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THE JEAN MONNET PROJECT RESEARCH ON DIGITAL CULTURE AND EDUCATION: THE ANALYSIS OF CATEGORIES IN STUDENT RESPONSES

Abstract: This paper presents one of the results of the project on “Digital culture in higher education: European perspective” funded by European Commission Jean Monnet Module (JMM) for the years of 2022-2025. The aim of this funded project is to convey European perspectives on digital culture in higher education. Within this project the authors have developed and introduced a brief module designed for students majoring in information technologies at Astana IT University in Kazakhstan. The authors have conducted an online survey among 452 students who have participated in the module. The purpose of this survey was to explore student perspectives and awareness about digital culture and digitalization in education. The data obtained from the student responses have been clustered into sixteen categories. The authors conclude that the respondents are aware of digital culture and education and opportunities in these fields. The student responses demonstrate multifaceted nature of digital culture and digitalization in education. Key themes include the use of digital tools in academic and professional life, digital interaction, and the societal impact of technology. Student responses also emphasized the democratization and accessibility of education through digital platforms. The findings of the study have revealed that there is still lack of familiarity among the respondents with the concept of digital culture and digitalization in education and a synchronous impact on society and culture.

Keywords: digital culture; digitalization in education; Jean Monnet Module; Astana IT University; categories.

Introduction

JM module and AITU

The Jean Monnet program, initiated by the European Commission in 1989, has been dedicated to fostering excellence in teaching and research in the field of EU studies for over three decades. This initiative has undertaken numerous activities aimed at deepening the understanding of European integration, promoting EU values, and supporting academic institutions worldwide. Through its various modules, chairs, and centers of excellence, the program has attracted students, teachers, researchers and policymakers that are interested in search for fundings for in EU-related studies.

One such project is “Digital Culture in Higher Education: European Perspective (further - DigCEE)”, the Jean Monnet Module, which has been developed by the Department of General Education Disciplines at Astana IT University (AITU) in Kazakhstan. The underlying idea of this module is that students specializing in IT fields, who primarily develop hard skills, should also gain an understanding of how digitalization in the domains of culture and education are evolving in the EU and what initiatives are undertaken by the EU to advance its society in the digital sphere. The project underscores the importance of integrating soft skills with technical expertise, helping students develop general and professional knowledge and meet the demands of the modern workforce, thus providing an opportunity to the students to be more competitive in the national and international labor markets.

It could be assumed that Kazakhstani university courses might not typically include EU-related content. This module by incorporating EU perspectives in digital strategies and their

implications aims at expanding student knowledge, fostering the student global outlook. The four objectives are set within the module: 1) to foster the introduction of a European angle into the curricula; 2) to raise interest in the EU and create the basis for future roles of European knowledge; 3) to deliver a tailor-made course related to the issues of developing digital culture; and 4) to foster the publication and dissemination of the project outcomes.

The target groups include 1) students on the undergraduate and graduate levels majoring in Media Technologies, Digital Journalism, IT Management, IT Entrepreneurship, Soft Engineering, and Cyber Security; 2) teachers and educators in IT fields; and 3) young researchers and other interested specialists from Kazakhstani universities.

The DigCEE Jean Monnet Module deliverables cover various activities, including seminars, workshops, and roundtables. One of the main activities is the development of a tailor-made course, along with conducting research. At the stage of the course development, the project team synthesized and analyzed EU policies and studies by EU researchers in the field of digitalization to ensure that the course content is relevant and aligned with current EU advancements. Additionally, the team had consultations with experts-researchers from EU universities on best practices and approaches in digital education.

The course offered in the framework of the DigCEE Jean Monnet Module, explores digital culture and its influence on communication in academic and professional contexts. It emphasizes research and existing policy in relation to digital culture and education development from the European perspective. The course includes such topics as 1) The concept of Digital Culture in EU studies, 2) European Digital strategy: Overview of EU actions, 3) EU policy on digital skills and digital education, 4) European Union and Digital Cultural Diversity, and 5) Digital Intercultural Communication

At the stage of project planning, it was necessary to determine the number of participants who could benefit from the module. The project team expected that on average approximately 50 students from various educational programs would enroll for the course. Beyond expectations, in the first year of project implementation, 230 students, primarily majoring in Information Technologies, Software Engineering, and Media Technologies joined the course. The course has been conducted in an interactive way on-campus, through extensive discussions, project work and collaborative activities.

To enhance the efficacy of the course, the research aims at exploring student understanding of digital culture and its effects on learning and education. The following research questions are central to the empirical part:

RQ 1: What is the extent of JMM students' familiarity with the concept of digital culture?

RQ 2: What are the categories of JMM student responses regarding their perceptions of digital culture and its impact on learning and education?

Literature review

In today's world, digital technologies impact all aspects of our lives, they are present everywhere and modify our way of living. According to Gere (2002), the prevalence of digital technologies points out the existence of digital culture. The researcher observes that "digitality can be thought of as a marker of culture because it encompasses both the artefacts and the systems of signification and communication that most clearly demarcate our contemporary way of life from others" (Gere, 2020, p. 12).

Culture, communication and information are closely related concepts. According to Merriam-Webster Dictionary, culture can be defined as "the integrated pattern of human knowledge, belief, and behavior that depends upon the capacity for learning and transmitting knowledge to succeeding generations" and as "the customary beliefs, social forms and material traits of a racial, religious, or social group". The difference between these two definitions is that the first one reflects the idea of how knowledge is transmitted, whereas the second one

underlines the influence of norms and values on people's behaviour and interpersonal relationships. In the light of the latter understanding of culture, Foresta et al. observe that knowledge influences traditional beliefs, attitudes and perceptions, and the extent of this influence depends on forms of communication and its content (Foresta et al., 1995).

Uzelac (2010) states that a widely accepted view on information and communication is that of data and data transmission, however, these are also social phenomena. In this regard, Hamelink (2003) overlaps a broad understanding of communication as a mere transmission of messages and refers it to "a process of sharing, making common, or creating a community" (p.155). According to the researcher, a set of cultural products constitute information content, and information becomes integrated into the cultural fabric of a society. The words communication and information imply the essence of human relationships, in which sharing knowledge and respecting others' cultural identity are significant aspects (Pasquali, 2003). Being a sign system for communication, culture lays the basis for individuals to build their own worldview through sharing common cultural codes and meanings. In this line, Foresta et al. (1995) observe "culture is a memory, collective memory, dependent on communication for its creation, extension, evolution and preservation" (p. 19). The above-mentioned aspects are important for understanding the phenomenon of digital culture, which relates to sharing information, communicating and interacting in the digital environment.

The concept of digital culture was introduced into research in the early 2000s by T. O'Reilly. The researcher related it to Web 2.0, "a world where users generate and distribute content, often with freedom to share, create, use and reuse." (Creeber & Martin, 2009, p.19). In modern research, digital culture is primarily considered from two perspectives – technological and humanitarian. The technological perspective relies on the idea that all elements of digital culture operate through digital devices, whereas the humanitarian perspective highlights that digital culture, and its continuous evolution bring forth personal and societal transformations (Guk & Veselovskaya, 2017; Chernykh & Parshikov, 2016).

Over the past decade, there has been a significant shift in education from merely integrating technology into the classroom to fostering a holistic digital culture that enhances student learning experiences (Fischer et al., 2020).

Digital culture is a complex socio-technical process that prepares students to effectively function and operate in a digital society (Ufimtseva & Ivanenko, 2019). It shapes the ways in which students interact with information and each other and influences their learning experiences and outcomes (Sari et al, 2020). Maslakova (2020) highlights that digital culture is a part of an individual's general culture which serves as an informational worldview. Klochko and Prokopenko (2023) focuses on digital culture as a part of digital competence, highlighting the importance of the safety of all the parties involved in the digital educational process, as well as the content and means of education.

In this regard, researchers and educators explore the concept of digital culture in education. Thus, Yelubai et al. (2020) conducted a survey among 97 students to identify perceptions of digital culture, digital society, and digital technology and their impact on students' future professional career. The results from the study revealed that the majority of participants relate digital culture merely to the ability to use a computer and the ability to find necessary online information. Khader (2024) investigated the effects of digital culture on students in terms of personal and academic perspectives. The participants of this study acknowledged that developing digital culture made them more open to the world, expanded their knowledge base, and enhanced their critical thinking skills. Galchenko et al. (2022) conducted an experimental study to evaluate student satisfaction with the integration of digital culture into academic programs. A particular emphasis was placed on seminars, conferences, and business simulations which were organized to assess and analyze students' professional behavior in the digital environment.

Developing students' digital culture not only enhances their technical skills but also fosters critical thinking, adaptability, and collaborative abilities in a digital environment (Elubay & Dzhusubalieva, 2019). By accessing and processing educational information with digital tools and platforms, students learn to contribute to a digital environment, thus becoming more proficient in digital literacy and communication (Haleem et al., 2022).

As technology continues to evolve, the incorporation of technological advancements into educational process has become increasingly important to prepare students for the demands and needs of a modern, digitalized world. As observed by Triantafyllou, "technologies are tools related to cognition that seem helpful for learners in their effort to identify the critical thinking they start to develop and transform it into learning progress" (Triantafyllou, 2024, p.2). Consequently, the development of digital culture is essential to cultivate students who have strong knowledge and competence in utilizing digital technologies effectively. From this perspective, it becomes necessary to explore how students understand digital culture and digitalization of education which might help in developing effective educational curricula and teaching materials and creating a holistic educational environment.

Methodology

Method: This was a non-experimental study based on a survey. The aim of the study was to explore the perceptions of the university students toward digital culture and its effects on learning and education. The specific objectives were a) to identify the level of students' familiarity with the term 'digital culture' and to determine any difference by different educational programs; b) to analyze students' responses through categorization.

A mixed-method approach was used, combining both quantitative and qualitative techniques.

Descriptive statistics were used to identify students' familiarity with the concept of digital culture. Contingency analysis and Chi-Square test were employed to explore the relationship between students' educational programs and their familiarity with the term 'digital culture' and to determine the statistical significance of this association.

Thematic and content analysis were used to analyze open-ended responses. This helped identify common patterns in the participants' understanding of digital culture and its effects on education.

The selected methods helped get an understanding of both the frequency of certain perceptions (quantitative) and the depth of students' views (qualitative).

Participants: In this research, a convenience sampling method was employed. The population was made up of students who participated in Jean Monnet Module activities. These activities were not limited only to course lectures and practical classes, but also covered seminars, workshops and roundtables. Participation was voluntary, with no specific inclusion or exclusion criteria applied beyond participation in the module activities.

Overall, the sample consisted of 452 students of IT-related educational programs (Table 1). Their age ranged from 17 to 20 years.

Table 1
Survey Participants

Educational program	Number of Participants
IT Entrepreneurship	28
IT Management	89
Information Technologies	15
Media Technologies	71
Computer Science	71
Software Engineering	77
Cyber Security	96
Smart Technologies	5
N=452	
<i>Compiled by the authors based on the data collected.</i>	

Instrument: This research employed a questionnaire, consisting of two sections: 1) a section on participant's demographic information, and 2) a section with questions related to digital culture and digitalization of education. The second section consisted of 7 questions, including one close-ended, one Likert scale, and five open-ended questions. It was decided not to overload the questionnaire with items and ask respondents primarily key open-ended questions which could help to get insights into students' views. To establish reliability, the questionnaire was pre-tested on a pilot group of students (n=30) to ensure that all the items were clear and comprehensible.

Procedure: The data collected were analyzed in two stages. Quantitative data analysis (descriptive statistics, contingency analysis, Chi-square tests) was conducted using SPSS v.29 software. Qualitative responses were analyzed manually through thematic coding. Initial codes were generated from the raw data, the similar codes were then grouped into categories. These categories were further analyzed to identify the recurrent themes in students' perceptions of digital culture and its role in education.

Results

First, survey participants were asked whether they were familiar with the term *digital culture* (Tables 2 and 3). The responses revealed that a significant majority, 62% (281 participants), had heard of the term. In contrast, 10.8% (49 participants) indicated they had not heard of it, and 27% (122 participants) were unsure. Thus, a substantial portion of the participants are aware of digital culture; however, there is still a considerable number who lack familiarity or certainty about the term.

Table 2
Are you familiar with the term digital culture?

	Frequency	Percentage
Yes	281	62
No	49	10,8
Not sure	122	27
<i>Compiled by the authors based on the data collected.</i>		

To trace the difference in familiarity with the term by educational program, contingency analysis was conducted, and Chi-Square was calculated (Tables 3 and 4).

Table 3
Familiarity with the term by Educational Program

Educational program		Yes	No	Not sure	Total
IT Entrepreneurship	Frequency	10	6	12	28
	Row%	35.7	21.4	42.9	100
	Column%	3.6	12.2	9.8	6.2
	Total%	2.2	1.3	2.7	6.2
IT Management	Frequency	65	8	16	89
	Row%	73	9	18	100
	Column%	23.1	16.3	13.1	19.7
	Total%	14.4	1.8	3.5	19.7
Information Technologies	Frequency	9	1	5	15
	Row%	60	6.7	33.3	100
	Column%	3.2	2.0	4.1	3.3
	Total%	2.0	.2	1.1	3.3
Media Technologies	Frequency	29	6	36	71
	Row%	40.8	8.5	50.7	100
	Column%	10.3	12.2	29.5	15.7
	Total%	6.4	1.3	8.0	15.7
Computer Science	Frequency	38	11	22	71
	Row%	53.5	15.5	31.0	100
	Column%	13.5	22.4	18.0	15.7
	Total%	8.4	2.4	4.9	15.7
Software Engineering	Frequency	56	6	15	77
	Row%	72.7	7.8	19.5	100
	Column%	19.9	12.2	12.3	17.0
	Total%	12.4	1.3	3.3	17.0
Cyber Security	Frequency	70	10	16	96
	Row%	72.9	10.4	16.7	100
	Column%	24.9	20.4	13.1	21.2
	Total%	15.5	2.2	3.5	21.2
Smart Technologies	Frequency	4	1	0	5
	Row%	80.0	20	0	100
	Column%	1.4	2	0	1.1
	Total%	.9	.2	0	1.1

Compiled by the authors based on the data collected.

The analysis reveals that familiarity with the term *digital culture* varies by different educational programs. Students of IT Management, Software Engineering, and Cyber Security educational programs demonstrate a higher level of familiarity, whereas students of Media Technologies and IT Entrepreneurship programs show higher levels of uncertainty.

Table 4
Chi-Square Tests

	Value	df	Asymptotic Sig. (2-tailed)
Pearson Chi-Square	48.07	14	.000
Continuity Correction	47.38	14	.000
Linear by linear association	6.53	1	.011
N of valid cases	452		

Compiled by the authors based on the data collected.

The Chi-Square test results further validate these findings. The Pearson Chi-Square test produced a value of 48.07 (df=14, Asymptotic Sig.=.000). This indicates a statistically significant association between familiarity with the term under consideration and the participants' educational programs. The p-value of 0.000 is less than 0.05, confirming the rejection of the null hypothesis that assumes no association.

To determine what digital culture means to students, they were asked to briefly describe this concept. The results revealed various perspectives, which have been categorized and distributed into 16 thematic groups (Table 5).

Table 5
Categories of digital culture and their frequency

Thematic categories of responses	Examples of responses	Frequency	Percentage
The use of digital technologies in academic and professional spheres	A workplace shaped and influenced by digital tools and technologies. Workplace with ICT Workplace which is influenced by digital technologies	88	17.69
Digital interaction and communication	Interactions between technology and human Community where people can exchange information by using technologies Technologies and digitalization affect our interactions as humans	74	14.86
Influence of technology on culture and society	Presence of technology, and its impact on society, such as communication, work, education. Culture that is represented in a digital form	63	12.67
Digitalization and the use of modern technologies in everyday life	Use and integration of digital technologies in our everyday lives New technologies capture everything around us and become part of our everyday life	52	10.45
Social media and online communities	Digital culture encompasses various aspects, including online communities, social media platforms It is culture that we have in social media	41	8.24
Digital privacy, digital security	Proper storage of data Observance of digital privacy	32	6.43
Digital art, media, and cultural expression	Media that we use to express ourselves Paintings, music and overall art on internet platform	32	6.43
Knowledge and competence in digital technologies	Knowledge of how to use modern technologies Understanding and ability to use technology	31	6.23
Digital tools and equipment	How things like computers and internet change our culture Ability to use digital tools and equipment It's era of computers, with no paper, everything is online	29	5.83
Digital norms of behaviour, digital ethics	Behaviour in internet space. Combining rules of behaviour and values with digital technologies. Rules of conduct on the Internet The ethics on the online platforms	27	5.42
Culture in digital environment	A kind of modern culture It is something with IT and culture	25	5.02

Technological impact on identity and relationship	Relationship between technology and society, shaping our identities, relationships, and modes of expression in the digital age	25	5.02
Digital performance and events	It's all about digital performances which can unite people. Examples can be the digital competitions, concerts and art exhibitions	19	3.82
Simplification and improvement of life with technology	Use of digital technologies for a comfortable life The opportunity to simplify and improve the quality of life with the help of technology	17	3.42
Digital transformation and future	Future, upgraded and modern Future innovation	17	3.42
Technological development of education	Nowadays educational system Efficient use of technology in education	16	3.22
<i>Compiled by the authors based on the data collected.</i>			
<i>Note: The table displays students' original responses and may contain inaccuracies or variations that have not been adjusted by the research team.</i>			

One of the key themes distinguished was the use of digital tools and technologies in academic and professional life (F=88). The next theme is that of digital interaction and communication (F=74), which emphasizes the influence of technology on societal norms and personal relationships. Another prominent theme was the impact of technology on culture and society (F=63), which may indicate that students are aware of broader societal shifts that emerge due to digitalization and modern technologies (F=52). Online communities and social media were also frequently mentioned (F=41), followed by such important aspects of online communication as privacy, security, and freedom of expression (F=32). Other prominent categories include knowledge and competence in digital technologies (F=31), digital tools and equipment (F=29), and digital norms of behaviour (F=27), which indicate the importance of digital literacy and digital ethics. Smaller yet significant categories are culture in digital environment (F=25) and technological impact on identity and relationship (F=25), demonstrating that students recognize the influence of technologies on the cultural sphere and personal identities. Less prominent but relevant categories include digital performance and events (F=19), simplification and improvement of life with technology (F=17), digital transformation and future (F=17), and technological development of education (F=16).

The responses to the Likert scale question, measuring students' perspectives on the extent digital culture and technology affected higher education, revealed that there is a moderate overall perception of the influence of digital technologies (mean=3.40, SD=0.71). This finding is supported by a majority of students, as 228 respondents (50.44%) believe that digital culture and technology affect higher education "a lot," while 189 students (41.81%) perceive a moderate impact. A smaller proportion of 23 students (5.09%) feel the impact is slight, and only 12 students (2.65%) believe there is no impact at all.

Open-ended questions helped to get more detailed insights into students' perspectives on digital culture and its effects of learning and education. Participants' responses were analyzed and distributed into separate thematic categories. Table 6 provides a breakdown of the perceived effects of digital culture and technology on learning and education, categorized into 9 key themes.

Table 6

Effects of digital culture and technology on learning and education: categories and their frequency

Thematic categories of responses	Examples of responses	Frequency	Percentage
Democratization and accessibility	the democratization of access to information and educational resources. Digital technology has made it possible for people to access educational materials, courses, and resources that were previously limited to a select few.	204	27.6
Learning opportunities	students develop and expand knowledge through technology students are able to find any information, communicate, and develop their research skills with the help of internet. Also, taking notes is much easier through technologies such as computers, phones, etc.	124	16.8
Online platforms	there are a lot of online learning platforms, and they are available for everyone. They help to do online conferences, do some tests, and search for more information.	97	13.1
Flexibility	convenience in learning if we have online lectures on some platforms we can watch them any time, while offline lectures cannot be recorded.	78	10.5
Technological integration into education	it helps to significantly save time.	67	9.1
Personalized learning and student-centered education	Allow you to use a wider range of forms and methods of learning It is easier to find information based on your needs Teachers can give tasks corresponding to the level of learning and thus improve the quality of education.	64	8.6
Knowledge and information access	60% of knowledge came from the free internet resources technology made education easier to teach, have access to knowledge	17	2.3
Interactive teaching	It helps to increase the effectiveness of practical tasks Technology makes classes and the learning process more interactive	16	2.2
Collaboration (on the global level)	exchanging knowledge, experience between different countries connections between students and tutors are established in a better way	11	1.5
<i>Compiled by the authors based on the data collected.</i>			
<i>Note: The table displays students' original responses and may contain inaccuracies or variations that have not been adjusted by the research team.</i>			

Democratization and accessibility emerge as the most frequently mentioned theme, with 204 responses (27.6%). This highlights the significant role of digital technologies in providing broader access to education and making learning more inclusive. Learning opportunities follow closely behind with 124 responses (16.8%), underscoring that digital platforms have broadened educational opportunities through online courses, resources, and tools. Online platforms, with 97 responses (13.1%), and flexibility, with 78 responses (10.5%), emphasize the convenience

digital technologies bring to education, including self-paced learning, remote access to courses and learning materials through various online tools. Technological integration into education, with 67 responses (9.1%), highlights the incorporation of AI and virtual simulations to engage learners and enhance their academic achievements. Personalized learning and student-centered education, accounting for 64 responses (8.6%), reflect that digital technologies help to tailor curricula and educational content to meet individual needs of students. Interactive teaching (2.2%) and knowledge and information access (2.3%) emphasize the importance of interactive methods and the ease of accessing information through digital platforms. Lastly, collaboration on the global level, mentioned by 11 participants (1.5%), indicates the role digital technologies play in knowledge exchange with international peers.

Discussion and conclusion

The findings of this study demonstrate students' positive attitudes towards digital culture and the digitalization of education. The data obtained are consistent with the results of surveys among university students in various countries (Andrew et al, 2018; Alam et al. 2023; Novikova & Bychkova, 2022).

The significant majority of participants are familiar with the concept of digital culture and recognize its importance in higher education. However, the familiarity with the term and its essence varies across different IT-related educational programs. This variation suggests a need for further study to understand underlying reasons, including an analysis of curricula and educational content.

The data reveals that students strongly believe that digital culture and technology have a profound impact on learning and education. Students highlighted access to education and learning resources via digital platforms and online tools as a key advantage. This finding aligns with the study by Huda (2024) who observed that access to digital platforms helps shape the digital environment, thus, contributing to online knowledge acquisition. Flexibility and convenience offered by digital technologies, such as remote learning and self-paced courses, are highly valued by students. Students also highlight that the integration of technology into education supports personalized learning and makes classes more interactive, motivating and engaging. This observation aligns with research by Dema and Moeller (2012), who state that the use of powerful digital tools allows students to meaningfully interact with data, solve open-ended problems, build their own understanding of facts and phenomena, thus, promoting a rich and engaging learning environment. In a study by Warren (2016), the use of student-centered technology enabled greater student participation and engagement through exploration of the educational material in creative ways.

Additionally, the findings indicate that students believe digital culture facilitates collaboration on a global level, provides democratized access to education, and enhances learning opportunities through online platforms. These observations are consistent with earlier research. A qualitative study by Nurdiana et al. (2023) found that successful partnerships positively impact students' learning performance, facilitate broader access to resources, and foster collaborative learning environment.

In conclusion, the findings of this study indicate that students are aware of the digital culture and opportunities it offers. Students' responses for open-ended questions allowed for distinguishing sixteen different thematic categories, which demonstrate multifaceted nature of digital culture. A big number of thematic groups describing digital culture from students' perspectives may be explained by the fact that students participating in the survey majored in IT-related educational programs, who directly deal with digital technologies. Future research might want to explore the perspectives of students of non-IT-related majors. However, the findings of this study revealed that there is still a considerable number of students who lack familiarity with the concept of digital culture or have somewhat vague understanding of it. This

may suggest a need for further elaboration of the curriculum with more profound topics and the development of the educational content.



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Conflict of Interest Statement

The authors declare no potential conflicts of interest regarding the research, authorship, or publication of this article.

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