing them and providing examples – ICT can be effectively used to convey them; for example, the vast spread of online (video) tutorials that explain through verbalization and examples how to cook a recipe, how to use the features of a new smartphone, how to draw a mandala, and so on.

In cases, however, where verbalization is not the primary form of teaching, but the practice of "modelling" (Cantoni, 2007) also plays an important role, ICT struggles more to "bridge the distance" between teachers and learners. This is the case, for example, in learning motor skills closely related to the learner's corporality, typical of studies in physical education and sports sciences. In this sense, the evolution of teaching and of new educational technologies could represent an interesting factor in the training of teachers in the field of sports sciences.

This area, traditionally anchored to physical interaction and in situ presence, now faces the challenge and opportunity to integrate innovative teaching methodologies that exploit the potential of digital learning.

The transition towards online and hybrid learning modes not only promises to overcome geographical and temporal barriers but also aims to provide accessible and inclusive education for a variety of students, including those in higher education environments (Potiuk, 2021).

Despite the undeniable advantages, the adaptation of teaching sports sciences to digital contexts has, however, raised relevant questions regarding the effectiveness of acquiring the necessary motor skills in more specialized subjects, typically linked to more bodily and "on the field" learning. In response to these challenges, the investigation focuses on the integration of ICT into motor education, aiming to enhance the learning of motor skills. The integration of ICT in motor education should be guided by pedagogical paradigms that recognize the importance of physical and sensory experiences in learning. For this reason, this study is inspired by the Sincrony methodology for movement education, which in turn is based on the theory of embodied cognition.

Embodied cognition posits that the learning processes do not occur solely at the cognitive level but require physical and bodily experiences. For instance, Thon et al. (2016) demonstrated an influence of sensory processes in learning during motor practice, and Allami et al. (2014) have studied neural reorganization in motor networks to support the concept of embodied cognition through. In accordance with this, the Sincrony model has sought also to improve cognitive aspects through targeted exercise protocols (Gabal, 2018).

From this perspective, the ability to integrate learning through physical and sensorial experiences becomes essential, even more so in physical education which by its nature should develop practical skills.

In this study, we want to understand whether using these paradigms to model the use of ICT can promote the development of motor skills. The motivations behind this study lie in the need to improve the effectiveness of teacher training in sports sciences, addressing the challenges of integrating ICT into practical teaching. In particular, the aim is to explore "how and if" these technologies can be used to facilitate the learning of motor skills, body awareness, and proprioception.

In fact, understanding the biomechanical causes of movements is a key aspect, allowing students to move beyond merely replicating visible gestures to develop a deeper awareness of the internal forces and dynamics that generate movement.

In this context, educational technologies can support teaching by providing tools that help to visualize and understand these internal dynamics, which are often not directly observable. Integrating this kind of knowledge into teaching can enhance learning effectiveness by shifting the focus from visible effects to the underlying causes that drive motor actions (Wang et al., 2022).

To address the challenges of integrating ICT into the body-based learning framework, the present study relies on two main methodological approaches: the Sincrony methodology and the principles of embodied cognition, which complement each other by addressing both theoretical and practical aspects of motor learning. In this context, the following research questions were formulated:

1) How effective are digital educational tools in enhancing motor skill learning?
2) How can ICT support practical teaching in sports science?
3) What are the guiding principles for using ICT to balance theory and practice in physical education?

2. Theoretical perspectives and potential applications of ICT in motor education

Motor Sciences programs are characterized by a strong interdisciplinarity: through a fusion of theory and practice, sports sciences explore different scientific fields that likely require different educational approaches to allow students to acquire even bodily skills aimed at teaching, especially for those ages considered critical for healthy growth (Mazahreh & Kilani, 2022).

Studying a theoretical subject in the field of sports sciences, such as biomechanics or exercise physiology, differs from teaching various sports or the basic skills of motricity and its observation principles. While the theoretical component benefits from lectures, critical reading of texts, and case study analysis to deepen concepts and principles, learning about movement requires a more dynamic and interactive approach, which in the past took place in practical environments like gyms, laboratories, or university sports fields.

Today, practice is often integrated with or replaced by internships, which offer targeted and direct experiences. These internships are designed to be efficient and generally allow students to apply theory in real professional contexts. However, their adequacy may be limited by the lack of resources or adequate support from the hosting institutions (Denison & Markula, 2023). Thus, a promising approach could involve integrating into eLearning activities ICT specifically developed to facilitate the development of practical skills in certain areas.

This strategy would aim to offer an educational experience that transcends the limitations imposed by physical distance or the scarcity of resources or available local facilities (Wang, 2022). This is in line

with the objectives of the Italian National Recovery and Resilience Plan (PNRR), which emphasizes innovation, digitalisation and improving students' skills to provide better job opportunities, particularly for young people (European Commission, 2021).

As part of these efforts, several new training programs have been proposed to modernize the education system and improve the quality of physical education by integrating digital teaching methodologies into the curriculum.

These programs are designed to better prepare students for the evolving needs of the industry and better adhere them to "real practice". The courses should in this perspective aim to guarantee operational skills for students in their reference sector.

In this context, the integration of ICT for learning could allow the full development of skills in both the theoretical and the most practical subjects (Mykytyuk et al., 2022; Jastrow et al., 2022).

For instance, a research like that of Couto et al. (2023) has highlighted how the use of videos, lecture recordings, and other multimedia resources can allow students not only adequate but also personalized theoretical-motor learning, for example, through the use of slow-motion or the ability to replay lectures.

Other studies have shown how distance learning helped improve the acquisition of specific theoretical motor skills overcoming the practical limitations in direct interaction and practical demonstration (Cherevko et al., 2023).

The adoption of Augmented Reality (AR), Virtual Reality (VR) and Arificial Intelligence (AI) has been explored as well: for instance, Loia & Orciuoli (2019) explored the use of AR in exercise and sport science. Zakharov et al. (2021) examined proprioception within immersive VR, and Leight & Nichols (2012) discussed the application of AI in physical education. Again, Liu et al. (2022) studied the development of an intelligent physical education teaching tracking system based on multimedia data analysis.

Shang (2014) examined new sports teaching models based on VR techniques. Similarly, Pan (2015) analyzed the use of VR in university-level sports training. Park et al. (2020) focussed on the development of AR content for physical education in elementary schools.

All these studies contribute to the growing body of evidence that supports the integration of emerging technologies in the teaching of physical and motor skills.

So, when used ad hoc, ICT can serve as a tool to enrich the learning experience by offering alternative opportunities for an online physical education as complete as possible.

This technological approach, inserted within the academic context, could fit very well with the principle of interdisciplinarity that characterizes programs in motor sciences.

3. The theory of embodied cognition

On the other hand, however, other studies have raised some concerns, especially in the very specific and delicate field of teaching developmental motor skills (Xu, 2022).

Working in schools with children or in other educational contexts requires an in-depth knowledge of the body and its motor learning capabilities, which cannot stem from purely theoretical constructs or visual imitation.

As a matter of fact, the brain does not perceive reality directly as it is, but through a process of active interpretation based on internal models, expectations, and past experiences. This reflection aligns with constructivist approaches to learning, which highlight the fact that knowledge is actively constructed by the individual rather than passively absorbed (Piaget, 1971).

Furthermore, social constructionism suggests that our understanding of reality is shaped by social interactions and shared experiences, further supporting the idea that perception is influenced by expectations and past experiences (Vygotsky, 1978).

Helmholtz's theory of perception also supports this view, suggesting that perception is an active process based on unconscious inferences derived from sensory input (Helmholtz, 1867).

The classic experiment of the "invisible gorilla", where participants, focused on counting the passes of a basketball, failed to notice a person dressed as a gorilla walking through the scene, demonstrates how our internal models and selective attention influence perception (Simons & Chabris, 1999).

These studies show how selective attention can narrow the visual field and cause us to overlook significant changes in our environment, even when changes occur slowly (Simons & Rensink, 2005). This further supports the need for an integrated approach that is not solely based on internal cognitive models but also includes physical and sensory experience, as proposed by the theory of embodied cognition (Shapiro, 2019), embodied cognition integrates both cognitive and physical processes, providing a more comprehensive understanding of how motor skills are acquired, particularly in dynamic and multisensory environments.

As two students can perceive the same lesson differently, depending on their past experiences, the educational approach must be flexible and adaptable, able to respond to the different interpretations and needs of the students.

When students become teachers, this understanding of the brain as an active interpreter of reality becomes even more important. Working with children, whose brains are in an intensely plastic and receptive phase, requires an educational approach that considers the variety of experiences and expectations that influence how children perceive and assimilate new information.

Teachers must therefore be prepared to present concepts in ways that can be easily integrated into children's existing models, while at the same time stimulating curiosity and openness to new experiences and interpretations.

Physical education and motor skills teachers are called to recognize and apply this principle in their daily practice, as well as to be aware of it. This means that, in addition to transmitting theoretical knowledge, it is essential that teachers are equipped with specific tools and skills that allow them to observe, assess, and guide the motor development of children in a sensitive and effective manner.

This requires a deep understanding of the different developmental stages and the underlying physical bases essential to every human movement, which can then be generalized and applied to each child or to each sport. By emphasizing the role of the body in learning, the theory of embodied cognition might provide interesting insights for the integration of its principles into a context of online teaching.

Research by Kopcha et al. (2021), for instance, highlights how the integration of emerging technologies could attempt to enrich the physical experience for education.

The C.O.P.S. framework proposal by Gubacs (2004), although extremely different from the context we studied, aims to modify and facilitate the training of physical education teachers, providing a guide for designing technology adoption plans that overcome existing barriers.

4. Methodology and practical applications

4.1. Sincrony methodology

Given the context, it is important to understand how the learning of some subjects in sports sciences could benefit from incorporating not only theoretical and imitative acquisition but also a bodily and

proprioceptive one, which is based on the proprioceptive recognition of muscle execution (Ackerley et al., 2022; Huff et al., 2018; Whittier et al., 2023).

In this context, the Sincrony methodology for educating movement (De Bernardi, 2008) presents itself as a useful and innovative tool. Introduced in Italy in 1991, the Sincrony methodology focuses on motor programs based on the causes of movement rather than its visible effects. This approach emphasizes the understanding of the internal dynamics, such as muscle activations and neural coordination that generate motor actions.

By shifting the educational focus to the causes behind movements, the methodology aims to optimize motor learning by reducing the recruitment of antagonist muscles and improving movement efficiency. The ability to comprehend and apply these biomechanical principles can be enhanced when students are guided to focus on the internal processes driving their actions, rather than merely replicating observed movements (Dounskaia, 2023).

Therefore, this methodology offers a pedagogical approach that integrates motor abilities and the neurophysiological aspects of movement according to the theory of embodied cognition. The method focuses on improving also cognitive abilities through body training. By improving body awareness (Ambretti et al., 2024), this approach is particularly relevant in teacher training, where future educators must be aware of the gesture in its entirety.

The Sincrony methodology has already used ICT to support face-to-face teaching, albeit on a small scale, for the recognition of movement through the proprioceptive system. When teaching motor sciences at distance, however, the use of specific digital educational tools could represent a new opportunity to improve the effectiveness of teaching, making learning more embodied.

The Sincrony method, in this sense, could provide a theoretical basis for creating images or videos that encourage students to focus more on the cause – the driving muscle of the action or gesture – using proprioception and reflection on movement (Pezzulo et al., 2007). Although there are no large-scale, conclusive studies proving the effectiveness of this method, several smaller-scale studies and pilot projects have supported its potential.

For example, a study conducted by Fogliata et al. (2023) demonstrated significant improvements in visuospatial abilities and motor coordination in school-aged children following the integration of Sincrony into psychomotor programs. Similarly, Ambretti et al. (2023) highlighted how the integration improved physical balance in adolescents. These studies observed changes in motor learning in subjects who were guided toward greater use of proprioception and reflection.

Therefore, it is desirable that when motor learning must occur remotely, there may be utility in guiding students toward greater causal and reflective analysis that also involves the proprioceptive channel. For example, analyzing the simple act of running through traditional videos could be enriched with descriptive videos of the muscles in contraction and their timing, as well as feedback and exercises that the student must respond to after having attempted that movement remotely.

4.2. Practical applications in motor education

The actual causes of visible movement are not explicit in the gesture; for example, if we were to analyze the generating causes of a jump upwards, we should perceive the downward thrust expressed by the contraction of the leg muscles in synergy with those of the thighs: even if the visual effect is a body moving upwards, the cause is an invisible downward thrust.

So, to improve the learning of fundamental motor skills, it could be useful to adopt an educational approach that goes beyond the simple reproduction of movement. Integrating biomechanical modeling

for muscle activation into educational technologies might be useful to provide detailed feedback for students, thus helping them develop a deeper understanding of the factors driving motor actions.

One example might be the offer of proprioceptive exercises, where students perform movements with varying levels of feedback based on questions.

This could involve activities such as performing specific motor tasks of complex sequences, with a focus on internal signals (Payne & Isaacs, 2016).

This approach could allow students to deeply understand movements through consciously experience the related sensations. Implementing ICT in motor education could start from the exploration of primary movements that are the basis of more complex actions and sports techniques, particularly in developmental motor education to support understanding. Among the fundamental movements that should be taught during the developmental age are walking, running, changing direction, jumping, throwing, and catching.

So, the students not only would learn to perform movements with greater precision but also gain the ability to critically analyze them, understanding the dynamics that regulate them.

This type of learning is particularly important in the training of future physical education teachers, as it prepares them to transmit not only theoretical but also practical skills.

5. Education in movement

Arnold (1988) identifies three fundamental dimensions in movement education: education "about" movement, education "through" movement, and education "in" movement. The first concerns theoretical knowledge about movement, the second involves skills acquired through bodily experiences (such as respecting rules), while the third dimension relates to knowledge developed directly through the act of moving (Brown & Penney, 2013).

The use of ICT in movement education requires balancing digital tools with direct physical experience, essential for developing motor skills. While ICT can facilitate theoretical instruction through videos, simulations, and gamification, integrating it for knowledge gained directly through movement is more complex but also more stimulating (Kestin & Miller, 2022).

For example, videos can illustrate the reasons behind movement activation, with questions interrupting the theoretical content to encourage physical experience, thus reinforcing learning (Brame, 2016; Sherer & Shea, 2011).

Additionally, using videos to record correct movement executions, assessable by both students and teachers, is an effective use of ICT in motor sciences. For instance, videos focusing on proprioceptive cues, like body alignment, enhance students' awareness of correct physical adjustments.

Advanced technologies such as haptic devices and biofeedback systems enable students to refine movements with real-time feedback (Araki & Sakuma, 1982).

Motion capture systems also track movements in detail, allowing for precise analysis and improvement of motor techniques (Inagaki et al., 2019; Gonzalez-Mendoza et al., 2022).

6. Delphi and future perspectives

A Delphi survey was conducted to evaluate experts' interest in integrating ICT and Sincrony methodology into movement education, focusing on learning based on the causes of movement, thus shifting from teaching processes based on effects (theory-vision-imitation) to a paradigm based on causes (theory of effects-observation-theory of causes-proprioception).

The Delphi survey is a structured method that aims to obtain a response among experts through a series of rounds of questionnaires, with anonymous feedback.

The Delphi survey was conducted involving a sample of 30 voluntary experts, which were asked, through three rounds of questionnaires, to express their opinions on the potential of a curriculum integrating ICT to improve both the theoretical understanding and the practical execution of fundamental motor movements. The authors were directly involved in designing the survey and conducting all rounds, ensuring consistency throughout the process.

This Delphi survey is to be considered as the initial step of a larger project: the iterations and responses obtained from this study will help guide future explorations aimed at a more complete evaluation of both technologies and their practical applications in motor learning.

The current approach therefore aims to establish a preliminary framework guided by the described teaching principles, providing a basis for more extensive technology integration and testing.

6.1. Delphi survey methodology

The sample consisted of 30 experts in the fields of physical education and motor sciences, from the Lombardy region, particularly from the provinces of Milan, Bergamo, and Brescia, as well as local sports associations. The experts were recruited through direct contacts and digital tools, with an average age of 45 years (SD = +/- 0.8). Of the participants, 60% were male and 40% female.

The experts came from diverse educational contexts, including primary, secondary, and university settings, and had an average of 15 years of experience in the field. The investigation was conducted in three phases, following the Delphi method, and involved questionnaires with 20 items.

Each phase was designed to build upon the results of the previous one: the first round explored general interest in the use of ICT in motor education, the second focused on specific applications, such as a teaching module dedicated to the causes of movement, while the third assessed students' demand for curriculum enhancement and the integration of new technologies.

The results from these phases indicated the need to develop a more comprehensive educational approach that not only embraces new technologies but also combines them with traditional teaching practices to optimize motor skill learning. For this reason, the focus has now shifted to designing a method that integrates proprioceptive feedback with biomechanical principles, with the aim of making the learning process more interactive and engaging.

The choice of specific technological tools will therefore be based on their ability to support this integrated approach, which seeks to combine physical experience with the use of ICT.

6.2. Delphi questionnaire

The questionnaire was developed through a four-stage process aimed at ensuring the relevance of the questions and the reliability of the data collected.

Stage 1: identification of key themes

Focused interviews were conducted with 10 representatives (5 teachers and 5 students) from the target group, selected on the basis of their experience and expertise in motor sciences and physical education. The participants (average age 35 years, SD = 3.2) were chosen to represent a variety of educational backgrounds.

The interviews, which lasted an average of 30 minutes, provided detailed insights into educational perceptions and specific needs related to the integration of ICT and proprioception teaching. The data were analyzed thematically, identifying recurring themes such as the importance of perceptual-motor learning and challenges associated with using technology. None of the interviewees participated in the subsequent stages of the study.

Stage 2: question development
Based on the identified themes, a preliminary set of 25 questions was developed: 15 for teachers and 10 for students. The questions for teachers focused on teaching methodologies, assessment of learning, and the use of ICT, while those for students addressed perceptions of teaching quality and the integration of technology in education.

Stage 3: content validation
A draft of the questionnaire was reviewed by a panel of experts (3 statisticians and 3 experts in educational methodologies), who provided feedback to enhance the validity and clarity of the questions. Following the review, some questions were modified or eliminated, resulting in a final set of 20 questions.

Stage 4: questionnaire pre-testing
The final questionnaire was pre-tested on a sample of 30 individuals (15 teachers and 15 students), different from the main study participants selected online. 95% of participants confirmed the clarity of the questions, while 5% suggested further modifications to improve comprehension.

The results of the quantitative analyzes were described using descriptive statistics (means and standard deviations), to assess the level of consensus among participants. (Table 1) The data showed an increase in consensus and average scores across the different aspects assessed, indicating a positive alignment of expert opinions between the first and second rounds.

The qualitative data, collected from open-ended questions, were analyzed to identify recurring themes and specific concerns that emerged in the different rounds.

Thematic analysis highlighted several key themes and expert concerns regarding the implementation of the proposed method, such as the need for a stronger emphasis on sensory-motor integration and challenges related to the practical application of ICT in diverse educational contexts.

To illustrate the qualitative findings, provides a summary of the main themes identified in the first and second rounds, along with their frequency of occurrence and corresponding expert comments. (Table 2)

This table helps to contextualize the quantitative findings by showing how expert perceptions evolved throughout the survey.

Table 1. Quantitative Analysis Results.

Evaluated Aspects	Round 1 - Consensus (%)	Round 1 - Mean Score (SD)	Round 2 - Consensus (%)	Round 2 - Mean Score (SD)
General interest in the use of ICT	89%	4.3 (0.7)	93%	4.5 (0.5)
Integration of the module on movement causes	78%	4.0 (0.9)	85%	4.2 (0.7)
Use of proprioception as a key element	73%	3.7 (1.1)	80%	4.0 (0.8)

Table 2. Qualitative Analysis Results.

Theme	Round 1 – Frequency (%)	Round 2 – Frequency (%)	Representative Expert Comments
Importance of sensory-motor integration	82%	88%	Proprioception is important for understanding
Challenges of implementing ICT in practical settings	65%	72%	There are barriers to adopting ICT tools
Need for a more interactive learning approach	78%	84%	Using ICT to promote active engagement

In the first round, 93% of the experts recognized the importance that ICT could have in developmental motor education, highlighting how it could enrich student learning not only by providing visual feedback but also by guiding them on sensory stimuli related to the main bodily motor patterns. By the second round, 87% of the experts positively evaluated the proposal of a pilot teaching module based on teaching the causes of fundamental movements (Nurjaman et al., 2022).

This growing consensus has led to the development of a pilot experiment called eCRONY, currently in progress, which aims at integrating the principles of the Sincrony method into a structured curriculum. The research team is actively working on designing and implementing this online learning module to evaluate its effectiveness in enhancing motor education through ICT.

Finally, the opinions of 76 students and/or recent graduates in sports sciences from different universities across Italy were assessed: 92% of the students expressed strong interest and a positive view about the possibility of integrating the understanding of biomechanical causes of movement into the university curriculum.

7. Research limitations

The results supporting the interest in the possible construction of ad hoc teaching online resources come on a theoretical basis from small-scale studies and pilot projects, thus limiting the generalizability of the results.

Furthermore, the effects of integrating proprioceptive learning and ICT into cause-based teacher training have not yet been fully explored. Finally, the use of digital technologies brings challenges related to access and the digital divide, which may influence the implementation of these methods in some educational contexts.

Further research is therefore needed to address and fully understand these aspects; however, data collected so far encourages us towards more extensive future studies.

8. Conclusions

The study highlighted a strong interest and consensus among experts regarding the use of ICT to enhance motor skills learning (93% of experts recognized the potential of ICT), although further investigation is required.

The eCRONY pilot project, currently under development, moves in this dicrection, aiming at evaluating how the integration of ICT into teaching activities can support them by shifting their focus from traditional effect-based approaches (theory-vision-imitation) to a cause-based paradigm (theory of effects-observation-theory of causes-proprioception).

The use of ICT in practical teaching of sports sciences has also received positive feedback (87% of experts favorably evaluated the proposed integration), suggesting that the paradigms of embodied cognition and the Sincrony methodology could provide a solid theoretical foundation for innovating educational approaches.

The shift to a cause-based paradigm in movement education, which integrates proprioceptive and theoretical learning, has shown potential for providing a more engaging and comprehensive educational experience.

However, the data collected indicate that further research is still needed to optimize the use of ICT in different educational contexts, find guiding principles that help adopt ICT to balance theory and practice in physical education, and confirm the long-term benefits (80% of experts emphasized the need for a balanced integration of theory and practice).

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Humanising AI-DriveEducation: Balancing digital skills and soft skills in European universities

Umanizzare l'istruzione basata sull'IA: bilanciare competenze digitali e soft skills nelle università europee

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ABSTRACT This study examines the integration of humanistic management and digital skills within higher education, focusing on the evolving landscape shaped by the COVID-19 pandemic and the rise of AI technologies. As universities worldwide adapt to increased digitalization, developing soft skills—such as emotional intelligence, communication, and critical thinking—has become paramount. This research explores the current state of digital competencies among educators in Spain and Italy, revealing a gap between the required and actual skill levels. The study highlights the importance of experiential learning methods, like LEGO Serious Play, in fostering these essential soft skills. Through a mixed-methods approach, the Bricks x Tips Lab serves as a case study, demonstrating the impact of humanistic training on educators' abilities to integrate technology and effectively maintain a human-centric educational experience. Findings suggest that while digital tools enhance flexibility and accessibility, the human element remains crucial for engagement and practical learning. This research underscores the need for comprehensive AI education policies and targeted training programs to equip educators with digital and soft skills, ensuring a balanced and inclusive approach to modern education.

KEYWORDS Artificial Intelligence; Humanistic Management; Digital Skills; Soft Skills; Cross-Cultural Analysis.

SOMMARIO Lo studio esamina l'integrazione della gestione umanistica e delle competenze digitali nell'istruzione superiore, focalizzandosi sul panorama in evoluzione modellato dalla pandemia di COVID-19 e dall'ascesa delle tecnologie AI. Man mano che le università di tutto il mondo si adattano all'aumento della digitalizzazione, lo sviluppo delle soft skills—come l'intelligenza emotiva, la comunicazione e il pensiero critico—diventa fondamentale. Questa ricerca esplora lo stato attuale delle competenze digitali tra gli educatori in Spagna e Italia, rivelando un divario tra i livelli di competenza richiesti e quelli effettivi. Lo studio sottolinea l'importanza dei metodi di apprendimento esperienziale, come il LEGO Serious Play, nell'incremento di queste competenze essenziali. Attraverso un approccio a metodi misti, il Bricks x Tips Lab funge da caso di studio, dimostrando l'impatto della formazione umanistica sulle capacità degli educatori di integrare efficacemente la tecnologia e mantenere un'esperienza educativa centrata sull'essere umano. I risultati suggeriscono che, sebbene gli strumenti digitali migliorino la flessibilità e l'accessibilità, l'elemento umano rimane cruciale per l'engagement e l'apprendimento efficace. Questa ricerca sottoli-

nea la necessità di politiche educative sull'AI complete e programmi di formazione mirati per equipaggiare gli educatori con competenze sia digitali che trasversali, garantendo un approccio equilibrato e inclusivo all'educazione moderna.

PAROLE CHIAVE Tecnologia Educativa; Gestione Umanistica; Soft Skills; Istruzione Superiore; Analisi Cross-Cultural.

1. Introduction

As we enter the third millennium, characterised by remarkable advancements in information technology, global computerisation, and digitalisation, we face a significant challenge: the rapid pace of technological progress has outstripped the development of essential soft skills. The educational system needs substantial reform to address this imbalance in our rapidly changing society. Academic research and pedagogical practice should prioritise the individual, focusing on their crucial interests, abilities, moral values, creativity, critical thinking, integrated problem-solving, and decision-making skills.

In recent years, the European Union has acknowledged the significance of digital skills for modern society. In 2019, the EU emphasised that while digital natives may have an easier time grasping concepts using Information and Communication Technology (ICT), they still need guidance from educators to develop these skills (European Commission, 2019) effectively. However, many university educators only possess intermediate digital skills, which are inadequate for effectively imparting this knowledge to students. This digital competency gap is apparent in both Spain and Italy, where universities are working to equip their educators with the necessary skills to meet the requirements of modern education (Villalonga-Gómez & Mora-Cantallops, 2022).

The COVID-19 pandemic has emphasised the significance of digital and online teaching methods, leading to a swift transition to distance learning. This shift has highlighted disparities in technology access and revealed challenges related to student engagement, motivation, and accountability. While digital learning provides flexibility and accessibility, it has also underscored the necessity for educators to possess solid digital skills to ensure effective teaching and learning.

Furthermore, integrating AI technologies such as ChatGPT has evoked various reactions. Some perceive AI as a transformative force that will reshape teaching, learning, and educational research. In contrast, others have expressed concerns about its potential to diminish critical thinking skills and promote complacency among educators and learners. This divergence reflects the broader discourse about the future of education in the age of AI.

In this context, humanistic management and the cultivation of soft skills have gained prominence. Humanistic management prioritises well-being alongside profitability, moving from an organization-centric to a human-centric perspective. This approach is particularly relevant in education, where developing soft skills such as emotional intelligence, communication, leadership, and teamwork is crucial for personal growth, social participation, and professional success. The literature highlights the effectiveness of experiential learning methods, such as those based on LEGO Serious Play,

in enhancing these soft skills. These methods encourage active participation, collaboration, and hands-on problem-solving, making them particularly suitable for fostering a new humanistic approach to education (Gauntlett, 2007; James, 2013). Research has shown that participatory methods can lead to higher levels of engagement and better learning outcomes (Kristiansen & Rasmussen, 2014).

Given the importance of soft skills, higher education institutions have been exploring various strategies to promote them. These strategies include awareness-raising projects, online and blended learn-

ing events, and innovative teaching and evaluation methods. While the effectiveness of online training for soft skills is debated, there is evidence that online courses can achieve primary goals such as understanding and awareness of these skills (García et al., 2016). In Italy, universities have increasingly recognised the importance of integrating soft skills into their curricula. Initiatives like the University of Turin's Passport Project aim to enhance academic success and work readiness by developing essential competencies such as study strategies, time management, and self-motivation (Ricciardi & Emanuel, 2018). These initiatives help students meet academic challenges upon entry and prepare for workplace demands upon graduation.

The Bricks x Tips Lab is an excellent case study for evaluating the impact of humanistic management training and participatory teaching methods on educators. This study aims to assess the effectiveness of these approaches in enhancing educators' soft skills and promoting a humanistic approach to education.

2. The impact of technology on university teaching and training

There is a rising concern in academic settings regarding the increasing use of generative AI tools like ChatGPT, Bing, and Co-Pilot by students. Recent surveys have shown that many students have already used AI tools to finish their coursework, raising concerns about academic integrity and the potential impact on students' writing and critical thinking skills (Warschauer et al., 2023). For example, nearly one out of three students in the US has used AI to complete written assignments, with 75% acknowledging that it is wrong but still engaging in such practices. This has led some universities to ban generative AI in academic programs, while others are revising their plagiarism policies to address these concerns (Wood, 2012; Yau & Chan, 2023).

Despite these concerns, there is also a growing recognition of the potential benefits of AI in education. Generative AI can provide personalised feedback and support, helping students to identify areas of weakness and improve their skills adaptively (Kasneci et al, 2023). AI technology is becoming increasingly prevalent across various sectors, such as finance, healthcare, and transportation, making it essential for graduates to have a strong understanding of AI principles to succeed in these fields (Buckley et al., 2021).

Therefore, the development of an AI education policy is crucial. Such a policy should prepare students to work with AI technology and understand its principles, enabling them to navigate ethical considerations and prevent academic misconduct. Furthermore, educating students on AI will ensure active participation in its development and implementation, contributing positively to society (Adiguzel et al., 2023).

As educational institutions adapt to these technological advancements, it is imperative to balance leveraging AI's capabilities and maintaining academic integrity. This entails developing comprehensive guidelines and educational frameworks that address AI's benefits and risks, ensuring that students become competent and responsible users of this powerful technology (Cotton et al., 2023). By doing so, universities can enhance the learning experience while safeguarding the quality and integrity of education.

The rapid advancement of technology is reshaping the landscape of university teaching and training, particularly for educators in accounting faculties across Italian and Spanish universities. Integrating digital tools, online platforms, and advanced software into academic curricula is changing how knowledge is imparted and redefining the essential soft skills required for effective teaching and student engagement.

Digital Literacy and Competency: University professors must develop a high level of digital literacy to effectively use and teach with the latest technology. This includes familiarity with accounting software, data analytics tools, and online learning management systems (LMS). Professors need to guide students in navigating these technologies, ensuring they are well-prepared for the digital demands of the accounting profession.

Enhanced Collaboration Tools: Technologies such as collaborative software (e.g., Google Workspace, Microsoft Teams) and virtual classrooms (e.g., Zoom, Blackboard) facilitate seamless interaction between students and faculty. These tools promote collaborative learning environments where students can work on group projects, share resources, and engage in discussions, regardless of their physical location (Wu et al., 2022).

Interactive and Engaging Learning Environments: Multimedia resources, virtual simulations, and interactive modules can make learning more engaging and effective. For accounting educators, incorporating real-time data analysis and virtual financial simulations can provide hands-on experience, making theoretical concepts more tangible and easier to understand. Data-Driven Decision Making: Technology enables the collection and analysis of detailed educational data, helping educators tailor their teaching strategies to meet the needs of their students. Learning analytics can provide insights into student performance, allowing for personalised feedback and support, which is crucial for fostering a supportive learning environment (Sinhaliz et al., 2023).

Remote and Flexible Learning Options: The shift towards online and hybrid learning models offers greater flexibility for students and educators. This adaptability is essential in times of disruption, such as the COVID-19 pandemic, as it ensures continuity of education through remote learning platforms. Continuous Professional Development: Educators must stay updated with technological advancements and pedagogical strategies. This requires ongoing professional development and training in new tools and teaching methodologies. Universities must support their faculty with access to training programs, workshops, and resources to ensure they remain at the forefront of educational innovation (Eggmann et al., 2023).

The incorporation of these technologies necessitates a redefinition of group orientation skills among university faculty. Educators must be proficient in digital collaboration, data interpretation, and ethical use of technology while fostering an environment of continuous learning and adaptability. By embracing these technological advancements, accounting faculty can enhance their teaching effectiveness, better prepare students for the evolving professional landscape, and contribute to a more dynamic and responsive educational environment. (Anderson & Hilton, 2015).

2.2 Existing Policy on AI in Education

The integration of AI technologies into teaching and learning environments has been ongoing since the 1970s. Today, various forms of these technologies are utilised across educational contexts, including personalised learning applications and information systems that aid in school administrative and management tasks (Al Braiki et al., 2020, UNESCO, 2021a). However, the advent of AI in education has also raised significant concerns. These issues range from the potential for academic misconduct to the broader implications for educational equality, curriculum design, and the role of teachers (Chan & Tsi, 2023; Chan & Zhou, 2023).

With the rise of generative AI tools such as ChatGPT, Bing, and Co-Pilot, there has been growing concern within academic settings about their use and potential misuse by students. Recent surveys indicate that a significant number of students have already utilised AI tools to complete their coursework, raising

issues of academic integrity and the potential decline in students' writing and critical thinking skills (Intelligent.com, 2023; Civil, 2023; Warschauer et al., 2023). For example, nearly one in three students in the US has used AI to complete written assignments, with 75% acknowledging that it is wrong but still engaging in such practices (Intelligent.com, 2023). This has led some universities to ban generative AI in academic programs, while others are revising their plagiarism policies to address these concerns (Yau & Chan, 2023).

In educational contexts, specific concerns include the impact of AI on assessment and curriculum design, equal access to AI technologies, the redefinition of teachers' roles, and the lack of technological infrastructure in emerging economies (Pelletier et al., 2022; UNESCO, 2021a). Consequently, existing AI policies in education focus on several key areas: promoting digital literacy to prevent inequalities (Southgate, 2020; UNESCO, 2021b), preserving the essential values of traditional teaching such as teacher-student and student-student relationships (Luan et al., 2020; UNESCO, 2021b), ensuring inclusiveness and equity in AI use (Tanveer et al., 2020; UNESCO, 2021a), and enhancing teachers' professional development to transform their roles (Wang et al., 2021). Additionally, there is a focus on training students in skills or "micro-credentials" necessary for harnessing AI technologies (UNESCO, 2021a).

Despite identifying multiple issues of concern, policies on AI in education are often generic and need more concrete evidence on implementing AI technologies (UNESCO, 2021a). Schiff (2022) reviewed 24 AI policy strategies and found that education is primarily viewed as a tool to support workforce development and training AI experts rather than focusing on the transformative potential of AI in education itself. This instrumental view may fail to adequately fund, regulate, and consider the ethical implications of AI in education. Furthermore, AI scholarship and education governance do not receive adequate attention in the current literature (Gellai, 2022), and public understanding of AI's policy implications is limited (Feldstein, 2019).

In response to these gaps, this research proposes a comprehensive policy framework for integrating AI in higher education, addressing both teaching and learning and ethical and practical concerns. The guidelines by UNESCO (2021a) will serve as the foundation for crafting a more precise AI policy for university teaching and learning. UNESCO's recommendations are well-researched and designed to be relevant across diverse educational systems and cultural settings, making them an excellent starting point for this endeavour.

The UNESCO framework for AI in education emphasises a humanistic approach, safeguarding human rights and equipping individuals with the skills and values needed for sustainable development and effective human-machine collaboration. The framework prioritises human control over AI, ensuring that AI is used to enhance the capabilities of both teachers and students. It also calls for ethical, transparent, non-discriminatory, and auditable AI application designs. Specific recommendations from UNESCO include interdisciplinary planning, equitable and ethical use of AI, comprehensive master plans for AI in education, pilot testing and evaluation, and fostering local AI innovations (UNESCO, 2021a).

This study uses UNESCO's recommendations to examine stakeholders' perceptions of text-generative AI technology in higher education. Insights from these stakeholders will be used to develop an AI education policy framework that promotes the ethical and effective integration of AI technologies in higher education.

3. The human element in AI-driven education

The rapid transformation of educational landscapes due to technological advancements and the COVID-19 pandemic has underscored the need for integrating humanistic management principles and digital

skills in higher education. Integrating AI technologies in education has opened new avenues for personalised learning and data-driven decision-making. However, the human element remains crucial in this AI-driven landscape. Educators must balance leveraging AI's capabilities with a human-centric approach to teaching.

Humanistic management prioritises the well-being and development of individuals, advocating for educational environments that promote emotional intelligence, effective communication, and critical thinking. These soft skills are essential for fostering student engagement and achieving meaningful learning outcomes. AI can provide valuable support, such as personalised feedback and adaptive learning pathways, but it cannot replace the nuanced understanding and empathy that human educators bring to the classroom.

Following this statement, Cuartero et al. (2019) advised that the European Higher Education Area recognise ICT as a necessity and a primary source of information. They argued that universities and their professors must evolve, innovate, and reinvent themselves to adapt to the information society. During the education of the next generation of teachers and professors, it is essential to break educational barriers and give new meanings to the teaching process to meet students' needs (Alonso-García et al., 2018). Based on that, new methodologies are being developed, such as mobile learning, blended learning, and flipped classrooms, to name a few. The development of these methodologies can be significantly attributed to ICT and the resources it provides. Those methodologies can result in permanent education, collaborative learning, and students' self-regulation as they adapt to different schedules (Romero-Rodríguez et al., 2020).

Therefore, educators must develop competencies that enable them to use AI tools effectively while retaining their unique human qualities. This dual focus ensures that technology is an enabler rather than a replacement, enhancing the educational experience without compromising the human touch.

3.2 Enhancing digital competencies in Spanish universities

In Spain, the emphasis on digital skills has highlighted a significant gap in the competencies of university educators. Despite the widespread availability of digital tools, many educators possess only intermediate digital skills, which are inadequate for meeting modern educational demands (Villalonga-Gómez & Mora-Cantallops, 2022). This deficiency affects the quality of instruction and student evaluations, indicating the need for targeted professional development programs.

The COVID-19 pandemic has dramatically transformed the educational landscape, leading schools and universities to adopt online and distance learning in adherence to social distancing measures. This shift has underscored the importance of digital and online teaching methods, necessitating educators to adapt swiftly. Notably, there has been a growing reliance on technology for teaching and learning, encompassing online platforms like Zoom and Google Classroom and digital resources such as e-books, videos, and interactive tools. Technology integration has notably enhanced the flexibility and accessibility of education, enabling students to engage with learning materials and participate in classes from virtually any location with internet access. Moreover, there has been a discernible trend towards self-directed and asynchronous learning, granting students greater autonomy to learn at their own pace. This method is especially advantageous for individuals with numerous obligations or difficulties attending in-person sessions. However, the shift to digital learning has also exposed disparities in access to essential technology and internet connections, particularly among students in low-income or rural areas. The move to online learning has highlighted student engagement, motivation, and accountability challenges.

The emergence of AI, as demonstrated by platforms like ChatGPT, has sparked diverse reactions from experts. Some see this AI advancement as a transformative force that will reshape teaching, learning, and educational research. In contrast, others approach it cautiously, fearing it may erode critical thinking skills and encourage complacency among educators and learners. This divergence mirrors the broader discussion about the future of education in the era of AI.

Humanistic management has gained significance since the late 20th century in the context of advancing research on leadership and its impact on collective actions and societal change. This approach delves into how leaders' personal narratives, histories, strategic capabilities, and ability to engage individuals shape social movements. Humanistic management underscores the importance of promoting well-being alongside profitability in business and management practices, shifting from an organization-centric approach to a human-centric perspective.

To address this gap, Spanish universities have initiated several programs aimed at enhancing digital literacy among educators. These include workshops, online courses, and collaborative projects designed to improve proficiency with digital tools such as learning management systems (LMS), data analytics software, and virtual collaboration platforms. The main institution coordinating educators' knowledge regarding ICT is the "Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado (INTEF)," which in 2017 developed the "Marco Común de Competencia Digital Docente," a reference paper that divides digital skills into five areas. Additionally, the COVID-19 pandemic has accelerated the adoption of digital tools, with the Spanish government publishing a new framework paper in 2022 to update digital competencies for educators (Agencia et al., 2022).

These initiatives aim to create a more integrated and effective learning environment that meets the needs of today's students by equipping educators with the necessary digital skills. Evaluations of teaching performance during the lockdown have shown that ICT has been a valuable tool for teaching/learning, highlighting the need for continuous improvement in teacher training for digital skills (Mannila, 2018; López-Belmonte et al., 2019).

3.3 Fostering soft skills in Italian universities

In recent years, the quality of teaching in higher education has garnered significant national and international attention. Within the European Union, there has been a strong emphasis on improving the quality and status of teaching and modernising higher education (Ragusa et al., 2023). As part of this modernisation, teachers' competencies are crucial, highlighting the importance of high-quality initial professional preparation and continuous professional development (Alonso-García et al., 2018). This approach is essential to effectively equip educators to handle complex content and diverse learners.

Italian universities have increasingly recognised the importance of integrating soft skills into their curricula. Initiatives such as the University of Turin's Passport Project aim to enhance academic success and work readiness by developing essential competencies such as study strategies, time management, and self-motivation (Ricchiardi et al., 2018). These initiatives reflect a broader trend towards experiential learning methods that foster active participation, collaboration, and hands-on problem-solving.

Several new methodologies, including mobile learning, blended learning, and flipped classrooms, have been developed to address the dynamic needs of modern education. These methodologies, heavily reliant on Information and Communication Technology (ICT), facilitate permanent education, collaborative learning, and student self-regulation (Skleutker et al., 2019). This aligns with the broader educa-

tional policy in Europe, which recognises the urgency of integrating ICT to enhance teaching quality and adapt to the information society (Schiff, 2022).

One notable method is LEGO Serious Play, which has been shown to enhance soft skills among students effectively. This participatory approach encourages students to engage deeply with course material, collaborate with peers, and develop creative solutions to complex problems. Research indicates that experiential learning methods like this lead to higher levels of student engagement and improved learning outcomes (Caggiano et al. 2020).

The evolution of soft skills education is also driven by the understanding that these skills, such as motivation, teamwork, work ethic, planning, effective communication, and cultural awareness, play a crucial role in educational and occupational success. Modern teacher education programs increasingly focus on these soft skills, integrating them with traditional hard skills to provide a holistic educational experience. Teacher competency frameworks and professional standards are essential tools in this context. They define the expected pedagogical skills and serve as a basis for conceptualising quality, assessing performance, and developing teaching capacity (Chan & Tsi, 2023). Significant cognitive, social, and affective outcomes have been reported when learner-centred teaching strategies such as role-play, interactive learning, discovery learning, and group work are applied, contributing effectively to the teaching and learning processes (Rodríguez-García et al., 2019).

A study involving Italian and Spanish teachers attempted to assess teachers' skills. The results revealed that educators generally possess high levels of interpersonal skills. The skills with the highest overall scores were assertiveness, networking, teamwork, and sensitivity, while the lowest scores were for social desirability and action orientation. This might be due to the nature of teachers' work, which is characterised by social interaction and requires high interpersonal skills (Bastos et al., 2021).

While both Italian and Spanish education systems encourage higher education for teachers, they differ in their approaches. The Italian system is based on a consistent approach with obligatory requirements, whereas the Portuguese system relies more on the independence of educational institutions. These differences may influence the type of skills emphasised in each system, affecting the official and hidden curricula (Caggiano et al., 2020).

In conclusion, Italian universities are fostering a new humanistic approach to education that emphasises developing technical and soft skills. This holistic approach prepares students for the complex demands of the modern workforce, ensuring they are proficient in their respective fields and capable of critical thinking, effective communication, and teamwork. Continuous professional development and innovative teaching methodologies are crucial to achieving these educational goals, aligning with the broader European agenda for modernising higher education and enhancing teaching quality.

By incorporating these methods into their curricula, Italian universities are fostering a new humanistic approach to education that emphasises developing technical and soft skills. This holistic approach prepares students for the complex demands of the modern workforce, ensuring they are proficient in their respective fields and capable of critical thinking, effective communication, and teamwork.

4. Assessing humanistic training for university educators: An applied research approach

A cross-sectional descriptive study involved 180 educators from universities and academies in Italy and Spain, each with at least three years of university teaching experience. Among these 180 educators, 90 were from Spain (University of Salamanca) and 90 from Italy. All educators responded to a ques-

tionnaire adapted from the Business-Focused Inventory of Personality (BIP) questionnaire, and the data collected are reported in Tables 1 and 2.

The tool used was an adaptation of the BIP questionnaire. The questions were divided into two sections: the first section referred to socio-demographic characteristics (gender, age, sector, work experience), and the second focused on the assessment of soft skills. The questionnaire evaluated 14 scales, grouped into four domains plus the impression management scale. In this case, the soft skills assessed included team orientation, sensitivity, and communication. Respondents were scored on a six-point scale ranging from 'Completely true' to 'Completely false'. The variables studied were clustered in three areas: intra-personal, interpersonal, and activity development, with an additional impression management scale. Not all questionnaire variables were selected, but only those most relevant to managers of different European nationalities. The soft skills profile obtained in the samples is presented on the standardised BIP questionnaire and compared with the normative score of the questionnaire.

The survey questionnaire included another essential question: Participants were asked about their availability to actively participate in future studies related to training these skills. 82.1% of the managers showed interest by responding positively to the proposal to continue participating in the research.

The HMM workshop includes a phase called BRICKS x Tips, which aims to set up the assumptions discussed in the TIPS phase. The test administration and receipt of the unique profile are deemed preliminary to the classroom presence for the playful phase 'Give your brain a hand', during which participants will be involved in a group activity to play with the famous Lego bricks. The TIPS phase concludes the session by proposing effective improvement strategies for soft skills. The rational level of planning and involvement in the different phases makes the learning intervention demonstrably effective and enjoyable; the workshop methodology and procedure become functional in organisations where teamwork, communication processes aimed at change management, and a culture of innovation are crucial.

Data Analysis: All variables, including gender, years of work experience, and nationality, were tested using the t-test tool. While gender and sector did not significantly influence the scales, work experience significantly influenced the capacity to connect and team orientation (Table 1). Thirty educators from each country confirmed their availability and were organised into three sessions with 20 participants each. About 50% of them underwent an online interview questioning the priority of soft skills in management education. The educators came from academic/university backgrounds and business schools. Gender and sector had no significant impact on the first respondent group. Results are reported in Table 2.

A cross-sectional descriptive study was conducted with teachers from university teachers schools in Italy and Spain. Each teacher answered a questionnaire adapted from the Business-Focused Inventory of Personality (BIP) questionnaire and received feedback from a personal profile indicating their soft skills. Subsequently, those who responded to the questionnaire were invited to the Bricks x Tips Laboratory phase. Six sessions were organised, with 60 teachers attending each session. The sessions were held in university lecture halls, with the first three sessions in Italy and the next three in Spain during June 2023. During this phase, data from 180 university teachers were collected.

The mean scores for lectures and seminars exhibit a substantial difference between the two groups, with Italians rating this method much higher than Spanish participants ($M=4.68$ vs. $M=2.97$). However, the F-value and p-value indicate that this difference is not statistically significant ($p=0.29$), suggesting that while there is a notable difference in preference, it may not be as statistically impactful. Reports were elaborated based on self-response reports completed at the end of the Lab. ANOVA Evaluation for Soft Skills between groups (Italian and Spanish) showed several vital findings that under-

Table 1. Gender comparison.

Soft Skills Category	Gender	Mean aft.	St.Dev	T-test	p-value
Team Orientation W	75	5.34	0,24	5.36	<0.001
M	105	4.93	0,08	3,83	<0.001
Communication W	75	3,21	0.08	3,83	<0.001
M	105	2,4	0.11	0,52	<0.0010.
Sensitivity W	75	2,89	0,13	0,11	<0.001
M	105	2,87	0,19	2,15	<0.0010

Table 2. Country comparison.

Soft Skills	Country	N	Mean	St.dev.	T-test	P-value
Team orientation	Italy	90	5.34	0.24	t(178)=4,12	<0.001
	Spain	90	4.93	0.26		<0.001
Communication skills	Italy	90	3,21	0,08	t(178)=3,83	<0.001
	Spain	90	2,40	0,11		<0.001
Sensitivity	Italy	90	2,89	0,13	t(178)=2,15	<0.001
	Spain	90	2,87	0,19		<0.001
Leadership	Italy	90	4,25	0.50	t(178)=3,45	<0.001
	Spain	90	3,80	0,60		<0.001
Problem-solving skills	Italy	90	4,30	0,50	t(178)=3,90	<0.001
	Spain	90	3,90	0,50		<0.001
Emotional Intelligence	Italy	90	4,40	0,50	t(178)=2,91	<0.001
	Spain	90	4,00			<0.001
Teamwork skills	Italy	90				<0.001
	Spain	90				<0.001

score the differences in these competencies across the two groups. The data presented in Table 2 clearly illustrate the significant differences in soft skills and engagement levels between Italian and Spanish educators. The Italian educators consistently outperform their Spanish counterparts across all measured categories, indicating that Italian educational programs may place a greater emphasis on developing these essential competencies. These findings highlight the critical role of tailored training programs in enhancing educators' soft skills and overall effectiveness, ultimately contributing to better student educational outcomes.

Among the sample of 180 educators who took part in the research, sixty educators participated in the Bricks x Tips Lab, 30 from Italy and 30 from Spain.

From the laboratory experience, it emerged that training in humanistic management, mainly through the Bricks x Tips Lab, significantly improved the transversal skills of Italian educators compared to their Spanish counterparts. This suggests that the integration of humanistic principles and interactive and practical learning methods can be implemented more effectively in Italian education.

Experiential learning techniques, such as those employed in the Bricks x Tips Lab, can be particularly effective in enhancing educators' soft skills. The interactive and hands-on approach fostered a deeper understanding of humanistic management principles and created an engaging and enjoyable learning environment.

The enthusiasm and active participation observed among the educators underscore the importance of incorporating such innovative training methods into professional development programs. By focusing on the centrality of human beings and emphasising the importance of soft skills, educational institutions can better prepare their educators to inspire and lead effectively in their respective fields.

Moreover, the differences observed between Italian and Spanish educators suggest that cultural and contextual factors play a role in the effectiveness of these training programs. Future research could explore these factors further to tailor humanistic management training to different educational contexts.

The study demonstrates the value of humanistic management education in fostering a more empathetic, collaborative, and effective educational environment. The positive outcomes from the Bricks x Tips Lab highlight the potential for such programs to bring about meaningful improvements in educators' soft skills and overall effectiveness, ultimately benefiting the students and institutions they serve.

5. Conclusion

This study aimed to evaluate the impact of humanistic management training on university educators in Italy and Spain while also exploring the existing policies and the necessity of developing a comprehensive AI education policy. The Bricks x Tips Lab findings revealed that Italian educators who participated in the lab exhibited significantly higher levels of team orientation, communication skills, sensitivity, leadership, problem-solving abilities, emotional intelligence, engagement, and learning outcomes than their Spanish counterparts. These results underscore the effectiveness of humanistic management principles and experiential learning methods in enhancing the soft skills of educators.

Additionally, the literature review highlighted the growing concern regarding using generative AI tools in academic settings. While these tools offer significant benefits, such as personalised feedback and adaptive learning, they also pose risks to academic integrity and critical thinking skills. The existing policies on AI in education are often generic and lack specificity, failing to address the ethical and practical implications of AI's full integration.

The findings of this study have several important implications for policy and practice. Firstly, the positive outcomes observed from the humanistic management training and the participatory teaching methods, such as those based on LEGO Serious Play, suggest that educational institutions should consider integrating similar programs into their professional development initiatives. These methods enhance educators' soft skills and foster a collaborative and engaging learning environment, particularly in an era dominated by technology and the quest for a new humanistic approach to education.

Secondly, the study underscores the urgent need for a comprehensive AI education policy addressing AI technologies' benefits and risks. Using UNESCO's recommendations as a framework, policymakers should develop guidelines that promote ethical, inclusive, and effective use of AI in education. This includes interdisciplinary planning, equitable access to AI tools, professional development for educators, and fostering local AI innovations.

While this study provides valuable insights, it has limitations. The sample size was limited to educators from Italy and Spain, which may need to fully represent the diversity of educational contexts globally. Additionally, the study focused primarily on the impact of humanistic training and participatory teaching methods. It did not extensively explore the long-term effects of such training on educators' performance and student outcomes. Further research is needed to validate these findings across different educational settings and to examine the sustained impact of humanistic management training.

Future research should expand the sample size and include educators from a broader range of countries and educational contexts to enhance the generalizability of the findings. Longitudinal studies provide deeper insights into the long-term effects of humanistic training and participatory teaching methods on educators' performance and student outcomes. Further research is needed to explore developing and implementing comprehensive AI education policies, focusing on ethical considerations and practical applications.

In conclusion, this study highlights the transformative potential of humanistic management training and participatory teaching methods in enhancing educators' soft skills. It also emphasises the critical need for well-defined AI education policies. By addressing these areas, educational institutions can better prepare educators and students for the challenges and opportunities presented by AI technologies, ultimately fostering a more effective, engaging, and ethical educational environment.

6. Authors' Contributions

Fabiana Coluzzi contributed to drafting paragraphs 1 and 4, while Vincenzo Galasso was involved in drafting paragraphs 2 and Alfonso J. López Rivero wrote the paragraphs 3 and 5.

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"I like everything about it" – Perceived educational value of a digital gaming experience with Assassin's Creed Odyssey: Discovery Tour

"I like everything about it" - Valore educativo percepito di un'esperienza gaming digitale con Assassin's Creed Odyssey: Discovery Tour

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ABSTRACT While research on videogames in education mostly focuses on demonstrating the effectiveness of Game Based Learning in a broad range of educational contexts, few studies have focused on examining in-depth stakeholders' perceptions in the educational/teaching area concerning gaming experiences based on a first-person play session. To fill this gap, this study presents the results of a reflexive thematic analysis of the answers to a qualitative survey based on a gaming experience of 13 informants related to the educational field (teachers, researchers, and Master degree students). The game used in the experience was *Assassin's Creed Odyssey: Discovery Tour*. The main aim was to understand their perceptions of possible uses of this digital game in formal educational contexts. Our analysis reveals the general perception of a significant overall advantage in the use of this game as an instructional tool compared to a traditional pedagogical approach. Pedagogical solutions for an instructional implementation and design, teaching interventions, critical perspectives are discussed.

KEYWORDS Game-Based Learning (GBL); Videogames; Qualitative Survey; Thematic Analysis; Instructional Design.

SOMMARIO Mentre la ricerca sui videogiochi in educazione continua a concentrarsi nel dimostrare l'efficacia dell'apprendimento basato sui giochi in un'ampia varietà di contesti educativi, pochi studi si sono concentrati nell'esaminare in profondità le percezioni degli *stakeholder* in ambito educativo/didattico a seguito di esperienze di gioco in prima persona. Per far fronte a questa mancanza, questo studio presenta i risultati di un'analisi tematica riflessiva in relazione a un'indagine qualitativa basata su un'esperienza di gioco di 13 soggetti operanti in ambito educativo (insegnati, ricercatori e studenti di laurea magistrale). Il videogioco usato nell'esperienza è stato *Assassin's Creed Odyssey: Discovery Tour*. Il principale obiettivo era comprendere le loro percezioni per un possibile utilizzo di questo gioco digitale in contesti educativi formali. La nostra analisi rivela la percezione generale di un complessivo significativo vantaggio nell'utilizzo di questo titolo videoludico come strumento per l'apprendimento rispetto ad un approccio pedagogico tradizionale. Soluzioni pedagogiche per la progettazione e l'uso didattico, interventi didattici e prospettive critiche vengono discussi.

PAROLE CHIAVE Game-Based Learning; Videogiochi; Indagine Qualitativa; Analisi Tematica; Progettazione Didattica.

1. Introduction

Pedagogical videogames potentialities have attracted increasing attention over time in scientific literature. As a consequence of this pedagogical attention to videogames, Game-Based Learning (GBL) has seen a growing interest, to the point that it is a popular and topical field (Karagöz & Ateş, 2022). In support of this growing pedagogical relevance, GBL is even mentioned in the *Guidelines for teachers and educators on tackling disinformation and promoting digital literacy through education and training* of the European Commission (EC, 2022) as a strategy that (if well designed) can improve learning outcomes. Going beyond the entertainment potential of games, GBL sees them as instructional tools to improve learning outcomes (Fioretti, 2023, p. 9). Since its early argumentative disclosures (Prensky, 2001; 2003), GBL has been refined to become a well-established strategy. Nowadays, an increasing number of works on game-based learning are focusing on showing its effectiveness in a wide range of educational contexts and for different educational purposes. Research on GBL and education is predominantly based on a quantitative or experimental approach (Costa et al., 2016, Erşen & Ergül, 2022; Guerra-Antequera & Revuelta-Domínguez, 2022) frequently aimed at proving the effectiveness of GBL in education (see, e.g., Erşen & Ergül, 2022). Yet the literature still lacks qualitative studies investigating in depth the perceptions/perspectives of stakeholders in educational research and teaching practice about digital gaming. This is especially true concerning their pedagogical perspective about teaching strategies and implementing ideas/solutions and feedback for the pedagogical use of digital games as instruments. As pointed out by Andreoletti and Tinterri (2023), research on games has failed to examine the pedagogical perspectives of teachers "such as for instance design solutions or instructional strategies that the teacher adopts while teaching with the game[1]" (p. 15). Furthermore, according to many researchers (Andreoletti & Tinterri, 2023; Hanghøj & Brund, 2011; Kangas et al., 2016) the implementation of digital games in instructional design/teaching process is an under-investigated field. Thus, despite some recent studies focusing on instructional design in relation to the use of games (Andreoletti & Tinterri, 2023; Nesti, 2017; 2023; Sardo & Thibault, 2024; Ugolini & Morreale, 2023) there is still lot of work to do, especially within the digital game-based learning field.

From many viewpoints, it is important to consider the perspectives of teachers and educational researchers (and MA students) regarding first-hand gaming experiences with the aim of reflecting on the educational use of digital games. On the one hand, we know that teachers/educators play a substantial role in game-based activities (Kangas et al., 2016); considerations stemming from a gameplay experience of these subjects can provide fruitful insights for an *ex-ante* instructional design of game-based interventions, as well as for a greater establishment of a game-based pedagogy. On the other hand, these perspectives can indirectly provide useful insights for game designers oriented towards integrating, modifying or refining pedagogical principles and processes.

In order to examine these perspectives, we conducted a qualitative survey on a gaming experience we set up for a precise "educational[2]" case study: the *Discovery Tour* of *Assassin's Creed Odyssey*, a dedicated stand-alone videogame linked to the famous game series *Assassin's Creed Odyssey*. The object of this game was designed primarily for educational and (in)formative purposes and for entertainment and it is based on the fruition/discovery of educational contents related to the history/culture of Ancient Greece.

[1] Translated into English by the authors from the original Italian.

[2] For the purpose of this research, we consider this game as an educational game, by virtue of its contents, even though it is actually an "educational" version of a Triple A commercial digital game environment.

In this study we underline the importance of investigating these perspectives before planning game-based interventions.

Against this backdrop, our main Research Objectives (ROs) are:

- *RO1*. Understanding the perceptions, instructional solutions/ideas and instructional feedback of qualified informants (including MA students) concerning a gaming experience based on *Assassin's Creed Odyssey: Discovery Tour* with regard to the possible use of this digital game in formal educational contexts for educational purposes.
- *RO2*. Understanding their critical perspectives about the digital "educational" game as an educational tool.

In order to analyze the survey data, we conducted a systematic reflexive thematic analysis. It should be noted that this research represents a first step towards a wider goal: these qualitative findings will in fact be propaedeutic for the creation of an instructional game-based design (containing, among various games, the adoption of this educational videogame) for formal education contexts.

2. Background

Over the course of time the educational potential of videogames has been extensively explored. Some researchers argued in favour of their educational use - mostly addressing the general public - and began to dismantle the prejudices surrounding them (Prensky, 2001; 2003; 2006). Others looked semantically at (some) videogames as "pedagogical treasure-chests" containing effective educational principles and as learning machines (Gee, 2005; 2013). They thus considered videogames to be what an effective learning system should be (see Rivoltella, 2007, p. VIII), a system reflecting learning principles, and an inspiration for rethinking instruction (see Nesti, 2017, p. 47). Others have illustrated the potential of these media tools, pointing out the social and active dimensions of gamers and shedding light on the pedagogical challenges of adopting videogames in the classroom (Persico et al., 2019; Shaffer et al., 2005; Squire 2005) and the opportunities (Squire, 2003). Still others focused on examining the different formative benefits of videogames (De Castro et al., 2018; Grande-de-Prado, 2018; Merino Campos & del Castillo Fernández, 2016; Griffiths, 2002). Lastly, there was obviously no lack of concerns in the educational field (see, e.g., Provenzo, 1991). In this panorama, the Assassin's Creed videogame series has been explored in academic debate within a variety of fields: some authors reflected on simulation and the meaning of representation of environments, architectures and monuments of specific videogames (Aroni, 2022; Dow, 2013); others investigated the role of these games in transmedia/interactive storytelling (Menon, 2015; Veugen, 2016); others discussed narrative, gameplay and authenticity (Politopoulos et al., 2019) and still others specifically examined the *discovery tours* game titles (Paananen et al., 2023; Poiron, 2021; Sardo & Thibault, 2024).

In this study we set a gaming experience based on the *Discovery Tour* of *Assassin's Creed Odyssey* (also known as *Discovery Tour: Ancient Greece*[3]). This is a dedicated (stand-alone) game introduced in 2019 and set in Classical Greece. Through this game, the player can discover virtual representations of historical places and monuments and learn about cultural-historical topics related to ancient Hellenic culture. The educational material of the game takes the shape of a tour (like a virtual living museum)[4]. The game allows the player to navigate its space, a vast open-world virtually reproduc-

[3] https://www.ubisoft.com/en-us/game/assassins-creed/discovery-tour

[4] For an overview of the tour Cf. Ubisoft AC UK at https://www.youtube.com/watch?v=jZpRAxH-AHs

ing Classical Greece, to interact with the environment and to choose, undertake and discover different tours divided according to different themes (namely: *Daily Life*; *Politics and Philosophy*; *Art, Religion, and Myths*; *Battles and Wars*; *Famous Cities*). Each tour is articulated in different "stations" (points of interest such as places/monuments) and features a narrative voice that explains the history, the details and the information related to them. The tour-path is also full of informative captions often displaying real images of places/monuments/artifacts, whereby it is easy to compare virtual representation and reality. At the end of each tour (30 in total) a multiple-choice quiz is available, aiming at testing knowledge of the information provided during the tour. The game also enables the player to talk/interact with fictional or historical characters (such as Leonidas, Herodotus, Aspasia) who introduce/guide the tour. Finally, although the game is predominantly based on experiencing tours (which follow a linear path), players can choose how to explore its environment and undertake tours: (through the game map, just by walking, selecting the tours according to different themes in the menu, or following a chronological approach from a timeline menu). In contrast to the main title (*Assassin's Creed Odyssey*) this "educational" title does not feature any violent content (such as blood, death, killings, etc.).

In a previous exploratory study (Sardo & Thibault, 2024) we examined this digital educational environment from a space-centred educational perspective. Our work revealed that the space of this digital game title seems to incentivize a mainly transmissive-receptive instructional architecture, and to a lesser extent, an exploratory instructional architecture (see architectures of Instruction in Bonaiuti, 2014; Bonaiuti et al., 2016; Clark, 2000). Furthermore, we have explained how the synergy of various elements in the ludic relation with space[5] invites/increases specific forms of playful action and, at the same time, incentivizes different learning strategies.

In this study, we intend to expand our previous exploratory study, by conducting an empiric gaming activity based on making a specific target (see par. 3.1.) play/experience this game, in in order to elicit their opinions to inform future pedagogical research.

3. Methodology and materials

The research design of this case-study, which is part of a larger research project, is mainly that of *interpretative research* (Trinchero, 2002, pp. 60-66) and is qualitative-empiric in nature.

3.1. Survey context

The survey was conducted during the month of March 2024 at Tampere University. The gaming activity we designed was meant to be carried out individually and restricted to people over 18 years of age. Recruitment channels were: *slack*, e-mails, posters scattered around the university, and postings on the university portal. Participants were asked to select an available 90-minute slot on a calendar, via *Doodle* platform, and to show up for the selected time and day at the laboratory. Participation in the activity was on a voluntary basis and participants were allowed to withdraw at any time. As a sign of appreciation for participating in the activity, participants were offered a 20€ gift-card.

Participants were selected according to precise criteria. The main underlying assumption behind the selection was that the participants should belong to the educational sector. In particular, they were expected:

[5] Namely: linearity of tour spaces; limited interaction with the environment; unbalanced space layout; parkour mechanics, exploratory mechanics, urban furniture and photorealism.

Figure 1. Study set-up: gaming cubicle.

- to be teachers or have teaching experience in the school sector (especially in the field of history) or in higher education.
- to be scholars (including MA students) in the pedagogical/educational field or researchers in the field of history[6] or history education.

The degree of gaming skill (*game literacy*) was not considered, as the game is very intuitive and accessible in terms of controls and, therefore, game literacy did not impact on final results. Moreover, various controls, basic commands, and mechanics for playing the game were explained in detail during/before the laboratory activity.

3.2. Study setting, set-up and equipment

The gaming activity took place in the technology laboratory *Ludus Lab* of Tampere University, designed for controlled experiments and equipment with gaming hardware and quiet spaces. Once at the laboratory, each participant was welcomed, the information sheet and the informed consent form were shown and the activity was explained. After filling out and signing the informed consent form, we had the participant enter in a gaming cubicle (Figure 1), wherein the gameplay session and the compilation of the related survey questionnaire took place. The equipment used by the participant inside this gaming cubicle consisted of:

- High-performance PC – connected to a 4K monitor – within which the game was installed.
- Headphones, worn by the participant to hear the audio of the game.

[6] We refer here to participants such as University professors, researchers and PhD students who, given their academic role, presumably had teaching experience. Therefore, the fact that we also looked at academic participants related to the field of History is, in any case, subordinate to educational purposes: as the game title is mainly related to the fruition of historical (and related) content, therefore the perceptions of those engaged in historical research is, indirectly, also beneficial from an educational standpoint.

– Keyboard and a mouse used by the participant as controls to play the game and for the completion of the questionnaire after the gameplay session.

In addition to the gaming cubicle instrumentation, two instruments were used by the researcher(s): a laptop, to remotely monitor the participant and another PC monitor to observe his/her gameplay, both located in another space within the laboratory.

The activity consisted of three phases:

1) *Introductory gaming phase*: During the first phase, participants were asked to explore the introductory tour (tutorial) of the game for 15 minutes, in order to familiarize themselves with the game and its controls. Before starting this phase, the basic commands for playing the game were explained.
2) *Free gaming phase*: After the tutorial phase, participants were asked to play the game in total freedom according to their own approach/preferences (selecting tours of interest, deciding how to explore the environment, where to go, what to do, etc.) for 35 minutes. Before starting this phase, various mechanics and gameplay/exploration possibilities of the game world were explained in more detail.
3) *Survey questionnaire completion*: Subsequently, still within the gaming cubicle, participants were asked to fill in an online questionnaire (survey) for the remaining time (approximately 30/40 minutes). The questionnaire was completed anonymously (no log-in required).

Thus, phases 1 and 2 concern the gameplay session (50 minutes of gameplay activity in total) and phase 3 consists of filling out the survey questionnaire about the gaming activity just experienced for the remaining time.

The only recording made during the activity was the PC game screen during gameplay session (phases 1 and 2) via a screen recording software installed in the high-performance PC used by the participant, and this recording was started and stopped in their presence inside the gaming cubicle. Before starting the activity, and the gameplay screen recording, the participant was informed that we would also remotely observe their screen during the gameplay session (phases 1 and 2).

Furthermore, still during the gameplay phases, the players inside the cubicle were also monitored remotely by a video camera placed above the gaming computer (the high-performance PC), and we also remotely observed their screen during play. The video camera was connected to another PC (laptop) located in another space in laboratory, separate from the gaming cubicle. The camera was not used to record but only to monitor the participant in case assistance was required. Before starting the gaming activity, the participant was in fact asked to raise his or her hand if in need of help or technical support.

In conclusion, the overall duration of the laboratory activity was, approximately, 1 hour and 25 minutes.

3.3. Survey questionnaire

Since our goal is an in-depth understanding of a given phenomenon (figuring out opinions/perspectives of subjects involved in the educational/teaching sector regarding the gaming experience from an educational perspective), we adopted a self-compiled questionnaire with open-ended questions as a data collection instrument (Trinchero, 2002). This choice is particularly useful if "[...] *the researcher's objective is to come to the understanding of a phenomenon, rather than to the explanation of a factor on the basis of others*"[7] (Trinchero, 2002, p. 199). This consists of two main sections:

[7] Authors' English translation from the original Italian text

1. Outline a short list of positive aspects that you have noticed about this digital game, if any. (You can separate aspects with a comma, e.g.: graphics, playability, educational contents, etc. In case you did not notice any, write 'none').

2. Outline a short list of negative aspects that you have noticed about this digital game, if any. (You can separate aspects with a comma, e.g.: graphics, playability, lack of interaction, etc. In case you did not notice any, write 'none').

3. What are your thoughts regarding the pedagogical dimension of this digital game? (If you can, please articulate your answer)

4. Where there any features that impressed you about this digital game? If yes, which ones?
(If you can, please articulate your answer)

5. Do you think this digital game could be integrated into formal educational contexts for educational purposes? If yes, in what ways (teaching strategies, educational methods, ideas, etc.)?
(If you can, please articulate your answer)

6. Do you think there are possible advantages in integrating this digital game as part of educational activity in formal educational contexts? If yes, which ones?
(If you can, please articulate your answer)

7. Do you think there are any possible risks in integrating this digital game as part of educational activity in formal educational contexts? If yes, which ones?
(If you can, please articulate your answer)

8. Would you personally use this digital game in formal educational contexts for educational purposes?
(If you can, please explain the reasons for your answer)

9. Please feel free to add here any other information you think is useful about this digital game or this experience:

Figure 2. Open-ended questions (original English text).

– The first is related to demographic data (gender, age-group, etc.) and background especially in relation to the selection criteria, such as level of education, teaching experience, experience with educational games, experience with the present case study, etc.
– The second part is the core of the survey and consists of nine open-ended questions (the last one does not require a mandatory answer) aimed at sounding out participants' opinions/perspectives/perceptions, with regard to the gaming experience in the laboratory, concerning educational issues (such as thoughts about the pedagogical dimension of the title, possible integration and adoption within formal educational contexts, etc.). For the sake of transparency, we report here the questions that were asked (Figure 2):

The questionnaire was administered after the gameplay session (see survey questionnaire completion in par. 3.2). *Microsoft Forms*, connected to the university's institutional account, was used to create the questionnaire.

3.4. Participants

3.4.1. Participants' Background

The subjects (n=13) who participated in the gaming activity in the laboratory, while mostly working/studying/doing research in Finland, were sufficiently diverse in terms of age group (3 aged 21-29, 6

aged 30-39, and 4 aged 40-49), gender (7 female, 4 male, 2 non-binary) and study level/occupation (7 researchers ranging from PhD student status to professor status, 4 MA students, 1 lecturer and 1 subject with a long experience in school teaching).The vast majority of the researchers (all but one) reported that their research is specifically in the field of educational sciences (pedagogy, didactics, learning, etc.). All the participants are related to the teaching practice (teaching or have teaching experience) in higher education, schools, or in both.

3.4.2. Experience with video games

Concerning the experience with video games, in a 5-point Likert scale:

- 5 participants reported they play video games *rarely (only a few times a year)*;
- 4 very frequently *(several times a week);*
- 2 occasionally *(a few times a month);*
- 1 frequently *(several times a month);*
- 1 does not play.

Among the participants who are players, Figure 3 details the type of platform on which they usually play video games.

With regard to the experience with video games made for educational purposes and with our case study:

- Almost all the participants (all except three) reported having played video games made for educational purposes before.
- The vast majority of participants (all except four) reported that they have heard of the *Assassin's Creed* game series before.
- Almost all the participants reported that they have never played one or more video games from the *Assassin's Creed* series before.

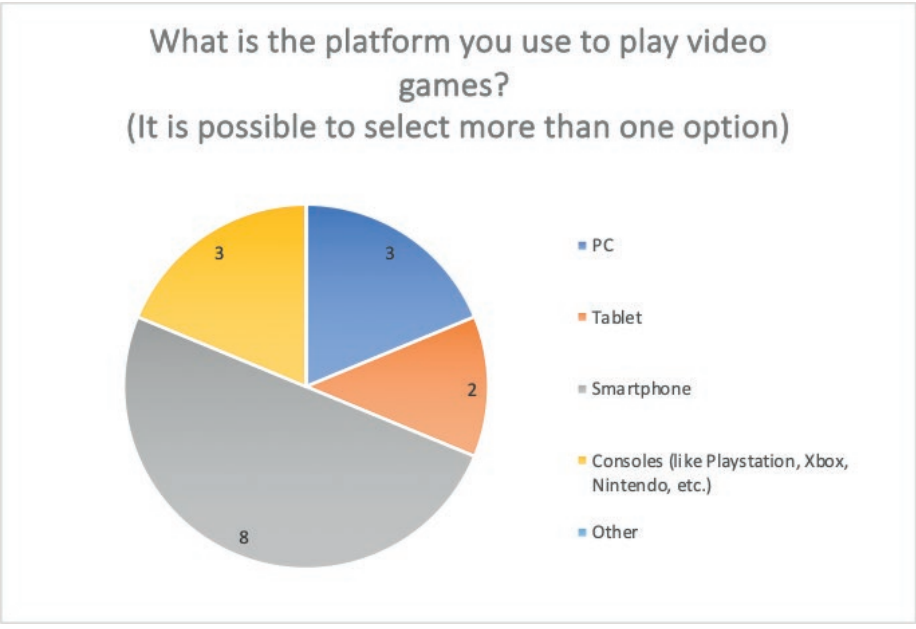

Figure 3. Platform used by the participants to play video games.

– All the participants, except one, reported that they had never before played the game we asked them to play in the gaming activity (*Discovery tour* of *Assassin's Creed Odyssey*).
– All the participants, except two that selected the answer "*more yes than no*", reported they are, in general, in favour of using video games as educational tools.

3.5. Data analysis

To analyse the survey data, we conducted a reflexive thematic analysis (Braun & Clarke, 2006; Braun & Clarke, 2012, Braun & Clarke, 2019; Pagani, 2020). Thematic analysis "is a method for systematically identifying, organising, and offering insight into, patterns of meaning (themes) across a dataset" (Braun & Clarke, 2012, p. 57). It represents a methodological approach that valorises the role of the researcher in the production of knowledge and, consequently, consider the perspective of the researcher as a resource, rather than a limitation (see Braun & Clarke, 2019).

The underlying reason for choosing this method (instead of other qualitative methods) is ascribable to several factors. Firstly, the nature of thematic analysis fits in with the objectives of our research. Through an analytic and systematic procedure, it is possible to "dive" into the data (and especially to examine the dataset cross-sectionally) for an in-depth and holistic analysis, in order to have a more detailed report of the information within the data-set than is possible with a simple content analysis. Secondly, the reflexive thematic analysis is flexible both in terms of the underlying ontological/epistemological framework (see Braun & Clarke, 2019; Pagani, 2020) and in terms of the type of data and sample. It therefore struck us as the most suitable method, given both the multidisciplinary context of approaches/theories regarding gameful strategies (and *Game Studies*), and the textual data related to our sample, since it "[...] can be used for analyzing data derived from *vis-à-vis* 'traditional' methods such as interviews and focus groups; but also textual data gathered through qualitative surveys, diaries, the use of cartoons or story completion activities (*story completion tasks*), online discussion forums and other media sources [...]"[8] (Pagani, 2020, p. 63).

Therefore, according to Braun and Clarke's guidelines (2006; 2012; 2019) on *six-phases* of thematic analysis we proceeded as follows:

1) Before starting coding, we *familiarized* ourselves with the data by repeatedly and attentively reading the text extracts of the entire data-set from the questionnaire, trying to interpret the eventual typing errors due to writing on a PC keyboard.
2) After the familiarization phase, a two-way *coding process9* was carried out. To strengthen the reliability of research, this was done through two researchers who coded independently. We then compared the codes, identifying connections and signs of originality in each one of the codings. After mutual agreement, a single code list was drawn up. Both semantic and latent codes were generated.
3) The initial temporary themes were then *generated* by grouping the interconnected codes. Based on similarities, themes such as "Positive appraisal of pedagogical potential", "Suitable for instructional design", "Attention to perspective: historical accuracy, realism and representation", etc., were generated.

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[8] Authors' English translation of the original Italian text.
[9] Although we are aware that it is not explicitly required in reflexive thematic analysis (see Pagani, 2020, p. 58), we believe that coding through two independent coders can be an additional enriching process: in comparing researchers' views, confirming and thus reinforcing the subjective perspectives of individual researchers – and rendering the interpretations more sound – as well as in enriching the description of data (reaching analytical observations that one or the other researcher had not attained) and providing a more nuanced and complex picture of the information within the data-set.

4) We then moved on to the *theme review* phase. We tried to make sure that our themes were not "false themes", i.e., domain summaries/topics touched upon in the study (see Braun & Clarke, 2019). This led to an iterative path backwards (to the data) and a reformulation/modification of existing themes into new themes/sub-themes, in order for them to have internal coherence and specificity as well as to be distinct and defined.
5) Again after mutual agreement, we "refined" and gave a definitive name to the themes.
6) We finally wrote the report both in an *interpretative* and *analytic* way (see Braun & Clarke, 2006; 2019; Pagani, 2020, pp. 80-85).

The approach to thematic analysis was, overall, mainly *data-driven*.

4. Results

As a result of the thematic analysis, 3 themes were generated: *Game as instructional resource, Transmissive educational mode* and *Perspective*. The first two themes respond to the first research objective (RO1). The last one responds to the second one (RO2). All the themes are articulated in several sub-themes.

4.1. Theme 1. Game as instructional resource

4.1.1. Pedagogical relevance

In general, participants claim that the game has great pedagogical potential. Participants reported good potential for learning History and other subjects[10]:

> *"This is a powerful resource for learning History, culture, physics, and also to create an environment to discuss with student several topics like ethics, women rights, etc." (A)*
> *"This game is clearly quite potential for (various kind of) history for sure. But there might be potential for geography and physics for example too. Philosophy also and theology. But of course game should be adapted for the time period and or subject." (D)*
> *"It is a very easy way to get to know the history by playing the game." (L)*

In responding favourably for the adoption of the game in formal educational contexts for educational purposes, some reported that it should be made available for art and history related subjects (I). Others, answering about personal use of the game title in formal educational contexts for educational purposes reported: "*Definitely,* if I'd be *a history teacher who needs to cover Classical Greece in my classes. Or maybe even a PE teacher who wants to educate students about Olympics :)*" (E)

Other participants highlighted how the use of this game in higher education would allow for "interesting" learning experiences (F). Also responding favourably for an educational use for Geography and History, some elaborated considerations broadly extended towards virtual reality: "*Many other subjects could be taught too in immersive VR worlds (not necessary* [sic] *realistic).*" (G). Potential for magnetizing attention from inattentive students is also pointed out: "*I think it is a very good pedagogical tool especially for those students who can be inattentive.*" (I). Several participants (J, M) pointed out that the game would be a good tool for teaching history, some adding that it could be integrated in formal education

[10] N.B.,: English was not the mother tongue of respondents. Hence, any mistakes in the reported quotes have been left as they were in the original survey responses.

(M). Finally, some intrinsic educational characteristics specifically related to the game environment are mentioned "[...] *even if not taking the tours, the environment in itself educates the player about the daily lives of people, e.g. how they dress, how they act in public and interact with each other.*" (E), "*presence of ancient people (it was good to observe their dresses, conversations).*" (K), "*Allowing people to navigate through time in map is good.*" (M) and that "[...] *Its easy to remember the places in the map.*" (M)

4.1.2. Use in formal education

In general, almost all the participants believe that the game can be integrated into formal educational contexts for educational purposes (see question 5, Figure 2), and, in this regard, the majority reported that they would personally use it (see question 8, Figure 2). A set of elements certainly seems to contribute to this result; among these, we primarily have to mention: easy and accessible playability, presence (and richness) of several educational contents, graphics, immersive and detailed environment. As regards educational content and playability: "*educational content* [...] *diverse set of topics*" (E), "*easily accessible playability*" (H), "*graphics, playability, music, accuracy of storyline, ability to manipulate amount of exploration and amount of video material*" (I), "*educational contents (if you want to explore more you can additionally read)*" (K), "*knowability, playability*" (D), "*sections, game order, simple to play*" (L) are all appreciated elements (the last one striking). In particular, it is reported that "[...] *how content is split into tours is a good strategy to frame scope and give freedom to explore*" (A) and that learning with visual aids is in line/fits with formal education "[...] *because using visual aids is very much required in formal education gamification adds a lot to the mode of learning*" (B), "*helpful for learning with visuals*" (J), "*Children especially learn more through visuals and game is the most interesting thing for them.*" (J) and enthusiastically "*I like everything about it. it seems it was created with so much thought and effort.*" (J)

4.1.3. Use beyond formal education

Although the majority of participants would use this digital game personally (see question 8, Figure 2) in formal educational contexts for educational purposes, there was no lack of critical perspective. Some informants affirmed: "*I have a hard time seeing the game being used in the context of school-based education, and if so only with a huge amount of accompanying material, which might make workload and expected outcome not meet each other.*" (H) and that "[...] *I would define the pedagogical dimension of it as a tool, which can only be applied in combination with a variety of othe rtools* [sic]". (H). Therefore, as concerns personal use "*Theoretically yes, within the context of education within museums. Practically, this would potentially require software modifications, which make it hard to realize.*" (H). Then, suggesting an adoption of the game only in combination with concrete objects or with a variety of other tools. Nonetheless, the participant reported that "*I could see the game being used in museum education though, especially when splitted into slices and put into dialogue with historical artifacts in exhibitions (e.g. putting the historical colourful reliefs and statues within the game in dialogue with the weathered and therefore colourless statues in exhibition spaces; or to provide context for exhibited tools oder* [sic] *objects of general life*)" (H). Then someone who, while still unsure about formal education contexts, would like to use it for a personal usage: "*I am not sure about formal educational context, but I would like to use it game for my son to show him the ancient world in the addition to e.g., books, movies*" (K). Finally, one participant agrees both with personal and formal educational use: "*Yes I will Not only for*

my formal education even for my personal Interest of Travelling I will have this tour and then, I will be visiting the place which i wanna go" (B)

4.1.4. Implementation

The importance of the variety of educational topics (contents) is then endorsed on the grounds that this could even provide insights for structuring/planning lessons; indeed, the game "[...] *can get the ideas for teachers how the lessons can be structured (based on locations or based on topics)*" (K), "*If integrated, it could help teachers to convey certain topics to students more easily.*" (E). There is also one who suggests an individual or group use: "*Teachers can integrate into their lesson, either as a tool to be used by students individually or for the class to explore together.*" (I). Still others, as a first starting approach to the ancient Greek culture: "*yes, I would suggest to use it for getting familiar with the antient Greek atmosphere. It can give the first impression. it can catch initial interest and motivation to that topic.*" (K).

4.1.5. Game-based Education vs. "Traditional" Education

Several comparisons between the use/integration of the present game title in educational environments and "traditional" education were made. Firstly, it would seem that the integration of the game in the educational field could be beneficial for a wider comprehension of educational topics, as well as more engagement, motivation, interest and even learning of students. In answering to the formal educational integration of the game, some reported:

"*For sure ,* […] *can be it need to be Integrated to have a better and Quick experience of history*" (B)
"*Sure! It is more engaging than a slides or handouts.*" (C)
"*Yes, I think it brings great depth to 'traditional' pedagogical contents, such as reading a book or filling out paper sheets.*" (E)

Participants also stated that the game was more motivating than a book or video (G), more fun than ordinary teaching (E, J), that it could enhance student learning (L), motivation and engagement (I), interest in learning contents (F) and that they will study more History (F). However, some noted that these benefits could be contextual:

"*As an optional and additional offering to students, it might be possible to increase engagement. Still, depending on experience with the Assasins Creed* [sic]*, or gaming in general, not every student might be motivated to pick up this game* […]". (H)

Furthermore, beyond the use "*as motivational tool for students*" (K), even benefits for disadvantaged students with "canonical" methods and advantages in attracting students for less interesting contents were reported: "*it increases accessibility for learners who might be disadvantaged when learning through conventional methods.*" (I), "*a very good way to attract students for less interesting contents*" (F). Further interesting pedagogical considerations about learning by playing were also made: "*learning enhance if it is according to the interest of children. Children not only will take it as a game but will learn also at the same time.*" (J), "[...] *it helps students to learn details in a fun way.*" (L). Answering about possible risks on integrating the game in formal educational contexts for educational purposes: "*I do not think there is any risk. Children now a days palsy* [sic] *games every day. Why not for learning?*" (J). Lastly, in addition to this number of positive benefits, there were even truly enthusiastic pedagogical affirmations:

"*As a teacher of history, I must say that it is the best way to teach history to the students of all levels.*" (J)

Furthermore, there are hopes for a future formal game-based education: "*I hope learning through gamers woulod* [sic] *become part of formal education soon.*" (J). In conclusion, based on the experience of participants, it seems that there would be a significant overall advantage in using this game as a GBL tool compared to classic educational methods, in terms of motivation, interest, engagement, and for less interesting contents, and even in increasing accessibility for disadvantaged students with conventional methods.

4.2. Theme 2. Transmissive educational mode

4.2.1. Transmissive-Receptive architecture

Among the characterizing factors of instructional receptive architecture there are: control by instructional source, information prestructuring, scarce or absent interaction and a certain linearity in the information transmission process (Bonaiuti 2014, Bonaiuti et al., 2016; Clark, 2000). These elements have characterized instruction modalities for a long time (the old well-established and still most commonly used *lectio* comes to mind), presuming a passive role of the learner (the jar to be filled). The game seems to follow mainly this type of instructional model and this is proven by participants' experience; they reported:

"[…] *i was just going from point to point and listening lectures* […]" (D)
"*Walking from spot to spot is not very engaging, you cannot interact with any of the topics shown* […]" (C)
"*no surprise (the same steps for each tour)*" (K)
"*The tours did not engage me, there was a lack of interactivity. I wanted to engage with more characters, and join them in doing their everyday life.*" (C)

Others comments underline this lack of interaction (G, H), others that information is shown in boring ways (C), and that the learning part can be a bit dull for a young audience (G).

4.2.2. Learning assessment: quizzes

A type of learning historically linked to this instructional architecture is the notional one. Even if asking questions at the end of the tours visited (quiz) was appreciated as a striking element of the game (F), there was no lack of criticism on this. Some participants reported having perceived the final quizzes as quite superficial, not providing a wider or deeper evaluation of information gained playing the game:

"*The quiz after the tour felt gimmicky*". (C)
"[…] *Most of this information is related to Greek Names (also quizzes are related to these names). and I already forgot them.*" (K)
"*tour quizzes quite superficial (e.g. only asking about specific names of people and not larger understanding of the cultural events)*" (E)

4.2.3. Learning goals and teacher interventions

Another aspect underlined was the lack of specific learning goals and (challenging) tasks inherent in the game:

"*no learning goals beforehand, no direct aim (find some treasure or something)*" (K)
"[…] *game would need to be task and or goal oriented and i should be able to make my own choices of actions for example how i gather information. I should also be tested during the game so i could get feeling of accomplishment during the tasks.*" (D)
"*Lack of deeper engagement, lack of nuance*" (C)

Furthermore, the main risks of a receptive instruction modality are related to ignoring the attention span of learners, with the consequence of a possible cognitive overload and Long-Term Memory (LTM) encoding failures (Clark, 2000). Indeed, participant reported that: "[...] *at the end I felt cognitive overload as so many information (especially the tours with 11 pieces).*" (K), "[...] *without concrete learning goals and iteration (maybe with other educational techniques such as group discussion afterwards) the information gained in the game can be easily forgotten.*" (K). Therefore, it seems necessary not only to set specific learning goals within an educational path as the game itself is not oriented towards specific goals, but also to obtain the teachers' firm interventions (after or before game session) in relation to a proper evaluation of acquired information while playing the game. Another risk is that of being distracted by aesthetics elements: "*a lot of distractions*" (L), "*being distracted by the aesthetics, needs guidance by the educator to make sure people are actually processing the info shown*" (C), or by fun/gameplay: "*The important historical details of the world may get hidden behind the fun gameplay.*" (G), "[...] *children can use a lot of time in playing the game instead of learning the main concept.*" (L). The educator's monitoring is finally recognized as important in order to avoid students' addiction: "*Maybe if a child addicted to play these games it would not be good. Hope this should be controlled by an adult.*" (M).

In conclusion, the key-elements highlighted by participants appear to be: setting specific learning goals, in-depth testing of acquired information, teachers' intervention/dialogue with the student and the teacher's monitoring to avoid student distraction.

4.2.4. Active learning strategies

Whereas the game mainly follows this transmissive-instructional model, in order to balance the learning activity within the frame of the game's use in the classroom, it might be useful to accompany the game activity with active instructional strategies. Among the participants there are some who suggest active/simulative pedagogical solutions: "[...] *Here, I would draw from the game as ideas for roleplay, making or crafting things, or simulating ancient greek* [sic] *society*" (C), and those who suggest a contextual use with additional materials/concrete objects: "*The game still very much follows text-based knowledge transfer, and therefore requires contextualiyzation* [sic] *with additional materials, objects, and artifacts outside the game space.*" (H). Finally, it is reported that: "[...] *might be a good option for workshop-based/project-based learning experiences*" (H).

4.3. Theme 3: Perspective

4.3.1. Immersiveness and realism

In general, the environment is perceived as immersive, realistic and detailed. In particular, regarding realism, the "graphics" are recurrently highlighted (especially in question 1, Figure 2). Furthermore, some interesting observations are made:

"*Spectacular visuals, Interactive Surroundings, Immense music to focus, Clear Explanations, Even the accent of people is so realistic all of these are very Impressive for me*" (B)
"*the way that the characters talk to the player creates a sense of being talking to a human*" (A)

The "*realistic views*" (L) are considered among the striking aspects. With regard to the detailed and immersive world other striking aspects are mentioned: "*The detailed world.*" (G), "*It has plenty of details* [...]" (E), "[...] *I felt the atmosphere* [...]" (K). Furthermore, "*high amount of available information*" (H), "*immersed graphics (detailed)*" (K), "*immersiveness* [...] *simulation of nature and environments*" (C) are positive aspects perceived. Lastly, it is even reported:

"*Very immersive and impressive game engine, including graphics and audio. Detailed scenes, high quality textures, fun and immersive gameplay.*" (G)

To conclude, among the positive aspects about the game a participant mentioned: "*historical accuracy of pretty much everything that was presented*" (D).

4.3.2. Accuracy and representation

Although the game is generally perceived as realistic, detailed and immersive, some critical views were expressed about the representation of educational contents/material. Concerning the pedagogical dimension of the game some even reported that they think the game has a great potential and is much more profound, immersive and interesting than other traditional games, and affirmed:

"[…] *However, the company has a great responsibility on providing such information; how they represent certain events and characters, which perspectives they choose to highlight and other ethical considerations, so that they don't, for example, enforce stereotypes, racism or other unwanted values.*" (E)

Hence, when teaching with the game a certain degree of responsibility is necessary. Answering about the integration of the game in formal educational contexts for educational purposes:

"*Yes, I think it brings great depth to 'traditional' pedagogical contents, such as reading a book or filling out paper sheets. However, it is teacher's responsibility to discuss with students whether all the information presented in the game is correct. For example, I'm sure there's some technical things that restrict the game designers and e.g. the distances in the game are largely different from real life. Also some of the relationships between the characters may be made more dramatic than they actually were, and other things we do not exactly know from history.*" (E)

We must not forget that, after all, even if this game seems to have been created with great effort and attention in reconstructing historical/cultural materials, we are, however, dealing with a media product and we have to use this digital product as we do the other media (like movies, books, etc.). Indeed, considering that "[...] *we need to be careful of what kind of ethical or moral values such game represents, as it is a mix of entertainment and educational material. Also, not everything presented in the game may not be historically correct, so it is important to reflect and critically examine its contents.*" (E).

Thus, the teacher's intervention (which could be a simple de-briefing after the gaming activity) seems useful also for a critical discussion/reflection with students about the accuracy of the information acquired playing the game.

4.3.3. Changes

Some game changes in view of its use for learning are finally provided:

"[…] *i think there is huge potential on creating historically very accurate and interesting and immersive mini games that capture students to learning experience through gaming.*" (D)
"*Successfully getting full score in the quiz should give some unique rewards.*" (G)
"[…] *could have done minigames or interactive sequences to support the learning*" (C)

As we can see, in line with previous results, these suggestions are mostly about more interaction, the sense of accomplishment through rewards, and the creation of mini-games.

5. Discussion

In this section we summarize the main results of our thematic analysis according to the three generated themes and in relation to the research objectives (RO1, RO2).

5.1. RO1. Theme 1: Game as instructional resource

The following are the main points emerging from the analysis:

- It is shown how the game, in general, has a great pedagogical potential.
- Almost all the participants believe that the game can be integrated into formal educational contexts, and, in this regard, the majority reported that they would use it personally. The game appears suitable for formal educational contexts and for curricular use. The synergy of various factors primarily contributes to this feature: easy and accessible playability, the presence, variety and richness of educational content and materials, the detailed and immersive environment and the game's visual modality.
- Pedagogical solutions about game integration are provided, such as using the game title as a starting approach to the comprehension of Greek culture/history.
- The analysis seems to reveal the general perception of an overall significant advantage in using this game as a GBL tool compared to a "classic" educational approach in a variety of areas: motivation, learning, interest, engagement, attraction for uninspiring contents or for inattentive students and even in increasing accessibility for disadvantaged students with conventional methods.

5.2. RO1. Theme 2: Transmissive educational mode

The following are the main points emerging from the analysis:

- The analysis on participants' experience seems to confirm how the game follows a transmissive-receptive (and, to a lesser extent, exploratory) instructional model with tangible risks of cognitive overload or getting lost (being distracted) in playing the game.
- Several needs arise: setting specific learning goals within a precise educational path, the in-depth fact-checking of acquired information, teachers' intervention/dialogue with students, and teachers' monitoring to avoid distraction due to fun/gameplay or aesthetics.
- For a balanced learning experience, the analysis highlights that the integration/alternation of active methodologies with the use of the game in formal educational contexts is advisable.

Based on our results, overall, even following a mostly transmissive instructional mode, the game seems to have a good pedagogical potential (both in teaching and learning) and can be seen as an

instructional resource, especially for curricular use. In this, the easy playability, the variety and richness of (quite accurate) educational materials and the visual modality play a significant role.

5.3. RO2. Theme 3: Perspective

The following are the main points emerging from the analysis:

- The game environment is generally perceived as detailed, realistic and immersive.
- However, the teacher's responsibility in reflecting/discussing with students about accuracy of information acquired playing the game should not be overlooked. Therefore, when adopting this game in formal teaching, a discussion about information accuracy is advisable.
- Some game changes for fostering learning are suggested (adding mini-games, full score, unique rewards, etc.)

Based on the above results, there are some reasoned/critical perspectives on the use of this game in formal education in relation to information accuracy and representation of educational materials. The importance of the teacher's role in discussions with students is also recognized.

6. Conclusive remarks

Our research seems to confirm our previous exploratory study (Sardo & Thibault, 2024) in relation to the fact that the game follows a mainly instructional transmissive-receptive architecture and, to a minor extent, an exploratory type of instructional architecture. This should undoubtedly be taken into account if we are planning to use this (or a similar) game as a GBL tool. Convergent risks of both instructional architectures, even if they are different in nature, could be found in possible cognitive overload and in the need of previous domain knowledge. Then, as pointed out in our analysis, teachers' interventions (e.g., briefing, de-briefing actions and teachers' monitoring) are essential to avoid this, to ensure a holistic understanding of educational contents, and also to ensure students are processing information. Drawing inspiration from the experience of participants, one suggestion could therefore be to use the game after a short introductory briefing about the planned contents and then, after the gameplay activity, hold a de-briefing session (or group discussion) with the teacher in order to reflect on the topics covered. Still based on our results, another solution could be the use of the digital tool in combination with active strategies (to mitigate the mainly transmissive instructional approach of the game), in particular constructivist-simulative methodologies to foster a less notional and more *meaningful learning* (Ausubel, 1963) in order to make students develop *competences*, both curricular and transversal, beyond the acquisition of educational contents. In this regard, in planning educational activities, it is advisable to define and share with the learners a set of learning goals to be achieved through the educational path. These should be related to a precise evaluation rubric (set by the teacher), and to assessment instruments for evaluating knowledge acquisition/understanding/competences after the activity. Our study agrees with the study (based on the same game of this research) of Paananen and colleagues (2023) that highlighted the perceived need for more tasks, goals and interaction and pointed to "content" as a positively perceived element. Our results are also in line with Gilbert's, who conducted qualitative interviews with students after they had played an *Assassin's Creed* franchise game (Gilbert, 2019). In this study, students' perceptions revealed a more immediate access to History (and a more holistic view of it) compared to school-based education.

Still with regard to pedagogical considerations, of course a game like this can contribute to foster exploration. Some participants reported that they appreciated the amount of material available in the game and that this variety and richness of contents encourages exploration. We have to consider how this immersive and realistic world can have an impact on helping students to contribute to a deeper understanding in learning history and also to foster an exploratory learning strategy. Indeed, some of our informants reported that the learning-by-discovery mode within the game is interesting, and that they appreciated the freedom in exploration. Furthermore, some reported how this allows the user to control their own learning. The strong control (freedom) of the learner is in fact a characterizing factor of the exploratory architecture (Bonaiuti, 2014, Bonaiuti et al., 2016; Clark, 2000;).

Although this game does not seem to fall within the canonical classification of an "educational game", our findings seem to support what was stated in Guerra-Antequera and Revuelta-Domínguez (2022, p. 41) about the fact that in educational videogames the focus is more on the content, rather than on the ludic/gameplay aspects and that these educational games are based on linear teaching/learning models. The observations made by participants confirm the importance of teachers' roles in guiding students in the right direction and in de-briefing–(see, e.g., Egenfeldt-Nielsen, 2006, p. 205). Even if it is true that some effective learning principles are not in "educational games" (Gee, 2005), as is partially true in this game, we believe this title is a good compromise. It presents a certain affordability in educational terms: easy and accessible playability, richness of educational contents (which lend themselves to a curricular use), visuals in line with formal education (which could foster the learning process). As highlighted in our analysis, we cannot fail to take into account the positive general perception of pedagogical game potential and the overall educational advantage in the use of this game as a GBL tool compared to a traditional educational approach.

We point out the great immersivity of the game, its impressive graphics and detailed environment. These features might, perhaps to a minor extent, incentivize an exploratory learning attitude by stimulating curiosity and interest in exploring the environment. The game might therefore be used as a *discovery learning tool*.

We therefore consider the positive side of this game that meets the educational system constraints: firstly, the gameplay duration, as "commercial" games are often more complex and generally require much longer to master (see, e.g., Squire, 2005 about *Civilization III*) and this is true both for students and teachers. Furthermore, the PEGI classification, as many commercial games are not suitable for primary or secondary school as they are often 18+-classified and/or might include violent contents. Finally, the notorious "content issue", as it is very complex to link curricular contents/competences using commercial games. These educational settings limitations must be taken into account. It is not surprising that serious/educational games are most commonly found in educational contexts (Costa et al., 2016; Guerra-Antequera & Revuelta-Domínguez, 2022). We therefore believe that good pedagogical principles should be integrated by the teachers and that the key factor is how games are used in relation to educational strategies adopted by the teachers in the instructional design phase.

7. Limitations and future perspectives

Ultimately, we have implemented certain measures to ensure our research attains greater objectivity and transparency, such as a controlled environment (technological laboratory) for the game-experience, a systematic and analytic qualitative method for data analysis, and an additional two-way coding process. Despite this, it should be considered that our research is in any case qualita-

tive in nature and, by virtue of this, has several limitations. Firstly, the perspectives and personal background of the researchers who conducted the thematic analysis, as each thematic analysis is the result of a personal hermeneutic process. Moreover, the professional instrumentation used during the game activity – a high-performance PC connected to a 4k monitor with the game configuration settings at the highest level – could impact the gameplay experience, as well as influence the more than positive general perception about game graphics and, consequently, the feeling of immersivity of the game environment (although we believe that the game itself has a remarkable graphic compartment regardless of the different digital platforms used to play it). Notwithstanding this, we believe that our research could provide profitable guidance and useful practical pedagogical hints to those interested in using this game (or a similar one) as a GBL tool in educational contexts. More widely, it may provide suggestions and guidelines for the establishment of an *ex-ante* pedagogical design of game-based interventions and activities. Future research will follow this direction. We will analyse other typologies of (educational) videogames (such as strategy, action-adventure or God games) in relation to instructional design implementation, in order to provide a systematic guidance for an educational design of digital game-based interventions.

8. Author contributions

The article is the result of the joint effort of all authors. For the formal attribution, please consider sections 2, 3, 4, 5 and 6 as written by Michele Sardo and sections 1 and 7 by Mattia Thibault.

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