

# **The Digital Age of Higher Art Education (European Experience): Professional Competence, Development, Innovation**

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*The present article's objective is to investigate the alterations that govern the circumstances for accomplishing educational goals in the context of the digital era. The literature review revealed major patterns in the European educational landscape that provided the framework for empirical confirmation. The sample was formed according to the stratometric approach. Respondents are art university students and educators from five European Union nations. In the study, a mixed research design was employed. The limitations and perspectives of instructors' and students' innovative educational engagement are underlined. The personality predictors of new digital environment adoption were established.*

*Keywords: digital competencies, meta-competencies, art education, art-based education*

## **INTRODUCTION**

In the context of the transition to the information paradigm of the educational process, there is an urgent need to identify the main trends that significantly transform the methodological basis of pedagogical activity. Mainly, art education, as the most sensitive to changes in ideological systems and conditioned by sociocultural fluctuations, requires considerable attention of the research community. The changes of the present time require art education specialists to revise the existing normative and methodological bases for

realizing the goals of art education. It should be noted that during quarantine restrictions related to the epidemiological situation (COVID-19), the educational sphere began to undergo a rapid process of restructuring of the traditional approach. An essential element of the metamorphosis in higher education was the development of the digital competence of scientific and pedagogical workers. The transition to a digital form of professional activity contributed to an intensive revision of the basic principles of education. These innovations of the epidemic period are largely integrated into the personal and professional life of the European community. However, the question of the changes that have stimulated such rapid integration remains relevant. The research process needs to continue to form a holistic view of the new interaction principles in the learning environment (Namestiuk, 2022). Particular attention should be paid to the fact that the proliferation of digital technologies in education has not been the only change in recent years. Pluralism in the educational tradition acquires a new meaning. Namely, the diversity of methodological concepts on which the research community relies is characteristic. So far, the principles of scientific, pedagogical, and artistic pursuits are not seen as mutually exclusive or alternative. The world community is trying hard to move toward a transdisciplinary worldview. Interdisciplinary projects are not isolated instances of the practical realisation of specific goals but rather the ideological orientation of the work of higher education. The unity of the whole set of paradigms is a new way of developing education and science. Notably, the interactions and compensatory mechanisms that arise during the assimilation of existing approaches are now a separate area for research by the student and professional community. The attempts to formulate certain principles for the functioning of the new system are of great importance. The question remains about the regularities by which these new open systems of knowledge function. We should also note that the synergy of the post-nonclassical stage of scientific development is also characteristic of the modern educational tradition.

Learning departs from the linear model and aims at mastering meta competences. For example, this approach stimulates students' scientific inquiry in an artistic environment. Learning interactions in the digital age are based on polylogicality and cooperativity. At the same time, there remains a significant pool of research on the quality of higher education. In particular, researchers in the direction of arts higher education rely predominantly on descriptive research and qualitative methods (Milbrandt, Miraglia, & Zimmerman, 2018). Given the significant limitations of published research projects, several questions about transformations in higher arts education remain open. Accordingly, in this paper we raise the following:

- (1) What are the trends of art education in the digital age in the European educational space?
- (2) To what extent have the educational trends been realized in art programs?
- (3) Are students and teachers ready to use new technologies?
- (4) Are students and teachers competent enough to apply them effectively?

## LITERATURE REVIEW

### Professional Competence

#### *Metacompetencies*

A characteristic feature of the current stage of development of the artistic tradition is the transition from the categories of situational competence to the broader context of competence in general. This discourse has been going on for a long time in the higher education environment, but it is the transition to the information paradigm that is responsible for the new perception of competence as an outcome of the learning process (Silva Pacheco, 2020). The need to adapt to the changing labor market became the starting point for revising the goals of the educational process. Indeed, the question of the relevance of higher education graduates' skills requires educators to address the concept of meta-competence. Detailing the consensus in the process of training art specialists is achieved by considering the close relationship of the creative process (and product) with the system in which it is implemented. Accordingly, the new competence categories are easier to integrate into the traditional educational methodology. It should also be noted that the described trends require sufficient time and directed activity of specialists in educational policy. The problem is widely presented in review publications and recommendation materials, but the integration continues. Therefore, the holistic concept of meta-competence requires fragmentation and

processing. Thus, referring to the research papers, we can identify the key competencies of today that fall under a certain category: critical thinking, interdisciplinarity, and cooperativeness (Lozano, Barreiro-Gen, Lozano, & Sammalisto, 2019). Notably, quantitative intelligence supports the prevalence of skills such as empathy, communication skills, dealing with media materials, and adhering to a moral paradigm are more important than the ability to qualitatively assess information and develop strategies. Note also that in Lozano et al. (2022), the highest scores were obtained precisely regarding critical thinking. Still, according to the diagnostic results, criticality is the least developed skill of art students. According to the authors, this tendency can be explained by the lack of effective educational interventions that promote this characteristic or the failure to implement them in practice. Raising the issues of pedagogical approaches and their influence on students' competencies, we can note that the current system of art education promotes the development of the latter in an individual, but the not collective process, changing the result of learning interactions by the predictions set by Cortese (2003). In general, researches on competencies in art education have several limitations that make it impossible to develop predictive models. The results of bibliographic reviews show a lack of conclusions about the sustainability of curriculum effects on educator competence. Moreover, the results obtained using experimental or quasi-experimental plans, the most common in this direction, are often contradictory (Schneider & Rohmann, 2021). Nevertheless, experts have established certain trends, and their content is often associated with the transition to a student-centered educational model as the main subject of the learning process (Blumenthal & Blumenthal, 2020). A separate subject of research is competency-based arts education which mimics this model and relies on a holistic vision of the skills, knowledge, and abilities acquired by the student during instruction (Farrington et al., 2019). Characteristically, there is no unified system for assessing competencies in the learning process. Differences in national professional communities and individual educational institutions are significant. Additionally, Schneider and Rohmann (2021) found a statistically significant discrepancy between educational institutions' strategies and educators' level of competence. In particular, it concerns the development of social skills due to the cooperative, creative activity of drama students. In the course of the work, the experts came to several important conclusions regarding the approach to the assessment of competencies and competency-based learning: the minimum time for assessment of the effects of formative psychological and pedagogical experiments aimed at art education is one year; the significant side variable is social facilitation and inhibition as well as the dynamics of vertical interaction during learning; the experts consider the Definition and Selection of Competencies (DeSeCo) the framework as promising for standardization of assessment. Finally, we note that the feasibility of extrapolating the findings within a different ethnocultural and value paradigm and the temporal sustainability of the findings must be considered to resolve the current crisis (Kavanagh, 2021), remains open. There is evidence of the non-universal nature of the competency-based education system and the need for additional indigenous research. Furthermore, it is not only humanities vocational training programs that are characterized by such cultural determinism, but also technical training that takes into account the cultural conditioning of trend-setting competencies (Baumeler, 2019). Moreover, attempts to develop a unified learning strategy for future artists remain relevant. For example, the European Network for Visual Literacy (ENViL) offers specialists a prototype of the Common European Visual Literacy Competency, which includes sixteen components of the visual literacy meta-skill and reflects the main stages of learning interactions (Schönau, Kárpáti, Kirchner, & Letsiou, 2020). Note that the prototype presented in the source was transformed, given the lack of any structure and internal alignment of the constructs. Currently, the competencies offered by ENViL in various modifications are used to prepare and adjust curricula and pedagogical approaches. Further in our work, we will rely on the ENViL rubrics at the stage of qualitative processing of problems. In our opinion, this model is important because it not only allows evaluating certain classes or methods but also contributes to the transition to student-centered learning. Particularly, using the ENViL rubric, we can acquaint students in the process of free creative search with a specific studied topic. Functional analysis has established greater efficacy in creatives in divergent autonomous task processing: the functional finality of PFC with DMN and DMN with TPN when performing related tasks (Beaty, Seli, & Schacter, 2018). In general, researchers in the field focus on combining classical competencies and developing synthetic models of competence (in this context, the concept of meta-competence is formed). This trend is due to the need for

new pedagogical approaches that will help solve the problems of the present. For example, the concept of complex thinking as a meaningful new formation proposed by Efland et al. (2003) is common. Complex thinking combines characteristics such as creativity and criticality, respectively, in the training programs for artists. The teacher can appeal to this meta-competence in the development of teaching methodology. Silva Pacheco (2020) notes that current training programs in higher art education are based on academic, and reproductive methods, while reflection and dialogical elaboration of aesthetic experience remain unrealized. It is the categories of reflexivity and transformation that we rely on in this paper as the cornerstone meta-competencies that should be formed in the professional training of artists.

### *Digital Competencies*

The 2019-2021 quarantine period has shifted educators' focus to digital skills as a distinct outcome of learning interactions (Guillén-Gámez, Mayorga-Fernández, & Álvarez-García, 2020). In the context of the spread of distance education and new methods and tools, the ability to work effectively in a digital environment has become an independent subject of several pedagogical studies. The most famous example is the Digital Competence Framework (DigComp), aimed at developing digital competencies in the working, educational and personal space. The DigComp 2.0 model preview was presented in 2022 and became the basis for developing strategies in educational institutions in the European Union (Mannila, Nordén, & Pears, 2018). A separate tool, DigCompEdu, has been created to work with faculty competencies. The latter focuses specifically on the abilities needed in teaching (Bilbao Aiastui, Arruti Gómez, Carballedo Morillo, 2021). Specifically, the model includes competencies such as engagement, resource use, didactics, and assessment, increasing the student's resources, and developing students' digital competence (Ryhta et al., 2020). Note that the educational model is quite consistent with the generic DigComp prototype but is necessary given the profile focus of educators. Polyparadigmaticity also remains in this direction. Thus, the ISTE refinements (Romero-Tena, Barragán-Sánchez, Llorente-Cejudo, & Palacios-Rodríguez, 2020) are used simultaneously as standards for teacher professional competence. And national programs for developing arts education and education in general often differ in their definitions of competencies and how to develop them (Spante, Hashemi, Lundin, & Algers, 2018). Note that digital meta-competence is necessary to reconcile heterogeneity at the organizational level in the context of educational strategy and policy development (Pettersson, 2018). Attempts to find common ground in national paradigms aim to form a certain unified theory of competence, most common in the educational process of different states (Sánchez-Caballé, Gisbert-Cervera, & Esteve-Mon, 2020). Thus, at this stage, there is a tendency to develop appropriate learning strategies based on the Key Competences for Lifelong Learning European Reference Framework building on the data presented in the review of Zhao, Llorente, & Gómez (2021). We can conceptualize digital competencies as the values, knowledge, and skills defining an individual's mastery of technology. Consistently, we can define digital literacy as an overall ability: the values, knowledge, and skills that define an individual's mastery of a technological environment (Byungura, Hansson, Muparasi, & Ruhinda, 2018). In conclusion, building on the findings of the review under review, it is necessary to focus on the study of teaching staff competencies specifically. An overwhelming number of publications offer results from surveys of the student body, given the ease of collecting data on this sample. At the same time, a qualitative approach to processing the problem is common. In addition, the directions of research work in the field of validation of diagnostic tools, development of pedagogical approaches, assessment of the impact of implemented competencies on student performance, predictors of digital competence, and perception of innovation by participants in the educational process (Zhao et al., 2021). Harmonising the results of the theoretical treatment of the problems and the realities of pedagogical practice, it should be noted that blended learning is currently one of the leading learning methods in higher education. According to Gaebel, Zhang, Stoeber, & Morrisroe (2021), about three-quarters of the programs at EHEA institutions are implemented this way. The value of digitalization in higher education is revealed through the ability to pursue educational goals within significant constraints. Particularly, through blended and distance learning, students can access educational services, and virtual mobility programs provide room for self-actualization and international interaction. Digital management systems for the educational process reduce the burden on the administration and improve the quality of the educational service. In general, the

trends are positive but moderate. To summarise, we note that transitioning to a new form of education requires a high level of competence among teachers and students, which remains an urgent task. Currently, few educational programs can guarantee effective mastery of relevant skills. In general, less than half of educational institutions, as noted in the previous paper, the authors involve the development of DELT as the method of quality control of education. Moreover, differences in integrating DELT-based initiatives are significant depending on the ethnocultural environment. Finally, we note that although the ICT infrastructure is sufficient in individual higher education institutions, the mismatch of resources to which students can access the goals of the educational process has been actualized under quarantine constraints. Regardless of the measure of the embodiment of certain projects and innovations, the role of the teacher in the digital educational environment is important. The educator is a mediator and tutor, coordinates and directs the process of students' acquisition and construction of new knowledge, and accordingly must possess a wide range of competencies (Gulden, Duygu & Canan-Gungoren, 2019). One of the important competencies regarding the digital resources available to the teacher is the ability to creatively implement instructional designs using multimedia tools. To conclude, the results of several studies are now the foundation for planning the learning process. However, the lack of consistency in the implemented projects is characteristic. As an example, attempts to summarize the experience of the research community are realized in developing a meta-framework of digital literacy (Bravo, Chalezquer, & Serrano-Puche, 2021). This model is detailed and has a strong theoretical basis, but it requires the selection of relevant diagnostic tools and integration into the arts education environment.

## **Development**

### *Education Policy*

The European Union policy in education is characterized by sufficient convergence of methodology and increasing complexity of implementation of the educational product due to bureaucratization. There is a growing gap between the EU principles and the procedures of scientific and pedagogical activity of EHE specialists. In addition, new approaches to measuring learning outcomes (e.g., PISA) do not meet the needs and opportunities of educational institutions in EHEA countries (Dakowska, 2019). In detailing this topic, we note that the current models of art education in Europe are in a constant process of transformation: under the influence of educational reforms, and political and research innovations. Against the background of these dynamics, the need for a unified model for experts in this field is becoming increasingly important. As an example, the European Network for Visual Literacy (ENViL) plays a significant role in rethinking and planning competency-based education. ENViL-type networks support educators and contribute to improving learning. Namely, researchers in this group propose a new approach to competency assessment that will simplify the reporting phase for higher education personnel (Kárpáti, 2019). Separately, we note that international professional groups' activities are of primary importance since the prototype of visual literacy offered by ENViL is appropriate for professionals regardless of the ethnocultural context. However, such innovations imply the development of regional institutions that will provide a high level of synergy between cultural traditions. We are convinced that the professional competence of national institutions is primarily determined by their ability to develop programs based on research products. The differences in curricula are considerable, and the European space's cross-cultural methodology faces corresponding limitations.

### *Assessment*

As noted above, the PISA assessment program is the most common among European countries. Alternatives in the assessment are offered: Progress in International Reading Literacy Study (PIRLS), the International Association for Evaluation of Educational Achievement (IEA), Teaching and Learning International Survey (TALIS). The main disadvantages of popular methods are their cultural non-universal nature and their focus on discrete competency models. More importantly, none of the programs involve assessments in the artistic process. Therefore, assessments are conducted according to nationally implemented criteria characterized by divergence. A contemporary trend is a move toward self-assessment

and new-style exhibitions. With this approach, simultaneity in student and faculty focus on both the process and the outcome of creative activity is possible.

Moreover, self-assessment is an effective method of constructing knowledge about the work's methods, subjects, and goals. More important is also considering the temporal component in evaluating one's product. In general, this approach corresponds to the principles of self-regulated learning, which is one of the leading vectors of development in the information educational paradigm. Note that the main disadvantage of this assessment method is incongruence: teachers' and students' assessments differ significantly (Groenendijk, Karpati, & Haanstra, 2020). The results obtained are also confirmed when using the other measurement scales mentioned above. Notably, the effectiveness of addressing rubrics during the reflective processing of visual works among middle-level art education students is significant. Regarding their application to higher education, the question of their appropriateness remains open (Groenendijk, Haanstra, & Karpati, 2020). Nevertheless, it can be predicted that students have the opportunity to develop visual literacy during the assessment phase, and discussion during group assessment promotes the development of soft community skills.

### *Cognitions*

In the era of neuroscience development, the cognitive direction of psycho-pedagogical activity is rapidly gaining popularity. Thus, the proposed conclusions of Heaton (2018) confirm the socio-cultural significance of working with cognitions in art education. The author postulates the potential of using these categories in the context of the scientific representation of art as a process of transformation and production at the level of thought processes. The described work identifies aspects of the art education process as constructing, transforming, finding connections, and applying. We believe that by appealing to the achievements of cognitive science, art educators can develop an effective program for mastering meta-competencies.

Moreover, this approach makes it possible to integrate artistic activities into the scientific process, which, notably, finds its expression in art-based research. For students, a focus on cognitions facilitates the search for connections between theoretical and practical components and the exploration of their cognitive process (Hetland, Winner, Veenema, & Sheridan, 2015). Working with the cognitive component not only standardizes the creative process and provides a theoretical framework for learning activities but also significantly increases the degree of reflexivity in the educational process. It is necessary to clarify the underrepresentation of this approach in art education. First of all, it is connected with the framework set by the current educational policy in the European space: cognitive and gnostic aspects serve as the main categories of academic performance evaluation, the result, but not the way of teaching future artists. Separately, we want to pay attention to the affective and bodily dimensions, which are not considered essential for gnosis in the educational paradigm. At the same time, using methods oriented to emotional experience is an essential element of the student's or teacher's experience in assimilating and constructing qualitatively new knowledge. Viewing the traditional cognitive approach is inescapable because it remains too limited. Returning to the reflection problem, we note that a focus on cognitive processes significantly affects the ability to productively group and self-assess work and adjust student technique (Pumahapinyo, Suwannathachote, & Wiwitkunkasem, 2022). Additionally, working with cognitions in arts education expands the scope of inclusivity in higher education (Liu, 2022).

### *Cultural Sustainability*

Continuity of development in art education, above all, is ensured by a high level of cultural sustainability. In the context of globalization and the rapid succession of artistic paradigms, educators must ensure the preservation of cultural integrity in its dynamic and transformative essence. Pedagogical specialists face the task of creating the context of educational interaction that will exist between the polarities of the global artistic process and the local cultural tradition. Note that the main driving forces: diffusion in the global culture and preservation in the regional one are not mutually exclusive and should be combined in mastering the specialty to realize the goals of the global approach. In educators' practice, this issue arises quite acutely, mainly, for the countries experiencing the most assimilation and influence of

“big” cultures (Ezedike, 2019). The specialists of these regions offer developments that will contribute to the transition to the battle phase in solving this problem. One of the most effective ways to support agents of regional culture is the meaningful expansion of educational strategy. The current programs provide for the elaboration of the problem of cultural sustainability theoretically and occasionally at the applied level. At the same time, the gap with the context in which the student's artistic identity is formed remains, given the failure of full inclusion in the cultural environment. Härkönen (2020) offers a practical solution in his model, noting the need to combine different types of knowledge creation in the learning process, which will reconcile the above polarities. It should be clarified that the path of knowledge creation in this context is characterized by agency: the author notes that it is essential to embody self-regulatory and socio-cultural cognition on a level with theoretical and practical. That is, the student must encounter the cultural space in an authentic situation and at the same time be able to explore and reflect on their own social experience (Härkönen, 2020). It should also be noted that the model presented by the author embodies several principles that allow bringing the learning process closer to the strategy of cultural sustainability: the creative process of students is seen as a dialogical, joint activity, the agents of which are both the creator and the society, in the cultural space of which the creator exists; students must be in the context of cultural heritage, understand its divisiveness; the mass agency should be defined as a valuable reference point; an important principle is the ecology of creative work, which is the most important for students. Turning to the goals proposed by the author, we can testify to the glocal orientation of this model. It is advisable to note that cognition of representations of other cultural spaces is also possible in such an authentic process of personal experience. In particular, increasing academic mobility programs and forming intercultural study groups is advisable (Härkönen, 2019). The described model is practical, given the goals of the educational process in higher education. However, implementing appropriate working methods requires significant time and human resources. On the other hand, the experience-oriented approach encourages students to develop conceptualization, reflection, and research competencies independently, while the exploratory component often requires higher education applicants to have a high level of subjectivity. Accordingly, the ratio of resources and potential benefits is equal: the specified learning situation will hide students' mastery of meta-competencies without destroying the current learning tradition.

### *Community-Based Art Education*

Considering higher education from the position of future specialists' meta-competences, it should be noted that not only academic but also social and emotional outcomes should be considered when developing an educational strategy. Let us note that the approach to knowledge as a result of living, research (artistic or scientific), and reflection (group or individual) of an authentic situation provides simultaneity in forming the above components of a student's meta-competence. Continuing the theme of sociocultural conditioning of art higher education, one of the effective forms of modeling authentic situations that provide students with opportunities for social and emotional development on a level with the academic one is community-based education (CBAE). This approach relies on the social meaning of the arts to stimulate individual and collective transformation (Lawton, 2019). Note that CBAE is a method for students to gain professional skills and an edutainment space for regional populations. Community-based education fosters relationships between bearers of ethnocultural knowledge and students who exist in the connotations of that cultural plane. The experience of community formed between the participants in the process is an essential protective factor for modern society existing in the context of rapid digitalization and isolationism. It is our conviction that CBAE as an educational practice satisfies a number of important needs of the individual that receives a higher artistic education while providing an important professional experience. Note that relationships are also strengthened between students involved in collaborative community-based projects, which is a prerequisite for forming a sustainable professional community later on. The sense of unity with members of a particular community and with other educators described earlier, demonstrates the cooperative sense of this method. Group creative projects are necessary for students as a space for discourse and worldview enrichment (Jokela & Huhmarniemi, 2018). The main task of this type of activity is to find common ground and statements that students will develop in their work. Group tasks promote soft skills and the construction of meanings of creative activities. In conclusion, CBAE is limited to interaction with

regional governing bodies and should focus primarily on the needs of the community in which students are engaged.

### *Transdisciplinarity*

Transdisciplinarity (TD) is an independent direction in developing the artistic, educational tradition. The goal of TD is to solve urgent social problems utilizing the finality of the methods of different disciplines. Postulated at the ELIA Biennale (2020), the concept of transdisciplinarity is subsequently reflected in several research projects (Van Baalen, De Groot, & Noordegraaf-Eelens, 2021). A meta-analysis result using PRISMA principles shows a statistically significant increase in scholarly production in the interdisciplinary direction (Tusheva, 2020). At the same time, pedagogical theory is becoming interdisciplinary (particularly STEM). Note that the educational tradition of today, using models of different approaches, is becoming stable and thorough, and TD in the new theoretical context has an important place. However, the relational essence of the described concept requires specialists to meaningfully contextualize transdisciplinarity in the educational process. Specifically, we can prognostically note that in an enriched environment of cross-methodologies, students can develop the meta-competencies described above. By broadening the context of the issues, the plasticity of skills and abilities will give professionals greater value in a dynamic labor market. In addition, transdisciplinarity provides access to a coherent scientific and artistic method for future artists, thereby forming a new niche professional activity (Burnard, Colucci-Gray, & Cooke, 2022). However, returning to the issue of pedagogical practice, according to TD principles, art education should serve not only as a curriculum in its own right but also as a foundation for the practical training of professionals in other fields (Nicolescu, 2018). Returning to the problem of context, we note that creativity as an element of learning will significantly influence the boundaries of the scientific paradigm because it will offer students methods of finding answers to questions that cannot be fully described in scientific jargon.

### **Innovation**

#### *Technology*

Methodological pluralism in art and art education continues at the instrumental level. Innovative ways of creative production coexist with age-old techniques. There is no transpositional technology standard for the twentieth century's creative process. Moreover, an eclectic postmodern tendency persists among the contemporaries, acquiring a new meaning in the ideological system of the metamodern. The information society makes the complete reduction of concrete technology impossible, and the synthetic, multimodal format of media production instead promotes experimental activity among artists. In contrast, for the educational process, the toolkit more often exists in a dichotomy of ergonomics: the latest technologies are seen as tools for professional activity. At the same time, previous forms acquire the status of artifacts. Moreover, the representation of these artifacts is directly determined by their significance for the regional or global tradition. Such a historiographical approach to the classical, as representative but not productive, contradicts the realities of the artistic journey of students of our time. The informational accessibility and media availability of artists' activities, due to the wide spread of information and communication technologies, provide opportunities for professional realization in both extreme and archaic creative niches (Rusen, 2018). With the divergence of tools and approaches, moreover the regular production of new ones, educators face the challenge of providing students with the skills and abilities needed to adapt to a new context and interact effectively with digital resources. A key aspect is the relevance of the competencies that future specialists will acquire in higher education. The main vectors of educational process development in this context we can define the introduction of the latest developments in the educational process or the revision of the self-target of learning activities and the focus on students' ability to interact with digital resources in general. Referring to the projects implemented in the European educational space, it can be noted that a quality educational service implies an optimal combination of the described interventions. Thus, programs focused on the development of media literacy and digital competences of students are significant (Di Pietro, Biagi, Costa, Karpinski, & Mazza, 2020). Since the vast majority of creative projects now take place in the digital environment, it is advisable to expand specialists' abilities in

this direction. Sustainable media literacy for artists is a guarantee of information security, environmental friendliness, and efficiency in the multimedia environment. In general, the main channel for mastering media literacy now is informal edutainment offerings and information education, while the curricula of educational institutions are at the stage of transformation and transition to a new method (Orozonova, Alamanova, & Kazakov, 2021). Accordingly, this problematic is a direction for further research activity. On the contrary, the use of innovative technologies in the educational process is a characteristic trend of our time, both in the practical and research dimensions. In particular, an important stage in the development of art education was the introduction of virtual (VR), augmented (AR), and mixed reality (MR) technologies. The defining quality of VR is the ability to simulate a qualitatively new sensory experience of another reality. For the educational as well as for the artistic processes, this is of key importance, given the new type of user agency. The immersive approach is the top way to improve the learning process. In full availability of information, it is necessary to provide the conditions of knowledge construction by students (e.g., authentic situation). Yes, VR allows the teacher to modify the authentic situation, increasing the specialist's control over the cognitive process. Note that immersive techniques provide educational applicants access to a new interaction format in which their subjectivity is equal to the teacher's agency. Thus, the application of virtual reality technology contributes not only to the expansion of perceptual experience but also to the reflexive one. In addition, it is natural to increase the level of motivation and success of students involved in learning with the use of VR projects (González-Zamar, & Abad-Segura, 2020). Augmented and mixed reality technologies also enhance the student's sensory experience, which is an important auxiliary resource for art education - the ability to demonstrate and master the phenomena under study in direct contact. But also, AR and MR are a form of a new reality, combining physical and virtual dimensions. Consequently, stimulates education applicants to learn the possibilities of similar ways of combining. Turning to the experience of teaching through the use of the immersive method, we believe it is necessary to notice the depth of transformation in understanding knowledge as a result of learning (Namestiuk, 2020). The use of immersive technology gives the student the experience of sensual interaction with the subject of study. For the educator, this innovation reveals an opportunity to stimulate emotional learning within the academic paradigm. The distance between the participants of the learning process and the knowledge itself is reduced, and digital resources allow us to live this knowledge. In conclusion, let us note that the application of immersive methods implies the creative work of the teacher, who will be able to integrate technology into the overall learning system. Moreover, it is important to simulate the problem situations in which the student will construct knowledge (Yuliono, & Rintayati, 2018). The issue of digital and professional competence is, again, fundamental. The problematic situation can be the process of creation, which is especially important in art education. Working with a digital, virtual product limits the experience of contact, the student's involvement in transforming reality. At the same time, the application of 3D printing technology in educational institutions is promising. Making material objects according to the work program presented by the teacher is one of the most effective ways of developing students' creative and complex thinking. Moreover, for visual art specialists, such practice is of direct value as mastering professional tools and a resource for developing kinetics and praxis. Note that using technologies such as 3D printing should not be innovative for educational institutions, given their prevalence in the professional environment. Future specialists' training must be done according to the realities of the work process. While the material resources of higher education are limited by board strategy, providing participants in the learning process with basic tools is a high priority (Menano, Fidalgo, Santos, & Thormann, 2019). The ability to work with heterogeneous tools of creative expression is important and often the leading professional competency of the artist of our time. For example, the proliferation of Artificial Intelligence (AI)-based software has spurred the development of an art education structure supported by this technology (Zhang, Shankar, & Antonidoss, 2022). The timely adaptation of higher education ensures the effectiveness of the professional community going forward. In particular, exemplary experiences were gained by the teaching community during the quarantine restrictions due to the COVID-19 pandemic. The need to compensate for the limitations and support the functionality of the learning process stimulated a rapid process of updating and developing digital platforms, software, management systems, communication channels, etc. In general, the transition to distance learning has driven numerous educational innovations

(Rakhimov & Mukhamediev, 2022). The main advantages that characterise this format of learning are resourcefulness (access to information and tool platforms), communication (intensification of interaction between students and teachers, development of academic community, transparency in the work of the administrative sector, implementation of feedback), and facilitation (changing cognitive trajectories, values, and learning objectives, the new role of teacher and increasing student agency) (Xiong, Zhi, & Jiang, 2019). Summarizing, we can talk about positive trends in the European educational environment, which will ensure the integration of the latest tools in the learning process while contributing to the development of digital-age meta-competences in students.

### *Methodology*

It is noteworthy that transformations occur not only on the procedural but also on the content level. Philosophy of art as an agent of change is developing in the actual cultural discourse, and responsible and artistic education occupies new positions in an information society. Thus, classical frames on knowledge as the primary goal of learning are expanded, ways of assimilation and construction are supplemented, and the retranslation is heterochronous, as described above. At the same time, the digital age has brought a new agency aspect to art learning, embodied in art-based research (ABR). Returning to the problem of constructing knowledge in an authentic situation, we note that the method of creation conditions the result of learning by limiting it to a certain direction. Accordingly, the educational program must provide a variety of methodologies with which students work. ABR, as an alternative channel of cognition, guarantees the participants of the educational process itself as an embodiment of the principles of post-industrial society. Note that restricting the methods of gnosis makes it impossible to have comprehensive contact with the subject of research, levelling out its important qualities revealed by the use of alternatives (Vasconcellos & Siegesmund, 2020). Art-based research and art-based educational research (ABER) are important not only in the context of art education, because for scholars, in general, is an effective way to activate the creative, creative beginning of the research process: finding the problem field, defining new vectors and transposing the main constructs under study (Mulvihill & Swaminathan, 2020). For higher art education, however, the method paves another bridge between the scientific and the artistic, offering a more stable position in contemporary educational discourse, particularly at higher education. Art as an agent of change in orthodox scholarship offers a toolkit for dealing with categories of personal experience that are simplified or leveled in research projects because they are emergent, complex, or left unattended by the specialist (Lucero, 2018). The publications also suggest the broader context of the ABR approach as the general creative literacy of the professional. Sousanis' (2015) notes that art-based research does not require higher education but defines a new, more effective interaction with reality. Creativity can serve as a meta-competency that enhances the adaptive abilities of professionals in different industries. Detailing, from the perspective of the classical research process, the product of creative activity is a channel of representation of the qualities of the phenomenon under study, which offers the specialist those data that are not available in other methods of collection, as we noted above (Cahnmann-Taylor & Zhang, 2020). Accordingly, the artistic experience enriches the content of a scientific or educational project. It is the heterogeneity of actors that plays a key role in the development of relevant products. For example, agents can be both the researcher and educator implementing the project and the participants (students or respondents) or professional artists whose work is the research subject in a scientific or educational context (Prendergast, Leggo, & Sameshima, 2009). Current arts training programs address this approach. However, pattern viewing, driven by the transition to the digital age, promotes a rethinking of creativity so that each process associated with a particular product can be viewed as a subject of knowledge in its own right. Turning to the arguments presented in the paper, we can postulate the viability of this approach, given the effectiveness of multi-agent methods such as CBAE, group, or TD creative work. Note that in the latter case, subjectivity is transferred to a specific cognitive paradigm that reveals new qualities of the phenomenon. Notably, the criterion for the effectiveness of such interventions should primarily be the appropriateness of combining different models - both implicit in the case of multi-agent systems and explicit in the transdisciplinary process of cognition. Particularly, when considering issues of focalisation, the interpreter's subjectivity in interacting with the product should be considered. Accordingly, the ability to separate the positions of focalisation not only in

the product but also in the cut of its processing is an important competence in the preparation of the post-nonclassical period. However, the problem of literacy in art-based cognition is broader and requires the selection and development of standards that determine the appropriateness of seeking alternative channels of knowledge. To reconcile empirical demands and post humanist tendencies, Rousell (2018) considers the data event. In essence, how data is operationalized as a concrete event suggests the possibility of insecurity from the relational influence of the interpreter. In educational practice, this approach leaves room for reflection and transposition while maintaining the integrity of the phenomenon. In our opinion, the conceptualization proposed in the described work is one of the innovative ways of developing empirical cognition in the artistic direction. The improvement and empowerment of specialists in this direction is ongoing and provides for further research projects.

## **RESEARCH METHODOLOGY**

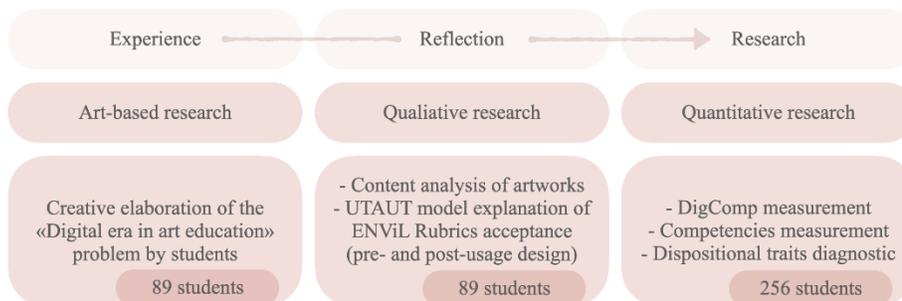
### **Procedure**

As noted earlier, the prevailing trend is toward qualitative research in the field. In addition, during the bibliographic review, we updated the limitations found in our predecessors' research. Particularly, it is necessary to involve the teaching staff in the survey, use standardized methods to further replicate, implement a cross-cultural approach, and take into account the psychological readiness of teachers to the new context of educational interaction. In the previous stage, we postulated the key directions of the development of art education in the countries of Europe, based on the research community's reconnaissance. Accordingly, at the stage of empirical processing of the problem, it is necessary to assess the qualities of teachers as agents of innovation of the mentioned process. The investigated qualities are operationalized through such indicators as: general competencies, digital competencies, readiness to accept new technology, and dispositional personality traits. In addition, the work considers the results of a focus group among teachers, during which the trends noted in the literature review stage were discussed, as well as students' creative exploration of the issue of digitalization of art education. Given the distinct commonality of the creative and educational process postulated in Vuk & Bosnar (2021), it was decided to design the empirical study based on the reflexive and transformative component of learning interaction. In the organizational phase of the study, we attempted to mimic the sequence of the creative process while integrating an art-based research standpoint with the principles of academic research. Accordingly, it was decided to implement the creative processing of the problems in the collection of products of higher education students' activities with the subsequent self-assessment by the participants of the educational process with the help of the ENViL rubric. Thus, we promoted students' creative understanding of innovations in the educational process, direct interaction with a particular manifestation of innovation. At the same time, we were able to get students' responses to (1) research question through content analysis of creative products. Notably, in this case, we turn to exploratory sequential design, actualizing the categories of analysis with the help of artistic search and students' reflection. Legitimately, a pre-and post-usage survey of respondents was conducted about the accessibility of using the ENViL tool when using the UTAUT model. In this way, we can test, in an experimental context, their ability to adopt a new didactic technique (in particular, ENViL Rubrics) and gain incidental insights into the degree of innovation at their institutions. The final step is to measure potential personal predictors of readiness and competencies required for learning in the new digital context.

The personal profile of students is formed according to a five-factor model (Farrukh, Sajid, Zreen, & Khalid, 2020). The relevant indicators are treated as operant of the basic dispositions without differentiating between aspects and facets. Whereas we assessed the overall compartments using several diagnostic tools, according to the categories highlighted in the literature review phase: Abreaction Test for Evaluating Creativity, Critical Thinking Assessment, Lifelong Learning Scale, and Self-Assessment of Problem-Solving Strat -Smits & Groen, 2020). Students' digital competencies were assessed using a questionnaire based on the DigComp model (Mattar, Ramos, & Lucas, 2022). Note that the exploratory approach does not diminish the value of the theoretical framework on which we rely. On the contrary, the described design

gives us additional insight into the problem field and has educative value for students working with the new method. A detailed description of the research process is presented in Figure 1.

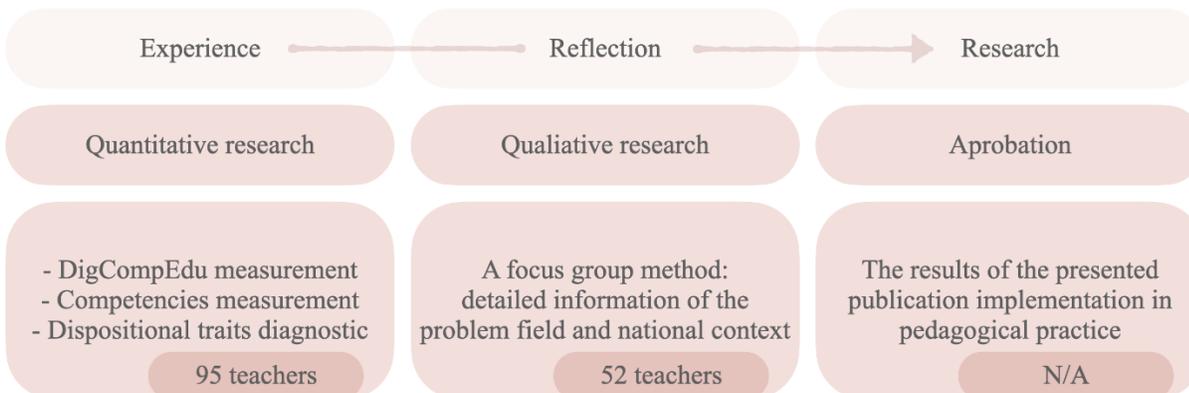
**FIGURE 1**  
**STAGES OF EXPLORATORY STUDY (STUDENTS SAMPLE)**



Source: *Drafted by the authors based on Vuk & Bosnar (2021)*

When working with teachers, we relied on explanatory sequential design, which is based on collecting quantitative data on teachers' professional activities through questionnaires. The quantitative representation reflects the level of “experience” according to the art-based research model to which we appeal. This step is embodied individually through the 1ka platform. The survey includes an assessment of teachers' professional competencies using the DigCompEdu framework and the above questionnaires. In the next stage, aligning the data with the student survey results, a qualitative research to detail the features of the educational process is offered. The method of intercultural focus groups was used. A group discussion of current teaching needs was conducted using video conferencing on the Zoom platform. Each group involved educators from several public institutions from all countries involved in the study. The issues discussed correspond to the main categories presented in the theoretical part of the publication. In working with teachers, the art-based research phase was excluded, given the respondents' limited time and motivational resources. Instead, the “research” phase will be implemented post-facto by testing and implementing the results of the research project. In general, the research strategy when working with respondents-teachers (See Figure 2) is focused on forming an environment for self-disclosure and obtaining explanatory information about the trends established in the previous stages of work.

**FIGURE 2**  
**STAGES OF EXPLANATORY STUDY (TEACHERS SAMPLE)**

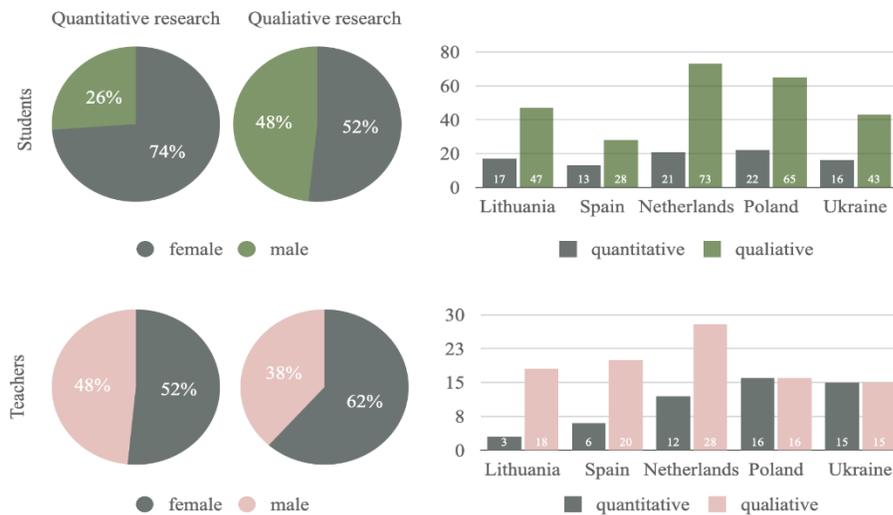


Source: *Drafted by the authors based on Vuk & Bosnar (2021)*

## Sample

The sample is formed using the stratometric method among scientific and pedagogical workers and students of 2-5 years of education in educational institutions of art direction. Respondents from 5 European countries: Lithuania (Northern Europe), Spain (Southern Europe), The Netherlands (Western Europe), Poland, and Ukraine (Eastern Europe). Taking into account the requirement of confidentiality of the administration of educational institutions, the names of the institutions involved in the study are not indicated in work. A total of 430 students and 156 teachers were interviewed. The art-based research phase was joined by 89 students whose works were presented at the group meetings at educational institutions. The works presented in the publication were provided with the respondents' consent. During the data preparation phase, 174 student and 61 faculty respondents were excluded. Accordingly, the final sample consists of 256 students and 95 faculty members. Statistical processing and predictive modeling were implemented based on the responses received. Any additional information would be well conducted and required. We will present the demographic profile of the study sample below as a visualization (See Figure 3). Note that characteristics such as age and economic status of the respondents' family are not reflected, given the detailing of these data in work during the one-factor analysis of variance.

**FIGURE 3**  
**DEMOGRAPHICS OF SAMPLE**

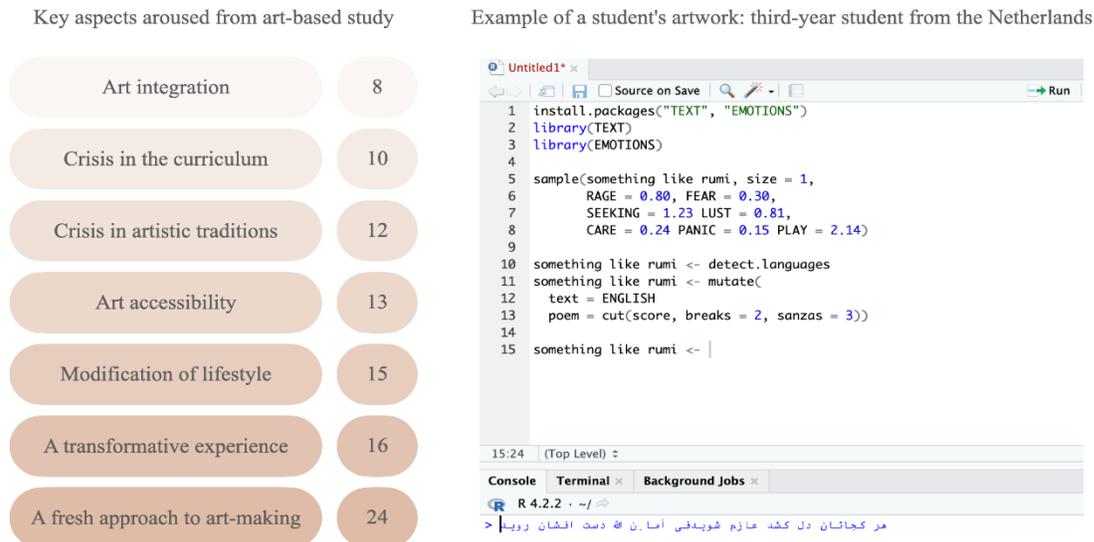


Source: *Compiled by the authors based on data collecting results*

## RESEARCH RESULTS

The students' artistic analysis of the concept of the Digital Age in art education provided important alternative positions on the problem under study. First of all, we can notice that the students raised several ethical issues that require attention in the academic community. However, there are also categories in the works of higher education applicants that are important for quantitative analysis and were not taken into account in developing the theoretical framework. Namely, the problems of inclusiveness and accessibility of creative projects are worth considering in further research projects. The results of the content analysis are presented in a graded representation of the main narratives realized by the students of art programs. In addition, below, one of the works created as a component of art-based research by a 3<sup>rd</sup>-year student from the Netherlands, who has consented to publication on condition of confidentiality, is offered (See Figure 4).

## FIGURE 4 RESULTS OF ART-BASED RESEARCH



Source: *Complied by the authors based on empirical research*

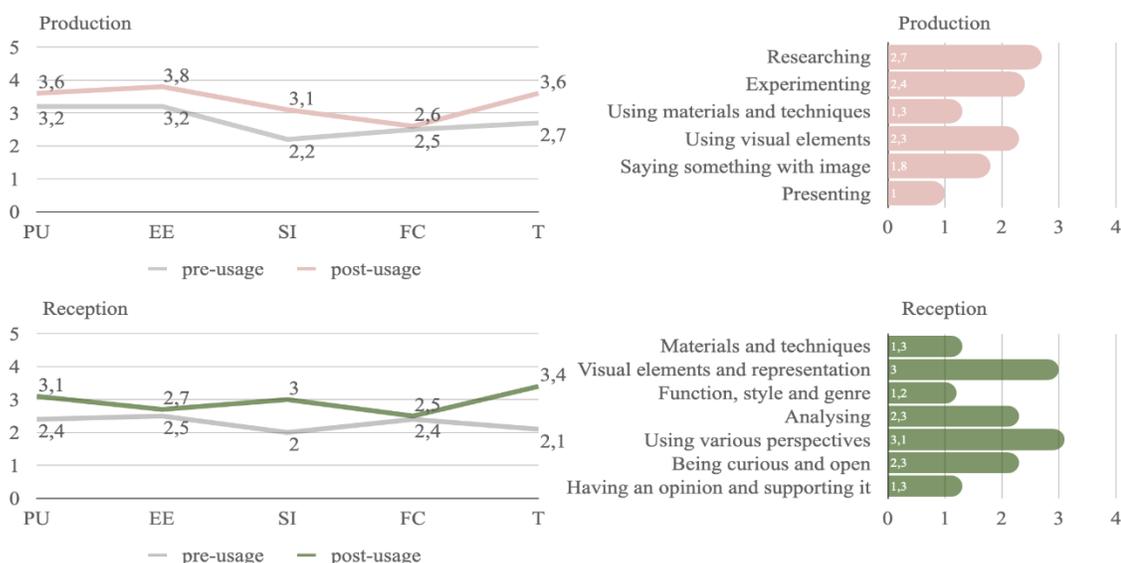
Accordingly, several trends related to the transition to the digital age were actualised in the process of students rethinking the concept of art education. Note that the formation of a matrix based on the content of the analysis has no content in this case, given the volume of works analyzed and the heterogeneity of formats in which students worked. The range of viewpoints expressed by students in their work indicates that they need adaptability from educators. The educational process must meet the changing needs and expectations of digital-age students. This may involve introducing new technologies and teaching methods as well as the openness of new ways of transposition. Digitalization greatly expands the tool, provides new presentation channels, and promotes accessibility and inclusivity in the arts.

In contrast, one of the key ideas identified in the content analysis is the potential for a crisis of the creative tradition. This idea reflects the current trend in art education, which emphasizes the need to balance traditional approaches with new, innovative methods, as we noted earlier. In addition, we will provide a clarification that is illustrative of one of the student works. A creative product simulating the writing of a poem using RStudio, a dynamic digital representation of the integration of idea art into the daily life of the information society, was performed. The central part of the work is a text box where the viewer is invited to create their poetry using the resources of the programming environment. Below, in the console, the student quotes Rumi's poem, "Go where you are drawn, said the king, and dance your way. You are protected," postulating the intersection of art and technology. The emphasis of the work is on the accessibility of the pleasures of art. Using RStudio, a popular programming environment for data analysis and visualization, to create digital artworks that allow viewers to generate poetry with just a few keystrokes suggests that technology can be used to overcome traditional barriers to creating art and promote inclusivity. The illustration also underscores the idea that in the digital age, art education can be more dynamic, interactive, and engaging than ever before. This suggests that students can use technology to create, explore, and experiment with different forms as they learn. Incorporating Rumi's famous verse into a work of art also emphasizes the importance of art history and understanding the cultural and historical context of artistic expression. This aspect of the artwork can be seen as an inclination toward the role of art education in promoting cultural literacy and critical thinking in an information society.

Indeed, in further research practice, we can embody the discourse on this issue in qualitative and quantitative analysis. The process of self-assessment and group assessment of work using ENVIL rubrics is the next important stage of work that will answer questions about higher education applicants' readiness

to operate in the new learning environment. The UTAUT pre-usage and post-usage questionnaire was relied on to determine students' acceptance of the new methodology of reflective learning processing. Given the substantive novelty of the ENVIL rubrics, we turned to this model as a method of reflective and transformative learning integrated into the process. Moreover, the rubrics survey was implemented digitally using e-learning platforms. Accordingly, in this paper, we consider the assessment results as an operant of students' beliefs and behaviors about the new work medium. We relied on a detailed questionnaire form and considered variables such as utility (PU), effort (EE), social influence (SI), facilitation (FC), and trust (T). An appropriate visualization of the results is provided in Figure 5.

**FIGURE 5**  
**ENVIL RUBRICS ACCEPTANCE**



Source: *Complied by the authors based on empirical research*

The results of the ENVIL Rubrics pre- and post-usage questionnaires indicate their effectiveness in student application. Although formal statistical tests were not conducted, given the non-normality of the distribution, descriptive statistics showed increases in scores for all constructs (expected performance, expected duration of effort, social influence, and favorable conditions) and the total score on the post-use questionnaire compared to use. This indicates that students became more confident in the usefulness of the rubrics to achieve their learning goals and found the use of the rubrics easier and more straightforward than during the theoretical familiarisation phase. However, the construct of favorable conditions has the lowest rating in both questionnaires, indicating that students' resources are quite limited and they largely determine the effectiveness of using rubrics. Limiting this stage of the research to the goal of determining the main constructs, according to the exploratory model, one can proceed to the processing stage of quantitative proper data representation. Particularly, the main task was to answer (3) and (4) research questions. To assess students' readiness and competencies, the results of a single-factor analysis of variance according to Fisher's criterion and extraction from Post Hoc tables according to Tukey's criterion are proposed. In addition, indicators are derived from post hoc tables. Thus, the table of variance analysis showed that age and financial status were significant predictors of the variables characterizing students' educational competencies, with F values of 22.161 and 18.888, respectively, and values of  $p < 0.05$ . This indicates that there are significant differences in the mean values of the variables on the scales of the methods under consideration. In addition, based on the Tukey's HSD retrospective test results, we found that junior faculty differ significantly from senior faculty, but do not differ from students in their ability to implement learning objectives. Moreover, according to the results of the message table, the chi-square takes on a value of 39.3

for Lifelong Learning in terms of the overall acceptance of new technology for participants in the educational process as a whole. Note that according to the 5 degrees of freedom provided by the presented design,  $\alpha = 0.001$ ,  $w = 0.31.2$  95% CI. Accordingly, the determining factor of adaptation to modern conditions can act exactly as readiness for lifelong learning.

**TABLE 1**  
**PREDICTORS OF DIGITAL-AGE PREPAREDNESS**

Educational Competency	Model R <sup>2</sup>	F	p-value	Strongest Predictor	Beta Coefficient
Evaluating Creativity	0.237	16.11	<0.001	Openness	0.438
Critical Thinking	0.309	24.08	<0.001	Conscientiousness	0.520
Lifelong Learning	0.148	8.65	<0.001	Conscientiousness	0.352
Problem-Solving Strategies	0.185	12.65	<0.001	Conscientiousness	0.401
Digital Competencies	0.264	19.91	<0.001	Openness	0.469

Source: *Complied by the authors based on empirical research*

A linear multiple regression analysis was conducted to determine the relationship between the personality factors and the different educational competencies, students, and faculty. Dependent variables included creativity assessment, critical thinking, lifelong learning, problem-solving strategies, and digital competencies. In contrast, independent variables were the five personality factors from the corresponding model: openness, conscientiousness, extraversion, enjoyment, and neuroticism. The results showed that the two personality factors were significant predictors of all educational competencies with different levels of effect size. For creativity, the model accounted for 23.7% of the variance,  $F(5, 250) = 16.11$ ,  $p < 0.001$ . The openness was the strongest predictor with a standardized beta coefficient of 0.438, indicating that a one-unit increase in openness was associated with a 0.438 standard deviation increase in creativity. Integrity was the strongest predictor, with a standardized beta coefficient of 0.520 for the lifetime learning model was 14.8% of the variance,  $F(5, 250) = 8.65$ ,  $p < 0.001$ . Characterological predictors were expressed for art students. At the same time, the didactic value of identifying personality predictors remained open. Open-mindedness was the strongest predictor of creativity and digital competence scores, with beta coefficients of 0.438 and 0.469, respectively. Integrity was the strongest predictor of critical thinking, lifelong learning, and problem-solving strategies with beta coefficients of 0.520, 0.352, and 0.401, respectively. These results suggest that educators and educational programs should consider the influence of personality traits on educational competencies when designing curriculum and instruction. For example, instruction and tasks that foster creativity and digital skills can benefit from providing opportunities for exploration and open-ended problem-solving tasks. On the other hand, instruction and tasks that focus on critical thinking, lifelong learning, and problem-solving strategies can benefit from emphasizing self-discipline, goal setting, and attention to detail.

## DISCUSSION

The results obtained in the empirical evaluation of the problem emphasize the potential of art position as an agent of change. A new context of art education was formed using discursive analysis combined with mathematical-statistical methods. The results confirm the idea of personality definability traits as the

foundation of professional performance, postulating the idea of affinity work. The results showed that openness as the basis of creativity and conscientiousness as the foundation of lifelong learning is the basis for an effective adaptation in a new learning context, both for teachers and students. The obtained values are consistent with previous studies showing a positive relationship between conscientiousness and academic performance. According to the results, the possibility of developing a reflective and transformative artistic program focused on personal development that will exist in the context of the digital age can be assumed.

Moreover, the analytical methods of phenomenology, structural approaches, and post structural critical theories are effective pathways that can be positively accepted among art students, given the established predictable model. Students' readiness to work productively in a new learning context determines their self-efficacy in the creative process. Introducing new technologies in the interdisciplinary, discursive, and cognitive dimensions that will form the basis of the digital era in higher education is a promising line of work. The new approach to art education will become the basis for theoretical meta-discourses on visuality, contemporary art, and socio-cultural dynamics in the future, expanding the influence of artistic activities of the student community as future agents of change. The potential of new ways of constructing knowledge will be reflected not only in the learning environment but will modify the social reality of contemporaries. The study also emphasizes the importance of a universal theme that raises moral and ethical issues and connects it to the student's personal experience to create knowledge. It remains open to setting a working goal, creating new ideas, and selecting ideas to be visualized. Essential steps in this process are finding the right form of problem or idea content and choosing appropriate media and materials. Reflection and analysis of the process and results and the development and evaluation of visual works are also an integral part of this method. However, the study also highlights the obstacles that teachers and students face regarding innovation in educational interaction. Although the teachers in the study demonstrated a high degree of personal readiness to work in the new digital context and an appropriate level of digital competence, these innovations require the development of meaningful implementation strategies. This study's findings can help inform future educational policies and practices to better prepare the educational environment for the digital age.

## CONCLUSION

Digitalization has changed how art education is delivered and received, offering innovative and dynamic teaching methods that engage students in new and exciting ways. While traditional art forms and techniques remain essential, the digitalization of art education provides a unique opportunity to explore new forms of creative expression, allowing students to experiment and push boundaries. The use of digital tools and technology in art education has opened up new career opportunities for students as the demand for digital artists and designers grows in various fields. However, as with any technological advancement, there are challenges associated with integrating digitalization into art education, particularly concerns about the impact on traditional art forms, accessibility, and digital literacy. Overall, integrating digital technology into art education is a valuable addition to traditional teaching methods, creating a more dynamic, interactive, and engaging learning experience for students.

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