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Digital Competence in Spanish University Education and Its Use by Students

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Abstract: Technologies have massively burst into all fields, including Higher Education. The current students have grown up surrounded by technologies, which is reflected in their behavior. For this reason, universities have adapted by integrating digital competence into their training offer, improving learning processes and adjusting to the university profile. The objective of this work is to ascertain how digital skills are used by Spanish higher education (bachelor's and master's degree) students, thus verifying whether so-called digital competence is being actively used in higher education. A survey was applied to 324 individuals, highlighting among its results that the university panorama is in a situation where digital tools are very useful for its improvement. These data were collected before the global pandemic, after which the use of online tools intensified. However, the students are still not aware of all of them, or they do not use them.

Keywords: education; communication channels; digital; students

1. Introduction

The world we live in is going through an era of digital revolution, and maintaining these changes is important for all economies. The Internet, the trend towards globalisation, ways of working and interacting are posing challenges [1]. The rapid growth of information and communication technologies (ICTs) and technology-enhanced work environments have enriched and improved professional activities, as well as people's private lives and the way they work, learn and communicate [2]. In turn, these rapid changes have led to increasing information overload and challenging situations that require a growing set of digital skills [3]. The development of a new literacy is a crucial determinant of effective functioning in the digital age, allowing people to experience a more fulfilling and productive personal and professional life [4]. New literacy in today's digital society has been the focus of significant scientific–educational attention over the past decade [5–7]. The 21st century has witnessed the importance of key competences and, as a result, an increase in research on the skills linked to technological, informational, visual and communicative literacy [8]. All these skills make up the so-called digital competence, one of the eight basic competencies that, according to the European Parliament, every citizen should acquire for lifelong learning [9].

The advance of technologies has been useful in many fields, including higher education. This happened especially in university education, one of the first types of education in which new technologies were implemented. Each university has created its own platforms through which students can access their notes (avoiding printing), explanatory videos, forums to clarify any doubts and even through which they can upload solved exercises or take some exams online. Through an electronic device (either a computer, tablet or even a smartphone) and an internet connection,

the student has access to virtually all course information. Technologies facilitate access to information in their academic training; the question is whether students really benefit from them. As a result, management processes (university bureaucratic procedures) have been modernised, and training modalities have emerged [10,11].

One of the groups that have most benefited has been students, who can access significantly more content and information, platforms, or have higher connectivity with colleagues and lecturers, among others. Previous studies already indicated that the profile of the university student has changed, being a highly technological individual, defining himself/herself by higher visual intelligence and preference for immediacy, hypertextuality, flexibility, network socialisation capacity and updating capacity in terms of technologies and products [12]. This has forced universities to adapt to this profile, with tools and methodologies, including new teaching and learning processes [13]. Other studies over the past decade show that students are starting to use these tools, but they are not yet fully integrated into the technologies available to education. They use the computer, Office packages and Internet search engines, as well as social media [14].

Based on both premises (that students make active use of technologies as part of university learning and that students have technologies at their disposal to enhance their university learning, but that they do not make extensive use of them), this study proposes to ascertain what the real situation is in the 2020s. The main objective of this research is to understand the use of digital skills by higher education students (bachelor's and master's degree), and to be able to demonstrate whether we are really facing students that make active use of new technologies also at the university education level, who make use of all the tools of the so-called digital competence, or whether the use of technologies is more typical of their personal lives. For this, empirical research was conducted via questionnaires (n. 324) to higher education students. The university chosen for this was the University of Vigo (Spain) which has a high offer of digital tools through its remote campus and moodle online platform. The following are established as secondary objectives:

- to determine how digital tools are used as part of the university learning process;
- to determine how consumer technologies are used as part of the university learning process;
- to ascertain how learning and visualisation technologies are used by university students;
- to find out which emerging technologies are most commonly used by university students;
- to establish different homogeneous profiles or groups in terms of the use of digital skills by university students.

2. Theoretical Review

According to the European Commission, [15] digital competence is defined as "the confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet". More specifically, competencies were defined as a combination of knowledge, skills and attitudes, and digital competence as "the confidence and critical use of Information Society Technology (IST) for work, leisure and communication" [16]. Specifically, scholars argue on three dimensions: cognitive (ability to think critically); socio–emotional (being able to use the Internet responsibly to communicate) and technical (possessing technical and operational skills) [17]. These cognitive challenges involve finding and collecting relevant information, developing an understanding of multiple texts, and integrating textual, graphic, and multimedia information to build representations of interconnected sources [18].

Individuals for whom these key competencies or advances in ICT have been virtually part of their lives are collectively called the "Net Generation" [19]. This includes those individuals born from 1982 onwards, who grew up in a technological environment and acquired characteristics that differ from those of previous generations [20–22]. Another name given to this group is "digital natives" [23].

m refer to those who grew up with technologies as part of their lives, while digital immigrants are those who adapted and learnt how to use technologies (immigrants in a digital world) [24]. However, this term, still used by some authors, has been discredited by others. Kirschner and Bruycker [25] argues that no native is an information expert simply because he has never known another world than the digital. Smith [26], Selwyn [27] and, Kirschner and Bruyckere [25] support this argument, opening a debate on the conception of students as digital natives by the mere fact of being born in a technological world, since they do not know an alternative reality.

In the younger generations, technology has made a big impact on their lives, although they are unaware of that, and they no longer think or process information in the same way as previous generations. Current university students are part of the first group, and the university system has to be adapted to them, as well as many of the lecturers. Today, students meet the expectations of being able to navigate a wide spectrum of digital challenges [28].

Other authors speak of New Millennium Learners (NML), referring to Millennials as "the first generation to grow up surrounded by digital media, and most of their activities dealing with peer-to-peer communication and knowledge management, in the broadest sense, are mediated by these technologies". Thus, this group has grown accustomed to [23]:

- accessing information mainly via non-printed, but rather digital sources;
- prioritising moving images and music over text;
- feeling comfortable performing multiple tasks simultaneously;
- gaining knowledge by processing discontinuous and nonlinear information;
- physical isolation being reinforced despite having digital services for social exchange;
- digital technologies occupying an increasing part of their rest time;
- expecting immediate responses and reaction speed;
- valuing multimedia content more than mere text;
- generating new languages and "chat" being increasingly important given the physical limitations imposed by technologies.

It is, therefore, an increasingly digitised world, where young people are entirely captivated by screens and applications, and teachers have no choice but to use pedagogy with digital assistance [29]. These changes have increased the importance of understanding academic perceptions and the professional use of these technologies in higher education [30].

Higher education institutions have a key role to play in preparing students to meet the demands of an increasingly technological world [31]. Higher education institutions (HEIs) have long been identified as key actors for innovation at national and regional development levels. In Europe, this role has faced considerable challenges in recent decades as a result of different policy frameworks (e.g., the Bologna Process) and societal demands (e.g., digitalisation) [32]. Against this background, educational systems have been called upon to integrate digitally-rich learning platforms and tools for teaching and learning, in recognition of the potential benefits of emerging technologies and digital learning environments that have become an integral part of the daily lives of young people [33]. There are many models that explain influential factors and mechanisms of the use of technology in classrooms [34]. Higher education institutions have been affected by the technological advancements brought about by the Industrial Revolution 4.0. This means that they must face a digital transformation in all dimensions. The application of digital transformation approaches to the domain of higher education is an emerging field that has aroused interest in the recent past, as they allow us to describe the complex relationships between actors in a technologically supported educational domain [35,36]. The digital teaching competence is structured in several areas:

1. Information and information literacy;
2. Communication and collaboration;
3. Creation of digital content;

4. Security;
5. Problem-solving, established within the common framework of digital teaching competence, developed in 2017 by the National Institute of Educational Technology and Teacher Training [37].

Other authors argue about the competences per area that teaching staff should have, among them:

1. Professional commitment: capacity to use digital technologies to improve the teaching process and interact professionally with colleagues, students, parents and different agents of the educational community;
2. Digital resources: identifying quality educational resources;
3. Digital pedagogy: knowing how to design, plan and implement the use of digital technologies in all the phases of the teaching process, promoting student-centred approaches and methodologies;
4. Evaluation and feedback: digital technologies can improve the existing evaluation strategies and pave the way for new and better evaluation methods;
5. Empowering the students; and 6. Facilitating competence: the capacity to facilitate digital competence with the students [38].

On the other hand, the use of ICTs supports innovative changes in education and, more specifically, Web tools allow education to adapt to the different scenarios and needs of students [39]. Additionally, learning using ICTs can occur regardless of space and time, interaction can be synchronous and asynchronous, and even learning can be understood as a continuum that extends throughout life [40]. For traditional education activities, it is common today to include the use of mobile technologies, encouraging the development of digital literacy and the combination of classic methods and the use of ICT, generating different learning spaces. This is known as blended learning, a methodological approach that encourages the use of ICT, tools with which an electronic platform can be integrated, and a learning environment created by combining face-to-face classes with virtual environments [37]. Thus, in the scientific literature, several studies highlight the advantages of digital competences and claim that they are a key factor in academic success. Still, we wonder if educational institutions are doing enough to develop students' digital literacy level, as well as whether students make heavy use of these competencies. A changing socio–economic environment needs people prepared to meet today's challenges and—why not—innovate in the areas in which they work. Digital competences have been named 21st-century skills, and are abilities needed not only in the educational environment but also in the workplace. Therefore, these skills are considered key to the effective functioning of contemporary society and have been integrated into the curricula of a large number of countries [41].

3. Methodology

To obtain data, the primary data collection tool chosen was a survey. According to Malhotra [42], a survey "includes a structured questionnaire given to respondents that is designed to obtain specific information". In the case of this work, the survey and its structure have been designed in such a way as to achieve the above-mentioned subgoals. In total, there were 15 proposed questions, divided into 3 blocks:

Block I (questions 1 to 6): use of digital tools as part of university learning.

- Question 1. Evaluate the use of the following applications (Likert scale from 1 to 5)

  ○ The online platform of the university itself;
  ○ The use of text processors;
  ○ Spreadsheets and presentations at an advanced user level;
  ○ Use of 2.0 tools to contact colleagues and lecturers (social media, blogs, audio through messaging apps, Skype).

- Question 2. Which tools do you use to contact your peers? (Open-ended question)
- Question 3. Which tools do you use to contact your lecturers? (Open-ended question)
- Question 4. Assess from 1 to 5 (Likert scale)

  ○ Use of generalist and specific search engines;
  ○ Use of multimedia language;
  ○ Use of aggregators and bookmarks;
  ○ Institutional communication tools and collaborative networking.

- Question 5. Which collaborative tools do you use? (Open-ended question)
- Question 6. Which consumer technologies do you use as part of your university training (multiple choice)?: 3D video, electronic publications, mobile applications, and telepresence.

Block II (questions 7 to 9): use of consumer, learning and visualisation technologies as part of university learning (based on the study by Tejada and Pozos [43]).

- Question 7. Which learning and visualisation technologies do you use as part of your university training (multiple choice)?: Learning and visualisation technologies: mobile learning, online learning, open content, open licenses, virtual labs, massive online open courses, augmented reality, and information visualisation.
- Question 8. Which emerging technologies do you use as part of your university training (multiple choice)?: BYOD (bring your own device), flipped classrooms, gamification, Internet of Things, virtual clouds, real-time translation, semantic applications, collaborative environments, open collaboration, social media, mobile broadband, and virtual assistants.
- Question 9. If you bring your own device to class, which one do you bring (multiple choice): Tablet, smartphone, laptop, other.

Block III (questions 10 to 15): sociodemographic profile (gender, age, course, degree, residence).

Prior to data collection, a pre-test of the questionnaire was carried out among researchers at the University of Vigo (Spain), thus clarifying certain questions and improving its design. A total of 10 researchers from the marketing area carried out this pre-test. Most of the questionnaire (block I and II) was based on Tejada and Pozos [43] and Carrera and Coiduras' studies [44], in which the questions have already been tested and validated. The option of the university's own platform and questions 2 and 3 have been added, in order to find out about the contact tools used by current students. For this purpose, we based it on Bond et al.'s study [45], which analyses the use of tools by high education students in Germany.

The population under study comprises individuals who are currently pursuing a bachelor's or master's degree. The sampling technique chosen was the non-probabilistic snowball, i.e., the selection of an initial group of respondents, who were asked to identify others belonging to the subject population, leading to the well-known snowball effect [42]. A link to the survey was generated and distributed online to the initial group of students, and these disseminated the link to other students. Employing the technique mentioned above, a total of 324 questionnaires were collected in the period from February to May 2020. As of 14th March 2020, the instructions sent with the questionnaire asked for answers to refer to the period before the COVID-19 situation. After the pandemic, university education went online, and we wanted to obtain a homogeneous sample, in line with the surveys already collected (prior to COVID-19). The questions proposed are multiple-choice questions and Likert scales of 1 to 5 points.

Descriptive analysis, correlation analysis, ANOVA and cluster analysis (homogeneous groups of the sample) were used to analyse the data obtained. Firstly, a descriptive analysis was carried out to find out the reality of this group in percentages, as well as the average values in questions with Likert-type scales. Correlation analysis allows us to determine if two variables are related, in this case, the access and the use of the information. Finally, cluster analysis was used in order to confirm if

there were individuals that could group together by the fact of their similar behaviour, has this been analysed the number of different groups within the sample studied.

4. Results

As we can see in Table 1, it is important to mention that the sample analysed corresponds mainly to students who are currently studying in Ourense (Spain), representing 72.9% of the sample. Most of them are between 18 and 22 years old (71.9%). Only 4.9% of the sample is over 40 years of age and could be considered digital immigrants. The courses they are taking are Tourism (51.9%), Business Management (24.7%), and Law (7.4%), as well as the joint honours degrees of Business Management–Law, Business Management–Computer Sciences and Geography and History–Tourism. The gender variable is fairly balanced, although women predominate (59.3%). Responses were obtained from students from all course years, from the first (37.0%) to the fourth (27.2%), which comprised the most representative sample. The fifth-year is only offered in joint honours degrees, accounting for 3.7% of cases. A total of 97.6% of the sample resides in Galicia.

Table 1. Sample profile.

	N = 324	**%**
Gender		
Male	132	40.7%
Female	192	59.3%
Age		
18–22 years	232	71.6%
23–30 years	64	19.7%
31–40 years	12	3.7%
Over 40 years	16	4.9%
Course		
Business Management	80	24.7%
Business Management-Law	24	7.4%
Law	24	7.4%
Business Management-Computer Science	4	1.2%
Geography and History-Tourism	24	7.4%
Tourism	168	51.9%
Degree		
Bachelor's	312	96.3%
Master's	12	3.7%
Course year		
1	120	37.0%
2	60	18.5%
3	44	13.6%
4	88	27.2%
5	12	3.7%
Residence		
A Coruña	28	8.6%
Pontevedra	40	12.3%
Ourense	236	72.9%
Lugo	12	3.7%
León	4	1.2%
Other countries	4	1.2%

As for the use of digital tools, the TEMA platform (virtual platform of the University of Vigo) is the one that has the highest interaction with students, with an average of 4.2 out of 5. The others have an average usage, with a rating close to three (Table 2). A correlation analysis (Pearson's correlation) was performed between the digital tools and the age and course variables, showing no significant

correlation, except between the spreadsheet and course year variables, which shows a somewhat higher level than the others (significance level of 0.322).

Table 2. Use of digital tools.

	N	Min	Max	Average	SD
University of Vigo Paltform	324	1	5	4.20	1.013
Microsoft Word	324	1	5	3.23	1.242
Microsoft Power Point	324	1	5	3.22	1.239
Microsoft Excel	324	1	5	3.01	1.264
Additional tools	324	1	5	3.91	1.300
Professional tools	324	1	5	3.02	1.442
N valid	324				

The use of 2.0 tools is higher between peers (average of 3.9) than with lecturers (3.0), and each student uses on average 1.8 tools. Specifically, 22.2% make use of a single tool to communicate with networked colleagues, mainly WhatsApp, followed by Social Media, Gmail, Discord, and phone calls. With regard to contact with lecturers, the predominant medium (90.0%) is email, with 41.0% of this group stating that Gmail is the medium they use. Secondary media are the platform of the university, and for a small minority, WhatsApp and Social Media (less than 1%) (Table 3).

Table 3. Means of contact with other students and teachers.

Among Students	
WhatsApp	96%
Social Media	84%
Gmail	65%
Discord	8%
Phone Calls	5%
With the Teachers	
Email	90%
University plaftorm	65%
WhatsApp	0.9%
Social Media	0.7%

An ANOVA analysis was also performed using age and course year as factor variables. In the case of age, significant differences are shown between the averages of the age factor for each of the digital tools (value <0.05). In general, the older the age, the more intensive the use. In the case of the course year, the differences can be seen in the use of spreadsheets and tools to communicate with the lecturers. As the courses progress, the use of the spreadsheet is increased at the advanced user level, with last-year students (fourth year) making the most active use of this tool (Table 4 and Figure 1).

Table 4. ANOVA analysis.

	Sign. (Age)	Sign. (Course Year)
University of Vigo Paltform	0.001	0.010
Microsoft Word	0.000	0.383
Microsoft Power Point	0.000	0.310
Microsoft Excel	0.000	0.000
Additional tools	0.000	0.068
Professional tools	0.000	0.000
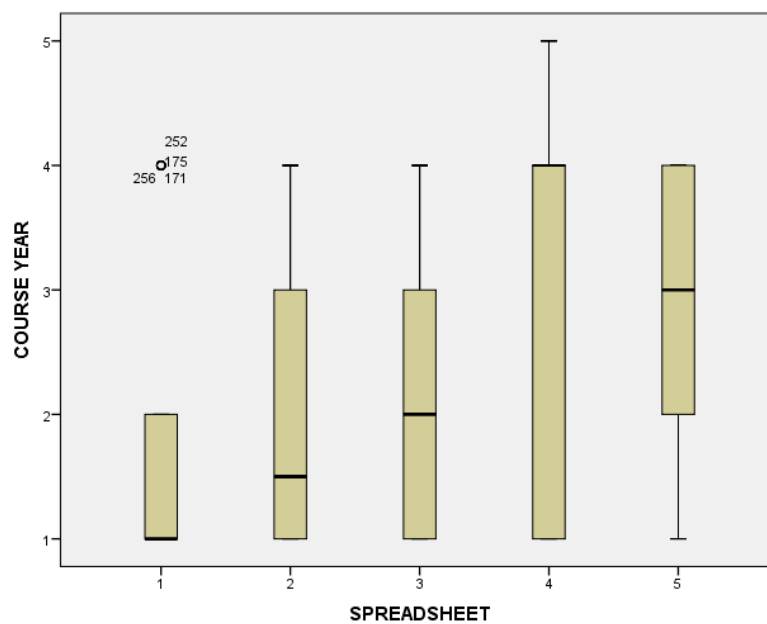
Figure 1. Box diagram. Use of the spreadsheet at a professional level depending on the course year.

The last part of this block corresponds to the access to and use of information. This construct (use of generalist and specific search engines, multimedia language, bookmarks, efficient location of information, institutional communication, collaborative networking and multimedia information presentations) shows a high level of reliability (Cronbach alpha of 0.892). The average value of the items that make it up is not high, 3.12 (on a scale of 1 to 5). The use of generalist search engines (4.48) stands out above the rest, followed by collaborative networking (3.32) (Table 5).

Table 5. Access to and use of information.

	N	Min	Max	Media	SD
Global search engine (e.g.,Google)	324	2	5	4.48	0.834
Specialised search engine	324	1	5	2.99	1.321
Multimedia language	324	1	5	2.88	1.203
Aggregators	324	1	5	2.40	1.174
Efficient locations	324	1	5	2.91	1.241
Communication	324	1	5	2.72	1.300
Collaborative work	324	1	5	3.32	1.334
Information	324	1	5	3.07	1.315
N valid (according to list)	324				

An ANOVA analysis was conducted again, using age and course year as factor variables. In the case of age, there are again significant differences in all the tools for accessing and using information. In general, the older age groups have a more active use of these tools. As for the course year factor, differences are observed in the use of global search engines, aggregators and efficient location of information (Table 6).

After applying Pearson's correlation statistic, high positive correlations are observed between those using multimedia information presentations and efficient location of information, collaborative networking and the use of institutional communication. Moreover, those who use aggregators and bookmarks make use of multimedia language (Table 7).

Table 6. ANOVA analysis.

	Sign. (Age)	Sign. (Course Year)
Global search engine (e.g., Google)	0.000	0.000
Specialised search engine	0.000	0.022
Multimedia language	0.000	0.093
Aggregators	0.000	0.000
Efficient locations	0.000	0.000
Communication	0.000	0.054
Collaborative work	0.000	0.131
Information	0.000	0.646

Table 7. Correlation between information use and access tools.

	E	C	G	ES	M	A	L	CI	TC	IM
E	1	0.076	0.104	−0.158	−0.317	−0.141	−0.048	0.073	−0.089	−0.126
C		1	0.153	0.166	0.002	−0.242	−0.113	−0.074	−0.126	0.011
G			1	0.387	0.257	0.134	0.339	0.286	0.339	0.238
ES				1	0.482	0.410	0.505	0.582	0.473	0.549
M					1	0.631	0.449	0.492	0.419	0.468
A						1	0.542	0.674	0.496	0.518
L							1	0.791	0.630	0.740
CI								1	0.560	0.693
TC									1	0.763
IM										1

E: age; C: course year; G: generalist search engine; ES: specialised search engine; M: multimedia language; A: aggregators and bookmarks; L: efficient location of information; CI: institutional communication; TC: collaborative work; IM: multimedia information presentations.

As can be seen in Table 8, in the case of collaborative technologies, Google Drive is the one most used (63.1% of the sample). It is followed by Skype, Prezi, Git Hub and Office Online (less than 1%). The second block discusses the use of consumer, learning and visualisation technologies as part of university learning, as well as emerging technologies. In most cases, students use only a single item of consumer technology, with 26.1% using two and only 7.9% using three. The most widely used are mobile applications (60.5%), followed by electronic publications (48.1%).

Table 8. Use of collaborative technologies and technological devices.

Collaborative Technologies	%
Google Drive	63.1
Skype	0.8
Prezi	0.6
Git Hub	0.4
Office Online	0.4
Other	34.7
Device Use	**%**
1 device	66.0
2 devices	26.1
3 devices	7.9

When it comes to learning and visualisation technologies, students make use of 1.8 tools. There are three that stand out from the rest: online learning, open license use, and open content, with more than 50% use each. Mobile learning has also gained an important position, reaching almost half of the analysed sample.

Another aspect of interest in this study is to determine which of the so-called emerging technologies are most used by university students. Current students make intensive use of social media as learning and interaction tools in their academic workload (64.2%, 208 students), as much as the use of virtual clouds (64.8%, 210 students) (Figure 2).
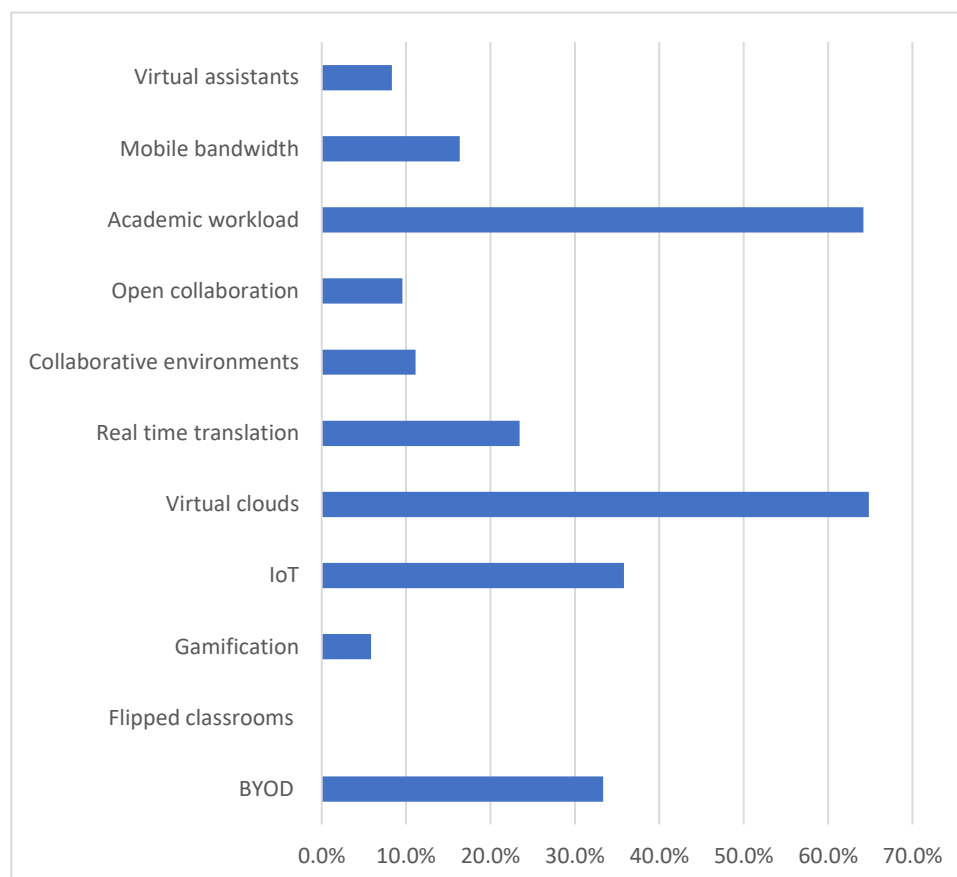
Figure 2. Use of emerging technologies.

The IoT (Internet of Things) is also starting to have a remarkable weight, as well as taking your own device to classes. In the latter case, the device of choice is the laptop (70% of the cases of those who bring devices to the classroom), with the smartphone gaining increasing importance (20%).

The third most used device is the table. Furthermore, students who take their laptop to the classroom also often use their smartphone for educational purposes. In some cases, tablets and smartphones are used instead of laptops. The smartphone is usually complemented with another device. As a final part of this study, possible groups with homogeneous behaviours within the university student population are analysed. After performing a cluster analysis (k-means cluster), three distinct groups can be established:

- Generation Z: the younger age group, with an average age of 21 years (second and third year). They are the ones that make greater use of 2.0 tools to contact lecturers and remain in an intermediate position in the use of digital tools.
- Millennials: the average age of this group is 34 years, comprising master's and bachelor's students. They excel in the use of digital tools, with scores of four and five in the use of word processors, spreadsheets, and presentations. This is the group that performs the most collaborative networking and efficient location of information.

- Generation X: it is the oldest group, on average 47 years old, and all of them are master's degree students. They present the lowest use of the three digital tool groups (scores of one and two out of five), except for searching for information in generalist search engines (five points). Of the three, this is the group with the lowest use of digital skills.

5. Discussion and Conclusions

Technologies have revolutionised various fields and sectors, including university education. On the one hand, the current students are part of the so-called Net Generation or digital natives, and so their growth has been accompanied at all times by technologies, making them have online communication and interaction needs. However, other authors contradict the term digital native simply by the reason that students do not know any other reality and have always lived surrounded by technology; this is a dilemma that arises between different researchers such as Smith [26], Selwyn [27] and Kirschner and Bruycker [25]. The university offer has had to adapt to these behaviours, and universities have, in turn, been able to take advantage of all these advances to improve their management processes and training modalities. Therefore, in the last decade, the offer of online courses and master's degrees has significantly increased, responding to a current need and demand of the market. However, for these to be successful, they need a complex structure that allows for teaching and interacting with students while maintaining the quality criteria that exist so far.

The use of technologies and digital skills in the university system is already a reality, and they are expected to continue to evolve and enrich the system in the short and medium-term, leading to the emergence of tools and the improvement and added functionality of existing tools. This is something that Titán et al. [1] or Uceda and Barro [11] were already saying in their studies. However, in view of this scenario, we wonder if students make use of all the digital possibilities they have at their disposal as part of their educational process, or whether their extensive use of these possibilities is limited to their personal life. Hence the objective of this study, to ascertain how digital skills are used by higher education students.

After presenting the results obtained, it can be concluded that certain tools are already inseparable from students, such as contact with peers and lecturers via email or social media, while the use of telephone calls is becoming less common. Conversely, the use of audio through messaging apps has gained relevance. In addition, digital devices (smartphones, laptops and tablets, mainly) have become the work material of students, with an increasingly higher numbers of students attending classes with these devices in order to access lecturer presentations, take notes and perform activities, something that German students at the University of Oldenburg were already doing in 2015 [45]. In particular, the study of Dabbagh et al. [14] showed in its results that 98% of higher education students used their laptop as the most used device, followed by the smartphone (72%), thus supporting the results obtained. Thus, as Henderdon et al. [12] stated in their study, we are dealing with a technological university student with the capacity for network socialisation, however, this study verifies that this capacity is not fully used as part of their university education.

Today all students have access to the Internet on their mobile phones, and the consultation of materials on these devices is increasing. The adaptation to on-screen reading is also striking, pushing students increasingly closer to zero paper use. They also resort to the university's platform, partly because it is where they can download notes and deliver the exercises performed. In the case of elective tools for queries, such as forums, they have not had the expected success. This had already been presented in Bond et al.'s [45] study, where the result was that the forums were used in only 42% of cases. Students continue to use email to contact lecturers directly. They use digital skills for connectivity, avoiding face-to-face and phone contact, just as they do in their day-to-day life. Shared tools such as those offered by Google Drive are also common for working in groups. However, previous studies state that tools that are not part of the university's own platform are less useful [45].

In addition to the above reasoning, digital skills are more than this, and this is where students are not making the most of their full potential. Of the full range of options, they have, the use of digital

tools as part of the training process has a rating of two on average. When it comes to searching for information, the Internet is king, but through generalist search engines like Google. The same result was obtained in Bond et al.'s [45] study, where search engines were the most used tool by German university students and Dabbagh et al. [14] also confirmed that 99% of university students use search engines. The use of specialised search engines (academic databases) only happens in a minority of cases, as does the advanced user-level use of Office applications (text processors, spreadsheets). This study shows that the use of these applications is very basic, as students do not have the knowledge to take advantage of all the functionalities and opportunities that they offer. On the other hand, we can verify what Dabbagh et al. [14] have said, and confirm that students are approaching the use of these tools, but they are not yet fully integrated into the technologies available to education.

With regard to emerging technologies, the sample studied uses some of the options, including virtual clouds, devices or real-time translation, but still at a very low percentage (with the exception of BYOD, bring your device). Other useful tools to improve or complement the training offer and learning processes, such as gamification or flipped classrooms, are still at a very early stage. In short, the university landscape is in a situation where currently there are very useful digital tools for their improvement, but students are not yet aware of all of them or are not used to using them. Students transfer to the academic world the habits of their personal life, mostly with regard to online connectivity (social media, messaging, video calls, collaborative networking environments, etc.), but they are not aware of specific tools for training, such as specific search engines, MOOC courses or all the features of Office programs, which would enable them to generate more attractive multimedia content. When establishing groups within the current university student population, Generation Z is the one that makes the most use of 2.0 tools for connectivity purposes. Still, they do not outperform millennials in taking advantage of other tools, such as efficient location of information or the use of Office programs. It is, therefore, necessary to encourage the use of digital tools beyond those relating to connectivity, which are already inherent in this group. This verifies what has already been stated in previous studies by Kirschner and Bruyckere [25], that students of this generation have only experienced a connected digital world and as of yet are not able to deal with modern technologies in the way that is often attributed to them. It is the previous generations that make more active use of certain tools, an argument which is in line with the conclusions of Ashour [31], that the digital age is not "transforming" the nature of the university. It is thus verified that the two premises from which this study started in the introduction are fulfilled, with the results leaning more towards the second one. On the one hand, some use of technology is observed as part of the learning process, but not at the expected level. It can be stated that university students are approaching the use of technologies, but they are not fully integrated [5].

Furthermore, it is observed that certain factors influence their use, mainly age and course year. As expected, the use of certain tools, such as spreadsheets, becomes more intensive in the final year. First-year students show a lack of knowledge of this tool and, as the years go by, they become experts. This shows that university studies not only provide knowledge of a specific subject but also allow learning of how to use technological tools. This will be very useful once the student enters the labour market. On the other hand, it is not the youngest students who have the greatest knowledge of these tools. The more specific the tools are (specific search engines, spreadsheets, presentations, etc.), the more millennial students display a greater knowledge. This shows a generational leap, where Generation Z makes more intensive use of online communication but does not show a greater knowledge of technological tools than its predecessor, the Millennials, who are more prepared in this sense [20–22].

Concerning results implications, the results of this research are useful for both the scientific and university community, since the use of technological tools efficiently at university level is not linked to student age. The youngest students are not those who make the best use of technologies, as is currently argued. The practical implications of this mean that it is necessary to include curricular programme methodologies that provide skills to younger generations to make the use of new technologies profitable.

Although there are already previous studies on this topic, this study brings a new geographical area, Spain, and with recent data; a decade after pioneering studies such as those of Selwyn [27] or Smith [26], we are now facing a new generation of students who are more closely linked to new technologies.

Finally, we should point out as limitations of this study such as that the sample collected focused mainly on university students of the Campus of Ourense (University of Vigo). For future studies, samples should be collected from other universities, thus allowing them to expand the significance of the results and establish comparisons among universities. In addition, this study analyses the use of a set of tools by students. Future research lines could focus on the professors' perceptions, which will confirm the theories of Bower [46], which states that educators often have a limited understanding of Web 2.0 technologies and there is a wide range of Web 2 available.

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