Interactive Digital Design Skill Set:
Crafting Executive Education Curriculum for the 21st Century

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Abstract

Portugal's education system offers a variety of non-degree programs essential for career advancement where Executive Education encompasses a critical role. Within this context, advancements have been made in recent years, both in the Executive Education field, as in the Interactive Digital Design education field. Nonetheless, ongoing challenges are still widely identified, from competition, technology advancements, institutional and societal changes, and efficient cooperation between Creative Industry and Academia. Based on an ongoing research aiming to establish a dynamic skill set framework in the Interactive Digital Design field for Executive Education postgraduate courses, this study applies a Delphi method to gather expert contributions on the evolution of Interactive Digital Design field, the professional profile and the essential skills needed for this area. With this method is intended to seek consensus over a set of 68 questions summarized from a first round stage, where valuable insights from main stakeholders were gathered –both from academia, the creative industry and students – revealing past and present trends on Interactive Digital Design, the evolution of required and expected skills, challenges, and opportunities in the field. The findings revealed a strong consensus over the presented topics among the participants with a high level of agreement, given way to the definition of a skill set to meet current and future professional needs and thereby guiding executive education's management in this field. The establishment of a skill set that may support postgraduate courses curricula design on an ever-shifting societal and technological landscape, aiming to better prepare professionals for the Interactive Digital Design sector, may represent an asset of great relevance in curricula governance and design. The attained knowledge is expected to support as a valuable resource for higher education institutions seeking to refine their educational offerings in response to evolving industry demands, societal changes, and technological advancements, thereby advising the strategic outlining, and guiding the design of future curricula.

Keywords: Executive Education, Design Teaching, Interactive Digital Design, Curricula Design, Delphi Method

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Introduction

As societies embrace digital transformation, the demand for skilled designers in the field of digital product design becomes increasingly urgent. Globalization further accelerates the adoption of trends, techniques, and emerging technologies, necessitating continuous skill updates across various domains. These dynamics significantly impact education, especially in interdisciplinary fields like Web Design, Interaction Design, or Digital Design. We observe now a recent proliferation of diverse learning modalities that blend formal, non-formal, and informal approaches across various contexts and formats. Executive Education (EE) courses exemplify this trend, evolving over time but facing persistent challenges. Intensified competition, rapid technological shifts, and institutional changes underscore the need for a holistic understanding of the ever-evolving landscape. Moreover, the Covid-19 pandemic has compelled a rapid shift to online learning, prompting the exploration of innovative ways to deliver program content and engage learners in virtual environments (Sawhney, 2021).

EE is widely acknowledged as a solution to the challenges posed by globalization and rapid shifts in science, technology, society, and closely linked to a Lifelong Learning approach, empowering individuals to acquire new skills and unlock their full potential (Demirel, 2009; Fulmer & Gibbs, 1998; Kaplan, 2016; Laal, 2011; Power & Maclean, 2013).

This approach has significant potential as a strategic tool for nurturing technical and leadership skills. It can serve as a catalyst for reshaping team dynamics by aligning fresh perspectives and strategies. Ultimately, it becomes a driving force for change, promoting innovative positions and organizational structures, playing a crucial role in bridging gaps and facilitating knowledge exchange between academic institutions, businesses, and society (Bolt, 1993; Conger & Benjamin, 1999; Gera, 2012; Ready, 1995).

Over the past few decades, there has been a gradual paradigm shift in EE teaching, reflecting an evolutionary trend. Presently, innovative programs prioritize student learning and foster closer ties with companies. This contrasts with the dominant trend until the 1980s, characterized by highly specific, specialized, and academically centered programs. Factors contributing to this shift include heightened sector competitiveness, rapid technological advancements, and institutional mergers driven by cost-cutting policies, and a growing tendency to establish partnerships with companies (Conger & Xin, 2000).

Within this context, Higher Education (HE) continues to grapple with significant challenges in establishing effective collaboration between academia and business. Universities have persistently sought to integrate industry and business into their EE programs through various initiatives. However, these efforts are often deemed incomplete or inefficient, lacking a cohesive strategic perspective or vision, with a noticeable gap in skill development, encompassing both skill acquisition and skill transfer. These skills serve as the essential value drivers in EE for both companies and executives (Clark, 1998a, 1998b, 2001; Djoundourian & Shahin, 2022; Moldoveanu & Narayandas, 2020).

In this regard, when designing an EE program, it is recommended that certain aspects of that program design consider inputs from multiple stakeholders. These stakeholders may include external company executives as well as university faculty. While achieving alignment among multiple stakeholders can be intricate, it has been demonstrated as crucial for purpose-driven, customized executive education, meeting individual needs rather than a one-size-fits-all approach. These changes have been made in response to the new realities of education and

the desire to provide tailored learning experiences (Boon et al., 2023; Conger & Benjamin, 1999; Conger & Xin, 2000; McCarthy et al., 2016; Myrsiades, 2001; Stopper, 1998; Vicere, 1998).

Also, it has been widely recognized the significant challenges in developing curricula in the field of Design education due to technical, technological, economic, and societal changes, as well as the rapid evolution of the industry, particularly addressing Interaction Design education, as stated by Meyer and Norman (2020), and pointed out in literature over the years (Culén et al., 2014; Faiola & Matei, 2010; Foley et al., 2005; Grudin & Salvendy, 2008; Heyer, 2013; Jill Anderson, 2022; Myers, 1994, 1996; Twining et al., 2021).

From another perspective, it is also highlighted that business organizations face significant challenges related to design skills within their structures, specifically at the C-level positions. These challenges encompass the requisite social skills for design management and leadership, as well as the underlying processes and methodologies inherent to design. Given the ongoing movement to elevate the designer's role in organizations and companies, new designations and skills have emerged, aligning with the evolving functions expected of today's designers, as these demands necessitate continuous adaptation and skill updates (Cruz, 2022; Groysberg et al., 2011; Sadun et al., 2022).

Within this context, this study arises as part of a broader research that aims to achieve a better understanding of design education in EE in the field of Interactive Digital Design, framed within a 10-year case study at IADE - *Faculdade de Design, Tecnologia e Comunicação da Universidade Europeia* in Portugal. Over the last decade, IADE executive education programs have consistently provided specialized training in Interactive Digital Design, attracting a diverse group of students, including active professionals from diverse sectors and fields, allowing to be in a privileged position in assessing the contextual and societal factors that have influenced EE in recent years.

As a result, it was identified that there was not substantial research addressing the specifics of this area and field, motivating the pursuit of a deeper investigation on the subject and aiming to deliver a skill set framework that may held a potential value for a wider audience, including other HE institutions aiming to shape future educational strategies within the Interactive Digital Design field, specifically in EE context. Such a framework holds the potential to encourage diverse and comprehensive viewpoints on the subject, thus informing the strategic development and design of future curricula.

The ongoing research started to provide a nuanced understanding of the student background within the Interactive Digital Design programs at IADE, moving to a deeper understanding about the Portuguese creative industry main strategic players and academic stakeholders perspectives. At that point was clear that some perspectives and point-of-views were aligned, however a richer knowledge was needed, attending the multiple dimensions of this phenomena, considering the overall perception on the evolution of this field, the professional challenges that design professionals were facing, and the convergence for a skill set that may address the specific challenges for this ever-evolving area.

That lead the need to collect insights that could converge toward a consensus among specialists and implied stakeholders regarding prior research findings. Additionally, this process aims to address the question of how to validate the gathered insights, thereby

providing a robust foundation for further analysis and interpretation and, thus, contributing to the development of a solid skill set framework in this domain.

Methodology

For this study, the Delphi methodology was selected as the preferred approach. This data collection method involves requesting expert opinions on the topic under investigation and resembles a structured questionnaire comprising a series of statements that experts evaluate. The method is widely used to explore validity and reliability issues in various domains, making it a powerful qualitative research technique. By leveraging experts' insights, Delphi method allows for in-depth interpretations of reality, enhancing our understanding of a specific phenomenon (American Philosophical Association, 1990).

This methodology represents a valuable approach for eliciting the most consensus-based opinions from a panel of recognized experts in a specific research domain, facilitating data collection without requiring physical presence, and making it particularly useful for geographically dispersed experts. Typically, the Delphi process involves multiple rounds of data collection, often in the form of sequentially administered questionnaires. These questionnaires provide aggregated insights into the group's responses, allowing for a deeper understanding of the research topic. After each round of data collection, researchers meticulously analyze the results. Dissonant opinions and their accompanying justifications are scrutinized during this evaluation. These insights are then compiled and subsequently shared with the expert group. At the conclusion of each round, participants are given the opportunity to revisit and defend their responses to the researchers. This iterative process continues until consensus is achieved among the consulted experts (Brás & Marques, 2018; de Liaño & Pascual-Ezama, 2012; Galanis, 2018; Osborne et al., 2003).

For this research, a first set of interviews and workshops were previously conducted on this topic, establishing a first round of data collection where questions were addressed to obtained significant insights over the same subject.

Participants were selected according to their relevance in the field within the dimensions of expertise in the Academic field (i.e., Faculty Deans, Design Courses Coordinators, Research Unit Coordinators and Executive Education Directors), Professional field (i.e. interlocutors in key-companies and organizations in the Creative Industry that were considered strategic and relevant for the study), excelling in 5 major characteristics: 1) More than 10 years of operation; 2) Global reach; 3) Interactive digital product main focus; 4) Acknowledge in its field of expertise; 5) Portuguese origin or affiliated. Also, students in the current postgraduate courses at IADE, thus encompassing all the stakeholders' sample for this study.

The data collection tool used was Google Forms, containing questions in a Likert type scale format with a range from 1 to 6, where: (1) Strongly Disagree; (6) Strongly Agree. We opted for a scale where the progression of choices totaled an even number, so that participants could clearly position themselves regarding their agreement or disagreement with the presented statement, with a value above 3 indicating agreement on the topic.

A total of 68 mandatory questions were included, organized in 3 main sections: 1) Interactive Digital Design field evolution; 2) Professional Profile; 3) Essential Skills. At the end of the questionnaire, an optional open-ended question was also addressed to collect additional insights not covered by the questions related to the discussed topics.

As a final note, all the questionnaires were sent to the participants directly and in some cases a follow up email or direct contact was sent or established.

In summary, these were the Delphi method stages applied in this study:

1. Question Definition and Pilot Questionnaire Design

The perception of this study dimensions, previously gathered from interviews and workshops, centered around 3 key aspects: 1) the evolution of the Interactive Digital Design field, 2) key aspects over the professional profile, and 3) the essential interactive digital design skills. Subsequently, a questionnaire model was devised to address the identified issues and assumptions, seeking consensus and validation from all stakeholders involved in this research with twofold intentions: first, to depict the current state of the field, and second, to offer insights into future prospects and recommendations for curricula design. A total of 68 mandatory questions were designed, facing the main outputs from the previous stated interviews and workshops on this subject.

2. Election of an Expert for the Pilot Questionnaire Validation

An expert from IADE faculty at *Universidade Europeia* in Portugal, recognized for one's research expertise in the field, was chosen and invited to validate and suggest improvements to the questionnaire. After a thorough analysis, some improvements in the questionnaire were identified. After receiving the improvement suggestions, adjustments were then made.

3. Final Questionnaire Design

Subsequently, the final questionnaire was then designed and organized into 6 main sections: 1) Introduction to the study; 2) Sociodemographic context; 3) Interactive Digital Design field evolution: a) between 2012 and 2020, b) during the Covid-19 pandemic, c) current and future perspectives; 4) Professional Profile; 5) Essential Skills; 6) Thank You note and open-ended question to any additional remark on the subject.

4. Select the Group of Experts and Send the Questionnaire

At this stage, representative stakeholders were chosen for the study. A total of 14 industry experts, 7 academic specialists, and 7 students were selected, resulting in a group of 28 participants. The link of the questionnaire was then sent via direct message and/or email, and a follow-up was conducted in some cases, also via email or by direct message.

5. Quantitative and Qualitative Analysis of Responses

An analytical framework was developed to process the data, involving the calculation of the mean for each response from the participants sample and the assessment of mean dispersion through standard deviation. Additionally, and recognizing the need to establish confidence intervals based on data distribution, we also determined the value of the mean minus the standard deviation in this statistical model. This approach ensured that if a consensus was found in the analysis, a minimum level of agreement across all questionnaire items was assured and that there was a high level of confidence in the results hence most of the interval dispersion was covered with this margin. Additionally, if any additional insight was offered by the participants through the open-ended question, a qualitative analysis will be performed.

6. Analysis of the Obtained Results

In this final phase, the collected data was analyzed, and a synthesis report was created based on the findings for expert consensus. The report focused on three major study areas: the evolution of Interactive Digital Design, professional profiles, and essential competencies for

the field, highlighting relevant topics for guiding future work. At this moment, it was highlighted the relevant topics where most significance divergences were found and signaled the overall considerations from the questionnaire.

Results

In this section will be presented the findings from the questionnaires. As specified, those were organized in *1) Sociodemographic context; 2) Interactive Digital Design field evolution; 3) Professional Profile;* and *4) Essential Skills*, as further detailed over the following topics:

1. Sociodemographic Context

The term "sociodemographic context" refers to the combination of social and demographic factors that define a specific group or population. It encompasses multifaceted attributes related to both social dynamics and demographic characteristics, facilitating our comprehension of shared traits among group members (Busayo, 2020). In this study context, the population sample comprised 28 participants that were consulted and responded to the questionnaire. All had professional or academic backgrounds closely aligned with the field of Interactive Digital Design, covering diverse dimensions bringing a multifaceted perspective of the phenomena. The demographic segmentation occurred across 3 defined categories: 1) creative industry experts; 2) academic specialists; and 3) students from post-graduate studies. The population sample comprehended 14 industry experts (50%); 7 academic specialists (25%), and 7 students (25%). Both industry experts and academic specialists all had over a decade of relevant expertise in the field of Interactive Digital Design, while the selected students no less than 5 years of experience in the field. Tables 1, 2 and 3 below, offer a more detailed perspective on the current role and academic degree from each participant of this study.

IE	Current Role	Academic Degree
01	Head of Design	Bachelor
02	Product Experience Design	Bachelor
03	Digital Product Design Lead	Bachelor
04	Advertiser	Bachelor
05	Head of User Experience	Master
06	Senior Product Designer	Bachelor
07	CEO	Bachelor
08	Product Designer	Bachelor
09	Head of Enterprise Design	Bachelor
10	Creative Director	Bachelor
11	UX Content Designer	Bachelor
12	Digital Public Services Specialist	Master
13	Senior Motion Designer	Master
14	Head of Product Operations	Professional Course

Table 1: Industry experts' (IE) profile

AS	Current Role	Academic Degree
01	Professor	PhD
02	Head of Strategy and Innovation	Master
03	Master Course Coordinator	PhD
04	Pos-graduate course coordinator	Master
05	Lead UX Researcher	Master
06	Faculty Dean	PhD
07	Product Design Lead	Master

Table 2: Academic specialists' (AS) profile

S	Current Role	Academic Degree
01	UX/UI Designer	Bachelor
02	Frontend Developer	Bachelor
03	Multimedia Designer	Bachelor
04	Designer	Master
05	Client Advisor	Bachelor
06	Student	Bachelor
07	Designer	Bachelor

Table 3: Students' (S) profile

2.   Interactive Digital Design Field Evolution

The evolution of Interactive Digital Design reflects technological advancements, user-centric approaches, and the ever-expanding possibilities of developing and design digital experiences.

Nonetheless, Interactive Digital Design field faced several challenges throughout its existence.

This set of questions propose to better understand the evolution and nuances occurring in this field, framing the biggest challenges and attributes relating to 3 temporal moments: a) pre-pandemic (between 2012 to 2020); b) during the Covid-19 pandemic; and c) current and future perspectives. The following 4, 5 and 6 tables exhibit the obtained results on this subject, aiming to extend a more comprehensive understanding of the field's resilience, adaptability, and transformative potential over this ten-year period, compassing some of the key-points on the field evolution over the years, and proposing some insights for present and future.

Topics	Mean	Standard Deviation	Agreement Level ($\bar{x}$-σ)	Mode
1. The domains of Engineering and Technology have seen substantial advancements catalyzed by the integration of Design. This evolution has manifested in two dimensions: greater complexity (of applications and platforms) and ease of use (for users).	4,89	1,05	3,85	5
2. Designers have been compelled to constantly update and learn. The rapid evolution and diversity of digital software have necessitated continuous skill updates, requiring a deeper technical understanding and a more holistic approach.	5,79	0,62	5,17	6
3. Increased possibilities for interaction. As technological solutions become more commonplace in everyday life (such as the significant evolution of smartphones during this period), the possibilities for interaction between users and systems have also grown.	5,57	0,68	4,89	6

	Mean	Standard Deviation	Agreement Level (x̄-σ)	Mode
4. The lack of consensus on best design and usability practices has become more evident. Designers needed a deeper understanding of human cognitive capabilities and awareness of usability principles and best practices.	5,43	0,73	4,70	6
5. The discipline of Interactive Digital Design has matured. It transitioned from being primarily concerned with appearance and visual impact (Web Design during the HTML and subsequent FLASH era) to integrating concepts such as Design Thinking, User Experience, User Interface Design, and User Psychology.	5,50	0,78	4,72	6
6. Digital services in the Public Sector have matured. Advances in digital maturity among public services and the bridging of gaps between organizations with varying maturity levels led to a greater awareness of the need to provide truly interactive digital services.	4,68	0,97	3,71	4

Table 4: Interactive Digital Design field evolution between 2012 and 2020

Topics	Mean	Standard Deviation	Agreement Level (x̄-σ)	Mode
7. The outbreak of the COVID-19 pandemic was responsible for introducing incremental innovation and acting as a catalyst for change in the field of interactive digital design.	5,00	0,96	4,04	6
8. There was a clear digital acceleration across various sectors, further propelling the ongoing digital transformation.	5,32	0,76	4,56	6
9. Designers demonstrated great adaptability, creating increasingly relevant, effective, and accessible digital experiences.	4,89	0,98	3,92	6
10. Work processes were significantly impacted by this new reality. In companies, collaboration and communication became a challenge that has been successfully overcome, dispelling many myths about work methods.	4,96	1,05	3,91	6

Table 5: Interactive Digital Design field evolution during Covid-19 pandemic

Topics	Mean	Standard Deviation	Agreement Level (x̄-σ)	Mode
11. The field of Interactive Digital Design is directly associated with disruption and innovation, creating a constant challenge in adopting new and emerging technological solutions.	5,11	1,01	4,10	6
12. The intersection of different digital technologies is also a widely recognized challenge in this area.	5,21	0,72	4,49	5
13. As a dynamic field that requires continuous research across various domains, designers constantly need to stay updated.	5,71	0,59	5,13	6
14. With the emergence of generative AI, designers face the additional challenge of questioning the processes and methodologies to use.	5,68	0,66	5,02	6
15. Designers now have a duty to leverage these new Artificial Intelligence tools to optimize and automate many of their daily tasks, posing additional ethical challenges in this new reality.	5,57	0,56	5,01	6
16. A paradigm shift: moving from user-centered design to a more globally focused design centered on humanity and planet, promoting greater responsibility in creating experiences that not only address individual needs but also anticipate their broader impact on society without causing direct harm to the planet.	5,43	0,82	4,61	6

Topics	Mean	Standard Deviation	Agreement Level (x̄-σ)	Mode
17. Development of Digital Services that incorporate emerging technologies such as Artificial Intelligence and the Metaverse.	4,75	0,91	3,84	5
18. There is a need for reflection on the use and incorporation of emerging technologies and how we can predict and mitigate inherent risks related to security and information accuracy.	5,61	0,56	5,05	6
19. Extensive use of Design Systems in this field, allowing for greater consistency in the user experience and increasing efficiency in design and digital interface development teams.	5,07	1,07	4,00	6
20. Designing for a new generation of digital natives, more civically and environmentally aware and accustomed to immediacy.	5,18	0,97	4,21	6

Table 6: Interactive Digital Design field evolution, present and future perspectives

3. Professional Profile

Several challenges within the Interactive Digital Design field stem from the need to enhance our understanding of the professional profile and, consequently, the sector's expectations. This topic presents a broad overview of previously identified expectations, as follows.

Topics	Mean	Standard Deviation	Agreement Level (x̄-σ)	Mode
21. Interactive digital design is, above all, collaborative and empathetic. Understanding the user and collaborating with different people who have diverse experiences is essential for the success of a digital product.	5,71	0,59	5,13	6
22. A full-stack professional is expected, proficient in Technical Skills, Application of Knowledge, and Strategic Thinking. The emphasis may vary according to the specific job description.	4,68	1,23	3,45	5
23. Skills related to autonomy and leadership, as well as social skills for teamwork and cooperation, are highly sought after.	5,25	0,95	4,30	6
24. Having diverse visual references and a broad visual culture is relevant.	5,32	0,89	4,43	6
25. Career progression is linked to the ability to add value and possess multidisciplinary skills, providing a comprehensive perspective.	5,43	0,78	4,65	6
26. For an entry-level professional profile (such as a collaborator, UX/UI Designer, or Web Designer), competencies lie in technical skills, such as user research, usability principles, and UI design.	5,11	0,98	4,13	6
27. For a professional profile at levels C and D (Creative Director, Head/Design Leader, CCO, or CTO), greater focus should be given to leadership and operational strategy-related skills.	5,39	0,67	4,72	6

Table 7: Interactive Digital Design Professional Profile insights

4. Essential Skills

There is an identified skill gap between the Creative Industry needs, the Academic offering and Students' expectations. With this in mind a selection of skills based on a previous round of data collection was acknowledge attending the specific profile of an entry level professional such as an UX/UI Designer or Web Designer (more associated to the mastery of technical skills and operational knowledge), a C or D Level professional such as Creative

Director, Chief / Head of Design, CCO or CTO (with skills more related to mastering management, leadership and business model skills), as presented in Table 8 and Table 9. Furthermore, as an exploratory evaluation, was intended also in this topic to grasp the possibility of perceiving an agreement to specific curricular units that would make sense for new curricular design on the Interactive Digital Design field, based on the previous inputs received from the Creative Industry, Academia and Students, as observable on Table 10 below.

Topics	Mean	Standard Deviation	Agreement Level ($\bar{x}$-σ)	Mode
28.1 Methods in Interaction Design The ability to master the User-Centered Design (UCD) approach and apply the different methods used in Interaction Design in context.	5,43	0,78	4,65	6
28.2 User Research The ability to conduct research processes to collect data about users and/or the usage of a digital product or service.	5,36	0,89	4,46	6
28.3 User Interface (UI) Design The ability to design graphical interfaces that are intuitive, suitable, and visually appealing, while applying the necessary methods and techniques in context.	5,46	0,87	4,60	6
28.4 User Experience (UX) Design The ability to master methods and techniques for designing a better user experience in interactive digital products.	5,61	0,67	4,93	6
28.5 Project Management (Lean/Agile) The ability to manage digital projects using agile and/or lean methodologies.	4,25	1,45	2,80	6
28.6 Interaction Data Analysis The ability to interpret collected interaction data and outline recommendations.	4,93	1,25	3,68	6
28.7 Interactive Tools (Figma) Technical proficiency in mastering the Figma tool.	4,93	1,28	3,65	6
28.8 Productivity Enhancement Tools The ability to master tools that increase productivity in tasks, such as Artificial Intelligence (AI) tools.	4,82	0,93	3,89	5
28.9 Programming (HTML, CSS, Js) The ability to master essential programming techniques and languages for the web.	3,57	1,29	2,28	4
28.10 Wireframing The ability to visually communicate the initial layout of a digital interface.	5,43	0,94	4,49	6
28.11 Design Systems The ability to operate within a digital design ecosystem, addressing various dimensions (organizational, technical, and design).	5,29	0,99	4,29	6
28.12 Prototyping The ability to create high and low-fidelity prototypes suitable for context and identified needs.	5,54	0,63	4,91	6
28.13 Usability The ability to master and apply usability concepts, rules, and techniques.	5,68	0,54	5,14	6

Table 8: Interactive Digital Design essential skills for entry-level professionals

Topics	Mean	Standard Deviation	Agreement Level (x̄-σ)	Mode
29.1 Team Management The ability to manage teams by facilitating communication, task distribution, problem-solving, and conflict resolution.	5,71	0,52	5,19	6
29.2 Digital Project Management The ability to manage digital projects, mastering project management methods, identifying and evaluating risks, managing time, resources, and prioritizing team tasks.	5,46	0,87	4,60	6
29.3 Leadership The ability to lead, demonstrating communication skills, empathy, collaboration, and strategic vision across the organization or agency.	5,79	0,49	5,30	6
29.4 Creative Team Leadership The ability to lead, demonstrating communication skills, empathy, collaboration, and strategic vision, with a focus on methods applied to managing creative teams.	5,75	0,57	5,18	6
29.5 Strategic Leadership The ability to lead, demonstrating communication skills, empathy, collaboration, and strategic vision, with focus on executing strategic objectives.	5,68	0,60	5,08	6
29.6 Design Strategy The ability to outline a guiding plan for the effective use of digital technologies, analyzing context, ecosystems, needs, and goals.	5,61	0,56	5,05	6
29.7 Business Strategy The ability to develop a long-term vision to achieve desired business objectives, aligning decision-making, task definition, resource allocation.	5,54	0,68	4,86	6
29.8 Decision-Making The ability to make strategic and creative choices, mastering methods for collecting, analyzing, and communicating information, considering task prioritization and resource allocation.	5,71	0,52	5,19	6
29.9 Innovation The ability to analyze and select idea proposals, creating environments conducive to creativity, fostering collaboration, learning from mistakes.	5,50	0,63	4,87	6
29.10 Ethics in Design The ability to reflect on and act upon ethical dilemmas that may involve complex decisions with significant impact, promoting positive values for current and future society.	5,46	0,91	4,56	6
29.11 Design Thinking The ability to apply design thinking methodology to problem-solving, bringing together diverse perspectives to address complex and multidisciplinary issues.	5,54	0,68	4,86	6
29.12 Service Design The ability to have a broad and holistic knowledge to act in the development of the overall customer experience and relationship.	5,29	0,84	4,45	6
29.13 Communication The ability to convey ideas and concepts clearly and objectively - both orally, in writing, and visually - while positioning oneself positively in response to feedback.	5,79	0,41	5,38	6
29.14 Presentation The ability to use techniques for effective presentations, such as storytelling, public speaking, strategic pauses, eye contact, vocal and postural positioning, empathy, persuasion, among others.	5,71	0,52	5,19	6

	Mean	Standard Deviation	Agreement Level (x̄-σ)	Mode
29.15 Emerging Technologies The ability to stay updated with the latest technological solutions and innovations to present a competitive edge, increase productivity or profit, or create innovative or differentiated products or services.	5,29	0,84	4,45	6

Table 9: Interactive Digital Design essential skills for C and D level professionals

Topics	Mean	Standard Deviation	Agreement Level (x̄-σ)	Mode
30.1 Macro Business Management	4,86	0,91	3,94	4
30.2 Business Processes	4,57	0,90	3,67	4
30.3 Design Ethics	5,25	1,02	4,23	6
30.4 Design Systems	5,43	0,73	4,70	6
30.5 Artificial Intelligence	5,39	0,72	4,67	6
30.6 Virtual Reality	4,43	1,32	3,11	6
30.7 Augmented Reality	4,61	1,21	3,40	6
30.8 Accessibility	5,68	0,66	5,02	6
30.9 Sustainability	5,43	0,82	4,61	6
30.10 Employability	4,82	0,93	3,89	5
30.11 Strategic Partnerships	4,79	0,98	3,81	5
30.12 Creative Services	5,11	1,05	4,06	6
30.13 Visual Culture	5,29	0,80	4,49	6

Table 10: Interactive Digital Design curricular units as possible asset

Conclusion

Briefly, the sample population Academic degree was found to have predominantly a bachelor's degree (16 of the participants, representing 57,1%), followed by master's degree (8 of the participants, representing 28,6%), doctorate degree (3 of the participants, representing 10,7%), and finally, professional course (1 of the participants, representing 3,6%). As expected, the background from the participants is very diverse. It was intended that different perspectives and point-of-views could be represented and bring diversity to this study.

Of the 68 questions presented, only 2 questions were below the agreement level rate (for this study, below 3, attending the 1 to 6 Likert type scale applied). Consequentially, it was found a 97% agreement rate among the participants regarding the total of 68 questions, with most answers trending to allocate towards the "strongly agree". The mode found was 6 (with 84%), followed by 5 (with 10%) and 4 (with 6%). The 1, 2 and 3 scale elements did not represent statistical significance in the mode analysis.

For this study, it was important to achieve a high level of consensus and thus, low dispersion. To a more cautious perspective on the collected data, was subtracted the standard deviation from the mean leading to create a confidence interval based on data distribution. This practice is common in statistical analyses to understand variability and generate reliable estimates within a specific sample (Lane, 2022). This calculus (x̄-σ) was proceeded for all questions individually, taking in consideration the exact standard deviation of each, offering thus a solid indicator of confidence on the attained result.

Overall, results shown a strong consensus among the respondents with an average standard deviation below 1 point. More precisely 0.83, varying from 0.41 to 1.45 point. Commonly recognized, a Low Standard Deviation with approximately 68% of the data falls within 1 standard deviation point from the mean (close to 1), with most of the data points clustered

around the average. A Moderate Standard Deviation is set where about 95% of the data lies within 2 standard deviations points from the mean (between 2 and 3), representing a wider range and including most of the data points. A High Standard Deviation (above 3) is where nearly 99.7% of the data is within 3 standard deviation points from the mean, encompassing a wider range and almost all data points (Khan, 2011).

From a specific point of view, topics 28.5 and 28.9, related to Interactive Digital Design essential skills for entry-level professionals, were identified as below agreement level: Topic 28.5 "Project Management (Lean/Agile), as the ability to manage digital projects using agile and/or lean methodologies"; and topic 28.9 "Programming (HTML, CSS, Js), as the ability to master essential programming techniques and languages for the web".

Also, the following topics found general agreement, however not with a high agreement level:
- From the section Interactive Digital Design field evolution between 2012 and 2020, topics 1 and 6: Topic 1 "The domains of Engineering and Technology have seen substantial advancements catalyzed by the integration of Design. This evolution has manifested in two dimensions: greater complexity (of applications and platforms) and ease of use (for users)"; and topic 6 "Digital services in the Public Sector have matured. Advances in digital maturity among public services and the bridging of gaps between organizations with varying maturity levels led to a greater awareness of the need to provide truly interactive digital services".

- From the section Interactive Digital Design field evolution during Covid-19 pandemic, topics 9 and 10: Topic 9 "Designers demonstrated great adaptability, creating increasingly relevant, effective, and accessible digital experiences"; and topic 10 "Work processes were significantly impacted by this new reality. In companies, collaboration and communication became a challenge that has been successfully overcome, dispelling many myths about work methods".

- From the section Interactive Digital Design field evolution, present and future perspectives, topic 17: "Development of Digital Services that incorporate emerging technologies such as Artificial Intelligence and the Metaverse".

- from the section Interactive Digital Design Professional Profile insights, topic 22: "A full-stack professional is expected, proficient in Technical Skills, Application of Knowledge, and Strategic Thinking. The emphasis may vary according to the specific job description".

- From the section Interactive Digital Design essential skills for entry-level professionals, topics 28.6, 28.7 and 28.8: Topic 28.6 "Interaction Data Analysis, the ability to interpret collected interaction data and outline recommendations"; Topic 28.7 "Interactive Tools (Figma), technical proficiency in mastering the Figma tool"; Topic 28.8: "Productivity Enhancement Tools, the ability to master tools that increase productivity in tasks, such as Artificial Intelligence (AI) tools".

- From the section Interactive Digital Design curricular units as possible asset, topics 30.1; 30.2; 30.6; 30.7; 30.10 and 30.11: Topic 30.1 "Macro Business Management"; Topic 30.2 "Business Processes"; Topic 30.6 "Virtual Reality"; Topic 30.7

"Augmented Reality"; Topic 30.10 "Employability"; and Topic 30.11 "Strategic Partnerships".

In conclusion, this study demonstrated a high level of consensus and strong agreement from stakeholders, creative industry specialists, academic experts and students, for all the presented topics, exception made to the essential skills for entry-level professionals, "Project Management (Lean/Agile)" and "Programming (HTML, CSS, Js)", were there was a consensus on a low agreement level on these skills.

It is acknowledged that additional efforts are required to enhance our understanding of the Interactive Digital Design field, where this study has its due limitations.

Further research, incorporating diverse perspectives - including key stakeholders from other Executive Education programs - presents an opportunity for more comprehensive insights. Nevertheless, these obtain inputs provide rich insights from specialists and give way to a future framework design for strategic guideline on curricula design in Executive Education, where such endeavors can apprise strategic outlines and aid the development of innovative curricula for Higher Education.

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