DIGITALCRAFT

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DigitalCRAFT: Enhancing Vocational Skills Through Design Thinking and Graphic Design ACTIVITY A.3 CURRICULUM DEVELOPMENT

- NATIONAL NEEDS ASSESSMENT REPORT-ROMANIA

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1. THE CONCEPT OF DESIGN THINKING

Design Thinking is described as a style of thinking or as a study of cognitive processes, which then manifests itself in the action of design thinking (Cross, 2007; Dunne & Martin, 2006).

In addition, design thinking is a holistic concept for those forms of cognitive learning and design, which allow students to work in an interdisciplinary way, producing positive changes.

Therefore, design thinking offers concrete solutions to complex problems that are not easy to define or understand. Design/projective thinking focuses on the need to create ideas and seek solutions (products, services, systems) to problems that arise and offers a new approach for a specific set of users (Lindberg et al., 2010).

Design Thinking can be seen as a multidisciplinary concept that provides a valuable methodology for creative work across disciplines, as it complements monodisciplinary thinking (Lindberg et al., 2010). Unlike analytical thinking in science, which leads to mono-disciplinary technical problem-solving solutions, teaching strategies in projective thinking focus on various disciplines and involving all of their perspectives (Brown, 2008).

Design/projective thinking requires creativity, and creativity is a 21st-century core for developing thinking skills for students (Mishra & Mehta, 2017).

Researchers suggest that creativity is also important for teachers, but given the challenges and difficulties they face, creativity is often seen as a leisure activity in the classroom (Root-Bernstein & Root-Bernstein, 2017). For many people, creativity remains a sought-after but intimidating skill (Williams, 2002).

It has been suggested that design thinking provides flexibility and easily accessible ways to guide teachers and enhance their creativity in tackling practical problems. In addition, Robinson (2011) and Pendleton-Jullian and Brown (2015) state that design thinking skills are key to 21st-century creativity.

Design thinking has become a phenomenon in various fields, including education. Projective thinking has become part of commercial and industrial activities, which promote the understanding of customer needs.

However, the principles of design thinking can be used and integrated into the educational context, proving to be an excellent tool to improve the teaching-learning process, especially for the development of skills among students.

Design thinking is a method of approaching the design process that provides a solution to a problem. This approach will greatly influence the way decisions are made, which in turn will produce new and innovative ideas in the field of education.

Projective thinking is often referred to as a new paradigm for addressing problems in many professions and fields, including IT, business, research, innovation, and education.

Therefore, design can be considered an excellent tool used in teaching and learning to develop twenty-first century skills (Kurokawa, 2013; Glen et al., 2014), as it involves collaboration to solve problems, by finding and processing information, taking into account the real world, people's experiences and feedback, by applying creativity, critical thinking and communication (Ray, 2020).

In the literature, projective thinking is sometimes referred to as "design-based" learning". She is perceived as a "model for increasing creativity, resilience, commitment, and innovation" (Dolak et al., 2013). The benefit of projective thinking in pedagogy relates to how it "enables students to work successfully in multidisciplinary teams and implement positive, design-led change in the world." In other words, the design thinking approach can be considered as a solution for solving everyday problems (Kijima et al., 2021).

Projective thinking skills can also be developed through various activities at school, especially in group/team work and projects, as one of the preconditions for design thinking is teamwork and open communication.

As the OECD mentioned in **the Future of Education 2030 and beyond**, the global trend is to have a student-centred educational process and the development of key competences by building a nonlinear and dynamic curriculum that recognises that every student is different. Thus, the role of the student is no longer that of a passive participant in the learning process, but of an active participant in this process, together with the teachers and the community to which he belongs.

In recent years, the Design Thinking (DT) method has become increasingly popular in education as a practical, professional and logical tool in creative problem solving that contributes to the development of key competences.

The Design Thinking method is collaborative, experimental and non-linear/cyclical, involving teamwork and reflection, having as an important mark the work process itself, and not just obtaining a solution, a result. The method was popularized by Stanford University (d.school, 2010), which also provided

a definition of Design Thinking as a nonlinear and repetitive process that has 5 steps: Empathy, Definition, Ideation, Prototyping and Testing. This allows students to imagine solutions to a real problem, given the arguments brought by multiple educational theories that the traditional model, based only on knowledge, no longer works and should be extended to include elements that contribute to personality development (e.g. metacognition and project-based learning).

It has been shown that methods based on learning through one's own experiences are more effective in helping people retain information (about 70% of learning occurs as a result of one's own experiences).

On the other hand, education for social innovation is a relatively new concept, which is linked to social entrepreneurship, social innovation and change (Rivers, 2015).

Design Thinking is a mindset and approach to learning, collaboration, and problem-solving. In practice, the design process is a structured framework for identifying challenges, gathering information, generating potential solutions, refining ideas, and testing solutions. Design Thinking can be implemented flexibly, serving as well as a framework for designing a course or a roadmap for an activity or group project.

Design Thinking can be considered both a method and a mindset.

What makes design thinking compared to other approaches, such as project-based learning, is that, in addition to skills, it emphasizes the development of mindsets such as empathy, creative confidence, learning from failure, and optimism.

Design Thinking is a tool that teachers can add to their toolkit to develop future-oriented learning skills within the curriculum – specifically, creativity, collaboration, critical thinking, empathy, and interdisciplinary application of knowledge to solve complex real-world problems.

Schools can use different elements of design thinking in the classroom, either implicitly or explicitly. It's a creative way to get to the answer to a problem and understand how you're learning.

Design Thinking can be used in the school planning process. It allows schools to empathize with students, teachers and the community, so that they understand their needs, putting the student at the center of the whole process at the school level.

2. PROJECT DESCRIPTION DigitalCRAFT: Enhancing Vocational Skills Through Design Thinking and Graphic Design

The **DigitalCRAFT** project is an educational initiative aimed at redefining vocational education and training (VET) in the field of design thinking and graphic design.

Recognising the critical role these disciplines play in today's digital and design-oriented labour market, the project seeks to bridge the gap between current educational offerings and the skills needed in the modern workplace.

Over the course of 14 months, the project aimed to create a synergy between Italian and Romanian teachers in order to develop a common curriculum that would not only reflect contemporary industry practices, but also be proactive in anticipating future market trends.

The project is particularly significant in focusing on the transformative power of design thinking and graphic design, which have become indispensable tools for innovation, problem solving, and creating added value in various industries.

GENERAL OBJECTIVE

- Measurably improving the quality and relevance of vocational education and training in the field of design, innovation and graphic design, during the 14-month period of project implementation, by encouraging international collaboration, developing and implementing a common curriculum and empowering at least 50 VET teachers/trainers from Italy and Romania, with the ultimate goal of improving students' employability and career prospects of VET education in the future dynamic job market.

SPECIFIC OBJECTIVES

- **Promoting collaboration and knowledge exchange between partners [Un/lab and SLI BACĂU]** to improve vocational education and training, vocational training methods in the field of design, innovation and graphic design.
- **Improving the capacity of teachers/trainers and vocational training institutions** to effectively empower students with relevant skills for the future job market, by creating a common curriculum that integrates design thinking methodologies, design and graphic design techniques into the educational process.
- **Strengthen the professional development of teachers/trainers and VET institutions**, by ensuring their access to virtual workshop programmes and virtual

training sessions designed to improve their understanding and implementation of the new curriculum, teaching methods and graphic design tools.

- **Increase the visibility and understanding of the new curriculum among VET teachers/trainers and institutions**, by designing and running an awareness campaign, which will use a short video to effectively communicate the benefits of integrating design thinking methodologies and graphic design techniques in VET education.
- **To improve the employability and career prospects of VET students**, providing them with industry-relevant skills through the new curriculum, which integrates design thinking methodologies and graphic design techniques, thus ensuring that they meet the dynamic requirements of the future labour market.

MAIN ACTIVITIES

○ **A.1 PROJECT MANAGEMENT** ○ **A.2 COMMUNICATION AND DISSEMINATION** ○ **A.3 DEVELOPMENT OF THE CURRICULUM** ○ **A.4 TRANSNATIONAL TRAINING IN ITALY** ○ **A.5 NATIONAL FORMATION IN ROMANIA** ○ **A.6 AWARENESS CAMPAIGN**	

TARGET GROUP

DIRECT TARGET GROUP:

- **VET teachers and trainers** from partner organisations and countries, who will gain knowledge on innovative teaching, innovative methods and tools.
- **Educational institutions and organizations** interested in adopting or adapting the developed curriculum.

INDIRECT TARGET GROUP:

- **Students from VET schools in Italy and Romania**, who will acquire skills relevant to the labor market.
- **Schools from Romania and Italy**, who expressed interest in the project activities during the design process, being involved in the needs assessment, as follows:

SLI BACĂU:

1. "Ion Ghica" Economic College Bacău (100 teachers and 1336 students);
2. "Dimitrie Ghica" Technical College Comănești (88 teachers and 1180 students);
3. "Gheorghe Asachi" Technical College Onești (70 teachers and 823 students).

Un/Lab: VET College "E. Orfini" (53 teachers and 655 students).

3. RESEARCH CONDUCTED

3.1. PURPOSE OF THE RESEARCH

Through its objectives, the project aimed to better prepare vocational and technical education students for the future labour market and to increase their employability.

The DigitalCraft project responds to the needs and objectives of the participating organisations, but also to the directly identified needs of the target groups, by acquiring up-to-date knowledge and skills by VET teachers and trainers. As these teachers apply the new curriculum and teaching methods, students in VET schools, who form the target group indirectly, will acquire skills relevant to the future labour market, increasing their employability and career prospects.

Activity A.3 – CURRICULUM DEVELOPMENT – is crucial for achieving the project's objectives, as it focuses on creating a comprehensive and interdisciplinary curriculum that incorporates design thinking methodologies and graphic design techniques for VET students from various fields.

Within the activity **A.3 CURRICULUM DEVELOPMENT,** it was envisaged that the two partners **[UnILAB and SLI BACĂU]** would collaborate to develop a comprehensive curriculum, which would incorporate projective thinking methodologies and graphic design techniques, making it applicable to various sectors and relevant for students in different VET disciplines.

3.2. RESEARCH METHODOLOGY

At activity **A.3.1 Needs assessment**, in order to carry out the needs analysis, we started from the development of a guide for partners for conducting interviews**.**

The methods and tools used in the study aimed to collect information that would highlight the following types of effects:

- at the individual level;
- in the medium term, at institutional level;
- long-term effects, both at the individual and institutional levels.

Methods and techniques:

- Quantitative Research: Questionnaire Survey
- Descriptive statistical analysis of the data collected in the survey

The guide was based on the following main guidelines:

1. **Objective**

   The interviews were designed for the purpose of collecting specific perspectives for the needs assessment phase of the Digital Craft project, with a particular focus on the perspectives of VET teachers and industry professionals.

2. **Number of interviews:**

   Minimum 4 interviews per partner country, the target group consisting of at least 2 VET teachers and at least 2 professionals from the VET sector and industry in the fields of design, innovation and graphic design.

3. **Approach from the students' perspective:**

   Instead of interviews, a questionnaire will be applied to a number of at least 10 students, students who come from various VET schools in each country. This approach aims to collect a wider range of data from the student population.

4. **Selection criteria for interviews:**

- Participants must be active in teaching in VET schools or in industry in the fields of design, innovation and graphic design.
- A balance between experiences and environments is sought to ensure a comprehensive understanding of the VET landscape.
- Willingness to participate and contribute to the project's objectives is essential.

5. **Interview methodology:**

- Semi-structured interviews will allow for in-depth exploration of participants' points of view while covering core topics relevant to the project.
- The interviews will last 30-45 minutes.

6. **Questionnaire for students:**

- The questionnaire will have to be distributed in VET schools, ensuring a mix of subjects and demographic backgrounds.
- The responses will be analysed to identify the specific trends and needs of this target group.

3.3. RESEARCH PARTICIPANTS

General data:

A. INTERVIEWS

The interviews were conducted with 6 teachers from VET schools in Bacău County, as follows:

- **"Ion Ghica" Economic College Bacău;**
- **"Dimitrie Ghica" Technical College Comănești;**
- **"Gheorghe Asachi" Technical College Onești.**

Also, interviews were organized with 3 professionals from the VET sector and industry in the fields of design, innovation and graphic design and in the field of advertising production.

B. QUESTIONNAIRES APPLIED TO STUDENTS

The questionnaires were applied on a sample of 62 students, who are schooled in grades X to XII, in 3 VET schools in Bacău County, respectively:

A. "Ion Ghica" Economic College Bacău;
B. "Dimitrie Ghica" Technical College Comănești;
C. "Gheorghe Asachi" Technical College Onești.

The respondent students are aged between 16 and 18 years old and come from both rural and urban areas.

4. ANALYSIS OF THE ANSWERS PROVIDED TO THE INTERVIEWS CONDUCTED WITHIN THE DIGITALCRAFT PROJECT

Based on the Interview Guides, interviews were conducted with teachers and professionals from the VET sector and industry in the fields of design, innovation and graphic design.

The interviews were designed for the purpose of collecting specific perspectives to inform the needs assessment phase of the **DigitalCRAFT** project, focusing specifically on the perspectives of VET teachers and industry professionals.

The purpose of the interviews was to gather valuable perspectives and feedback from VET and vocational teachers, respectively from industry professionals in the fields of design, innovation and graphic design. The interviews aimed to identify current gaps and challenges in the existing VET curriculum, understand the evolving needs of the industry, and gather suggestions for incorporating digital tools and methodologies. This information will be essential in shaping curriculum development.

The insights gained will help us create a more relevant, comprehensive and forward-looking curriculum that meets the demands of the modern workplace and enhances the skills and competences of VET students in these creative areas.

The semi-structured interviews allowed for in-depth exploration of the participants' points of view while covering the core topics relevant to the project.

4.1 INTERVIEWS WITH VET TEACHERS

The interviews conducted with teachers in vet education focused on the following **ASPECTS:**

1.1. Troubleshooting

Design thinking offers a systematic approach to problem solving. It helps students think critically and creatively and develop solutions that are not only effective but also innovative. These skills are valuable in any professional context, not just in design-related fields.

1.2. Resiliency

The modern labor market is dynamic and requires workers who can adapt to new technologies and methodologies. Design thinking and graphic design skills ensure that VET students are well-prepared to accept changes and new challenges in various industries.

1.3. Communication

Graphic design skills are essential for effective visual communication. With the growing importance of digital media, the ability to create clear and compelling visual messages is valuable in sectors ranging

from marketing and communication to data presentation and user interface design, including unrelated fields such as electrical, mechanical, and hydraulic studies.

1.4. Relevance of interdisciplinarity

Design thinking encourages an interdisciplinary approach, combining knowledge from different fields to create holistic solutions. This is increasingly important as the boundaries between traditional roles blur and collaboration between different sectors becomes more common.

1.5. User-centricity

Design thinking focuses on the user experience, ensuring that products, services, and systems are designed with the end user in mind. A focus on customer experience is crucial to the success of any business.

1.6. Innovation

Both design thinking and graphic design are the drivers of innovation. They encourage thinking outside the box and developing new ideas, which can lead to breakthroughs in any sector.

1.7. Digital competence

In today's digital age, graphic design skills are intertwined with digital literacy. Understanding the tools and principles of digital design is now a fundamental skill, as digital content dominates in communication, marketing, and product development.

1.8. Competitive Advantage

In a crowded job market, having design thinking and graphic design skills can differentiate VET students from their peers, giving them a competitive advantage when looking for a job.

1.9. Entrepreneurship

These skills are also key to entrepreneurship. Design thinking helps identify market opportunities and develop innovative business models, while graphic design is crucial for branding and customer engagement.

1.10. Cultural and social empowerment

Design thinking often involves considering the cultural and social context of products and services, which is important for creating socially responsible and culturally sensitive solutions.

4.1.2 ANALYSIS AND INTERPRETATION OF THE ANSWERS TO THE INTERVIEWS WITH TEACHERS IN VET EDUCATION

The answers provided by VET teachers will be analysed in the following to identify the specific trends and needs of the target group to which they belong.

Question no. 1: How do you integrate design thinking problem-solving exercises into your curriculum?

The answers to this question showed that some teachers apply the principles of design thinking in the curriculum, in teaching-learning activities.

In general, the interviewed teachers stated that they have developed, over time, mixed strategies to stimulate inventiveness, imagination, eccentricity, spontaneity, overcoming the fear of breaking theoretical barriers. They believe that students need different channels of communication, in order to get them actively involved and make connections from several fields.

The teachers said that, many times, they try to use interactive exercises, both individual and collective, to hold debates on certain issues or concepts, to try to use new, innovative solutions.

They also try to capture their attention, motivation, to come up with new topical topics, to create usable products together with the students, working in groups, on teams, to create interactions, to link the concepts/notions taught to their lives, interests, concerns, experiences.

One of the interviewed teachers proposed several **methods through which problem-solving exercises related to projective thinking could be integrated** into the curriculum, namely:

1. Creating a dedicated module in the curriculum for learning and applying the principles of projective thinking. This module could include theoretical lessons on the principles of Design Thinking and practical exercises for their application.

2. **incorporating the principles of Design Thinking into other disciplines**, such as economics, marketing, commerce, by adapting exercises and projects to promote creative thinking and problem solving. For example, creating a product catalog for the practice company.

3. **promoting interdisciplinary projects, which involve the use of projective thinking to solve complex problems**. These projects could involve students from different classes or disciplines collaborating to tackle a real or simulated problem.

4. **organizing extracurricular activities, such as design clubs or innovation competitions in which students can apply and develop projective thinking skills in a more relaxed, creative environment**. Currently there are certain activities, such as the fairs of exercise companies, in which a contest takes place on certain sections, some of them also involving this part of creation and innovation, such as: the best website section, the best advertising spot, the most beautiful creative catalog and others.

5. **Providing additional resources and learning materials for students**, such as books, videos and online tutorials, to help them understand and practice the concepts and techniques of design thinking outside of class hours.

6. **Implementing ways to assess projective thinking skills**, such as individual or group projects, presentations and students' design portfolios, followed by constructive feedback for continuous improvement of their performance.

Question no. 2: Can you give an example of how the current curriculum prepares students to adapt to technological advances in design?

The teachers' answers to this question highlighted the fact that, currently, the curriculum is based on the acquired skills, it aims to help students develop all the skills they need to become adults, to become adults in a future job.

One of the interviewed teachers, a teacher at an art college, exemplified this aspect, mentioning the fact that at vocational high schools, a new discipline was introduced - computer image processing, deepening this subject developing modern technical skills for using computers and information technologies, graphic processing operations. In this subject, students:

- He learns tools, various and complex techniques of image manipulation.
- develops projects - usable products, for example posters, business cards, promotional materials, advertising materials, flyers, banners - functional, practical and aesthetic products, which develop their creativity, but also the acquisition of a technical, artistic vocabulary, which they can develop later.
- They work in teams, learning to document themselves, to understand the specific tasks of the respective project, to meet deadlines, to collaborate with other team members, to give and obtain feedback.

Also, another teacher, a physics teacher at a VET high school, mentioned that students should not limit themselves to the rote learning of definitions or laws, without understanding the phenomena, considering that they should be taught to make connections and to understand, to interpret the new information they are facing.

Another teacher gave a number of examples of how the current curriculum could prepare students to adapt to technological advances in design, namely:

- **the use of design software**, in art, technology or even mathematics classes, through which students could learn to use different design software, such as Adobe Photoshop, Adobe Illustrator, Corel Draw or even CAD software, Computer Aided Design, which are frequently used in the design industry. Through these apps, students can learn how to create and manipulate digital images and models, preparing them for use in professional practice.

- **carrying out technology-based design projects**, i.e. students could be encouraged to carry out design projects, which involve the use of modern technologies such as 3D printers, augmented or virtual reality devices or even construction robots. These design projects could be integrated into the practice firm-related modules in grades 11 and 12, giving students the opportunity to experiment and understand how technology can be used to create innovative design solutions.

- **To achieve collaborations with industry professionals**, by organizing collaborations between the school and professionals in the design and technology industry, in order to provide students with a real perspective on how technology is used in professional practice. These collaborations could include presentations, lessons, visits to design offices or advertising creative firms, for example, or even internships for students.

- **organizing elective courses or special interest clubs**, where students can explore and specialize in specific areas of design and technology, such as graphic design, product design, and others. These additional activities would allow students to develop their skills in a more focused environment and explore current technologies and trends in the industry in more depth.

By integrating these elements into the current curriculum, students will be prepared to adapt to technological advances in design and become competent innovative professionals in their field of activity.

Question no. 3: In what ways does the curriculum emphasize the development of visual communication skills?

The answers to this question highlighted the following main aspects:

- It is necessary for students to acquire a series of theoretical notions - a compositional structure, highlighting a center of interest, methods, color theory, distribution of spaces, balance between visual and textual components, dynamism, the power to direct the viewer to the most important point or information in the image
- Using, in teaching activities, IT equipment, such as, for example, the interactive whiteboard to present experiments to students, the graphic, visual part being important for understanding the concepts taught.

A teacher interviewed gave a number of examples of how the current curriculum could emphasize the development of these visual communication skills, namely:

1. **through visual arts and graphics courses**. The curriculum, therefore, can include courses dedicated to visual arts and graphics in which students learn about the principles of design, composition, color, shape. These courses could help students develop and develop a solid understanding of visual language, but also improve their communication skills through images.

2. **through the use of technology and design software**. Students can be taught to use different technologies and software, such as: Adobe Photoshop, Adobe Illustrator or other photo and graphic editing programs, such as Corel Draw, for example. Through these tools, students could learn to create and manipulate images and graphics, in order to communicate ideas and messages in an effective way.

3. **through design projects and visual artifacts**. Students can be involved in projects and assignments that involve creating visual artifacts such as posters, infographics, presentations, or even animations. These projects would encourage students to use their creativity and visual communication skills to convey information and create visual impact.

4. **analysis and interpretation of their image**. In literature, history, or even social science classes, students can be encouraged to analyze and interpret images to better understand the cultural and historical context and extract messages and ideas.

5. **through presentations and exhibitions**. Students can be encouraged to present their work and projects in front of their classmates and teachers, in presentations and exhibitions. These opportunities would give students the chance to improve their oral communication skills and receive constructive feedback on their work.

By integrating these elements into the curriculum, students have the chance to develop their visual communication skills and become more effective in conveying ideas and messages, through images and graphics.

Question no. 4: How do you encourage students to apply design thinking to different subjects or disciplines?

The teachers' answers to this question highlighted the following main aspects:

- It is very important to encourage students to express themselves freely, to share their opinions, to make associations of ideas, to make various connections, to make "fusion" between arts or between other disciplines, to remove preconceived ideas, to remove inhibition, to experiment, not to be afraid to make mistakes, not to be afraid to make a fool of themselves.
- Interdisciplinarity helps students to use their knowledge from various fields, helps them discover new things related to certain aspects, certain fields (e.g. biology, chemistry or physics) and helps them to have a global view of what the phenomenon or substance or lesson means.
- Communication between teachers of different disciplines is very important in order to develop projective design in students.

- Encouraging students to apply this projective thinking to different subjects or disciplines can be achieved by taking an interdisciplinary approach and fostering an environment in which creativity, exploration, and complex problem-solving are encouraged. This could be achieved by promoting an open and collaborative environment between teachers and students, between students and teachers, by encouraging collaboration between students, open dialogue and the exchange of ideas.

Question No. 5: What methods do you use to learn the importance of user-centered design in your courses??

The interviewed teachers said that they try to adapt their teaching style to the level of the students, as there are classes with children with different levels, with more or less notions/knowledge, and the teaching style must be adapted to their level.

Some of them mentioned that they try to do practical work, in which students have to work in teams, communicate, carry out the project together, which helps them in their personal development.

The interviewed teachers mentioned that the methods used to learn the importance of projective thinking are those in which the student actively participates in class. They mentioned brainstorming as a method frequently used in classes, in addition to experiments, research and role-playing. The emphasis is rather on questions centered on thinking, imagination and less on those that are centered on memory, in order to develop their empathy, the ability to know the audience they are addressing.

Another method frequently used and exemplified by the interviewed teachers was the choice of free, personalized topics that would motivate them, topics that would really interest them.

The interviewed teachers believe that it is very important for the student to be encouraged, to be supported to discover as many things as possible on their own and to realize that they have the necessary knowledge, that they have the opportunity to develop a certain theory, to use their own experiences to explain to themselves what is happening, why it is happening.

Question 6: How are innovation and creative thinking promoted in your VET sector?

The answers to this question highlighted the following aspects:

1. Children should be encouraged to use both their intuition and imagination so that they can understand and explain what is around them. Therefore, teachers encourage students to find

similarities and differences between the phenomena they encounter every day, so that, basically, starting from a previous experience, they can manage, on their own, to explain other phenomena with which they encounter, perhaps, for the first time.

2. Innovation and creative thinking are promoted through the diversity and complexity of the projects. For example: graphic design competitions, either traditional or digital, photography competitions, digital processing competitions or poster section, Olympics, museum activities, museum visits or study trips, documentary trips, in which students deepen what they have learned and make connections with the real, living environment.
3. The teachers' use of graphic design in the preparation of the recapitulative lessons. For example: making a concept map with students, PowerPoint presentations

Question no. 7: How competent do you think your students are? With the essential digital tools for modern graphic design?

The interviewed teachers said that students have a series of digital skills that, however, need to be developed.

Looking at the whole, they consider that the level of competence of students with digital tools is medium, to advanced. Although technology is part of everyday life, there are many students who do not yet have digital skills or are not interested.

As a rule, students use the phone very easily, using the Internet and, especially, certain applications that are more related to social media. But, even if they have skills in using the Internet, they do not show many skills in terms of using certain programs, especially if they are specialized programs.

At some VET high schools, the subject "computer image processing" ensures the acquisition of these skills in the use of computers and information technologies.

The school lays the foundations, but the student has to work, needs individual study, needs independent work, interest and motivation.

There are some students, such as those from rural areas, who did not have the opportunity to encounter learning situations regarding graphic design.

The interviewed teachers believe that it would be very useful if, in ICT classes, notions from this field – graphic design – were also introduced into the curriculum.

Question no. 8: What specific skills do you focus on to provide your students with? A competitive advantage on the labo

The answers of the interviewed teachers highlighted the following:

1. The interviewed teachers believe that it is very important for students to develop the habit of working in a team, understanding the distribution of tasks and collaborating.
2. Teachers appreciate that it is very important that, in high school, apart from theoretical knowledge, students also acquire certain technical skills, for example to carry out an experiment, to learn to use a measuring instrument.
3. In order to have a competitive advantage on the labor market, in workshop work, the interviewed teachers mentioned that they try to develop students' skills of communication, open thinking, teamwork, organization, management, use of an appropriate work technique, which they can exercise on time, quickly, to use their creativity and practical, qualitative rather than quantitative skills.

Question No. 9: How does the curriculum support entrepreneurial skills using design thinking and graphic design?

Some teachers interviewed from vocational education believe that students learn general notions about entrepreneurship, but not applied to the artistic profile, but rather focus on theoretical skills, practical activities rather than entrepreneurial ones. That is why they believe that there should be such a course applied to the artistic profile.

The vocational education teachers mentioned that, in the specialized subjects, in the 11th and 12th grades, students work in the so-called exercise companies, where they can develop the skills of entrepreneurs, but they also believe that this component should be developed more.

Question no. 10: How is the cultural and social context incorporated into the design projects in your courses?

The last question concerned **cultural and social accountability** - taking into account the cultural and social context of products and services, which are important for creating socially responsible and culturally sensitive solutions.

The teachers' answers came up with the following:

- The cultural and social context must be seen in relation to the children's own experiences. They come from different backgrounds, they are used to working together or not, they have different attitudes towards school, colleagues, the environment they came to (high school) and it is very important that they also value the specificity of the areas they come from. For example, teachers from specialized departments have the opportunity to use the

cultural and social experience of students in organizing activities within exercise companies, in which it can be capitalized.

- Collaborative learning is very important, because by learning together, from each other, with each other, the learning result can be a thorough one, what students will learn will remain imprinted in their minds and can be used more easily in practice.

4.2. ANALYSIS OF THE ANSWERS PROVIDED BY INDUSTRY PROFESSIONALS IN THE FIELDS OF DESIGN, INNOVATION AND GRAPHIC DESIGN

The analysis of the answers provided by them highlights the following main aspects:

Question no. 1: In your professional work, how do you use design thinking to address and solve complex problems?

The answers showed that, in the professional activity of those interviewed, projective thinking (design thinking) is used to approach and solve complex problems in several ways.

The interviewed professionals also provided a series of examples of the application of projective thinking in this process, namely:

1. **Understanding user needs:** Web designers use techniques, such as user interviews, observing users in action, and analyzing data to gain a detailed understanding of their target audience and the context in which they will interact with the website.
2. **Defining the challenge:** Based on understanding the needs of the users, web designers formulate a clear and concise challenge for their project. This challenge serves as a guide for the development of solutions and guides design efforts in the right direction.
3. **Idea generation:** The design team uses brainstorming techniques and other idea generation methods to explore a wide range of possibilities for solving the challenge. At this stage, the focus is on generating ideas freely and without constraints, without evaluating them yet.
4. **Prototyping and testing:** Designers create quick prototypes and iterations of their ideas to test with end users. The feedback obtained from the tests is then used to iterate and improve the prototypes, before moving forward with the final implementation.
5. **Implementation and evaluation:** Once a prototype is deemed satisfactory by users and the design team, it is implemented and launched. However, the design thinking process does not end there; The designers continue to monitor and evaluate the website's performance according to the goals set and make adjustments and improvements based on the feedback received.

As a conclusion, it turned out that by applying projective thinking in their web design process, professionals in the field are able to address and solve complex problems, focusing on the needs of users and developing innovative and effective solutions for those needs.

Question No. 2: Can you share an example from your career where adaptability to new technologies or methodologies was crucial for success?

The professionals interviewed provided a number of examples, as follows:

1. **adaptability to new technologies through the transition from traditional to digital production**. The professionals mentioned that they have adapted their production strategies to correspond to technological changes and the behavior of the target audience. This involved a transition to digital production, such as creating content for websites, online ads, and social media campaigns. To do this, they had to adapt and learn new technologies and methodologies, including new photo/video design and editing programs, understanding algorithms and online platforms for advertising, as well as adapting workflows to effectively manage digital production.
2. **Transition from static web design to responsive web design.** The professionals noted that a new approach had to be taken and integrate responsive web design into their practice, including by using technologies such as HTML5 and CSS3 to create websites that can dynamically adapt to different screen sizes and resolutions. Thus, adaptability to technological change and evolving design practices was therefore crucial for success in an ever-changing web environment.

Question No. 3: How do you leverage graphic design skills to improve visual communication within your organization or with customers?

The answers to this question highlight the fact that the professionals interviewed believe that agraphic design skills can be leveraged to improve visual communication within an organization or in the relationship with customers in several ways. A number of examples have been given in this regard:

1. **Creating a cohesive visual identity:** Graphic designers can develop and implement a set of design elements, such as the logo, color palette, typography, and other graphic elements, that reflect the organization's identity and values. A cohesive visual identity can strengthen brand recognition and create a strong and memorable impression on customers.

2. **Development of marketing materials:** Graphic designers can create attractive and effective marketing materials, such as posters, brochures, catalogs, flyers, and other promotional materials, that grab customers' attention and communicate the organization's key messages in a clear and engaging way.

3. **Web design:** A well-done web design can improve users' experience on the organization's website or online platforms, and make it easier to navigate and interact with content. Graphic designers can create intuitive and attractive interfaces that provide a pleasant and efficient experience for users.

4. **Social Media Graphics:** In the digital age, social media graphics are essential for grabbing audience attention and generating engagement. Graphic designers can create attractive and relevant images and videos for social media posts that increase visibility and promote engagement.

5. **Infographics and data visualizations:** Graphic designers can transform complex data and information into infographics and data visualizations that are easy to understand and interpret. This can make it easier to communicate and understand information, and make the organization's messages more accessible and attractive to the public.

6. **Collaboration with clients:** Graphic designers can work closely with clients to understand their needs and goals, and to develop customized and effective design solutions. Clear and effective communication with customers is crucial to ensure the delivery of products and services that satisfactorily meet their needs and expectations.

By leveraging graphic design skills in these ways, organizations can improve their visual communication, strengthen brand recognition, and create a strong and lasting impression on customers and their target audience.

Question no. 4: Could you describe a project where an interdisciplinary approach was key and how design thinking facilitated this?

The interviewed professionals provided some details on a number of projects in which they were involved, in which the interdisciplinary approach was essential:

1. A first example consisted of a web design project on the development of an online educational portal for high school students. This project involved collaboration between graphic designers, web developers, education experts, psychologists, and other relevant professionals to create a digital platform that would provide an effective and engaging educational experience.
   The stages in the realization of this project were:

a) **Understanding user needs:** The design team used projective thinking to gain a deep understanding of the needs and expectations of students, teachers, and parents regarding online education. This involved research, interviews, and observations to identify key issues and opportunities.

b) **Defining the challenge:** Based on understanding the needs of the users, the team was able to define the clear challenge for their project.

c) Through brainstorming techniques and collaborative workshops, ideas could be **generated** for the platform's features, educational content, interaction functionalities, etc.

d) **Prototyping and testing:** Designers and developers created quick prototypes of various elements of the platform and tested them with end-users to get feedback. This feedback was used to iterate and improve prototypes before final implementation.
e) **Implementation and evaluation:** After the prototypes were validated and improved, the team implemented and launched the platform. The team continued to monitor and evaluate the platform's performance and make adjustments based on user feedback and other relevant factors.

2. Another example was the creation of an integrated advertising campaign for the launch of a new food product. This project involved close collaboration between various departments such as marketing, advertising production, graphic design, product research and development, and even sales and distribution teams. The interviewed professional provided a series of details regarding the stages he went through to make the final product, namely:

a. conducting extensive research to understand consumer needs and preferences, market trends, and competition. This research was crucial to guide all aspects of the ad campaign, from the core message to the distribution channels.
b. Participation of teams from different departments in brainstorming sessions to generate creative and innovative ideas for the campaign. Design thinking methods such as mapping customer experiences and creating characters or stories were used to better understand how the product could solve consumer problems or needs.
c. Prototypes of the campaign were created, including advertising materials, advertisements and other visual communication elements. These prototypes were then tested on a group of consumers to get feedback and make adjustments before the official launch.
d. The campaign was implemented on various channels, and its performance was constantly monitored and evaluated. The data and feedback received were used to make adjustments in real-time and ensure that the campaign remains relevant and effective.

By applying projective thinking in their web design process, the two firms were able to successfully address the complex and interdisciplinary challenges associated with the development of the projects described above, in order to effectively meet the needs and expectations of users.

Question no. 5: How do you ensure that the end-user experience remains central during the design process in your professional practice?

Professionals interviewed noted that there are several ways to ensure that the end-user experience remains central during the design process.

Thus, in the initial stages of the project, they try to understand the needs and objectives of their clients as best as possible, in order to develop a clear vision for the projects they need to carry out.

Before starting the design process, they dedicate time to conducting market research and understanding the target audience, to identify the needs, preferences and behaviors of end users, with the ultimate goal of developing solutions that effectively meet these requirements.

During the design process, it involves end-users or representative people from the target audience to test the initial prototypes or concepts. This gives them real-time feedback on the user experience and allows them to make adjustments to improve the final product.

At every stage of the project, it ensures that accessibility and usability are prioritised. This means that the design must be intuitive, easy to navigate, and provide a pleasant experience for end users, regardless of the platform or device they are using.

The design process does not end once the product is released. They continue to monitor user performance and feedback and make adjustments accordingly to ensure continuous improvement in the user experience.

Through these practices, they manage to keep the end-user experience at the center of their design process, ensuring that their products meet the needs and expectations of their target audience.

Question no. 6: What strategies do you use to stimulate innovation and creative thinking within your team or projects?

The interviewed professionals stated that, from their point of view, there areseveral strategies they use to stimulate innovation and creative thinking within the team working on their projects, namely:

1. **Regular brainstorming:** organizing periodic team brainstorming sessions, in which members are encouraged to come up with new and unconventional ideas for web design projects. In this case, the atmosphere is open and non-judgmental, and all ideas are welcome.

2. **Promoting diversity:** the team is made up of members with different perspectives and experiences. They believe that diversity within the team can stimulate creativity and bring up new ideas and approaches.

3. **Creating an open environment for the exchange of ideas:** Free and open communication within the team is encouraged so that members feel comfortable sharing and exploring new ideas without fear of criticism or rejection.

4. **Organizing workshops and training sessions:** organizing workshops and training sessions to explore new technologies, design trends, and creative approaches in the field of web design. This can stimulate lateral thinking and inspire team members to approach their projects with a broader perspective.

5. **Creative challenges and games:** running creative games within the team to stimulate innovation and lateral thinking. These activities are fun and challenging, while also providing opportunities to explore and experiment with new ideas.

6. **Rewarding and recognizing innovation:** The innovative efforts and contributions of team members are recognized and rewarded. This can be in the form of public appreciation, bonuses or career advancement opportunities, to encourage and motivate the continuation of creative thinking and innovation.

By applying these strategies within the web design team, innovation and creative thinking can be stimulated and develop more innovative and engaging web projects.

Question no. 7: What digital tools and technologies do you consider essential for modern design and innovation, and why?

Those interviewed stated that, from their point of view, there are a number of digital tools and technologies essential for modern design and innovation, which facilitate the creative process, enable effective collaboration and contribute to the development of innovative solutions. Here are some of them:

1. **Graphic design software:** Tools such as Adobe Creative Suite (Photoshop, Illustrator, InDesign), Sketch, Figma, or Adobe XD are essential for creating digital graphics, illustrations, layouts, and other visual elements. These programs offer advanced functionality and flexibility in the design process.

2. **Prototyping and interactive design tools:** Platforms such as Sketch, Figma, Adobe XD or InVision allow designers to create interactive prototypes and design user experiences (UI/UX) for websites and mobile applications. These tools make it easy to quickly test and iterate on ideas and concepts.

3. **Virtual reality (VR) and augmented reality (AR) technologies:** VR and AR offer innovative possibilities for design and interactive experiences. These technologies allow design concepts to be simulated and visualized in a virtual environment and can create immersive experiences for users.

4. **Collaboration and project management platforms:** Tools like Slack, Microsoft Teams, Trello, or Asana make it easy to collaborate and coordinate efforts within the team. These platforms allow for idea sharing, task management, and project progress tracking in real-time.

5. **Analytics and Artificial Intelligence:** Using data analytics and artificial intelligence can provide valuable insights into user needs and behavior. Tools like Google Analytics, Heatmap.me, or sentiment analysis tools can help to gain a deeper understanding of user interaction with products and services.

6. **3D printing and digital manufacturing:** 3D printing technologies allow for rapid prototyping and the manufacture of customized and innovative products. These technologies are essential for prototyping and testing product concepts in an efficient and affordable way.

These digital tools and technologies are essential for modern design and innovation because they facilitate the creative process, improve collaboration between team members and allow the development of innovative solutions that meet the needs and expectations of users.

By integrating these tools into the design and innovation process, organizations can remain competitive and create successful products and services in the marketplace.

Question no. 8: What do you think gives a design and innovation professional a competitive advantage in today's market?

The interviewees appreciated that a professional in the field of design and innovation can gain a significant competitive advantage in the current market by possessing key skills and qualities, such as:

1. **Creativity and innovative thinking:** The ability to generate new ideas and approach problems with a fresh and innovative perspective can set a design and innovation professional apart. The ability to think outside the box and provide unconventional solutions can bring significant value in a competitive environment.
2. **Technical knowledge and practical skills:** Design professionals must possess solid knowledge in the use of tools and technologies relevant to their field of work, as well as practical skills in applying this knowledge in practice.
3. **Ability to collaborate:** The ability to work effectively in a team and collaborate with members from various fields and disciplines can contribute to the success of a design and innovation professional. The ability to communicate effectively, listen, and share ideas and perspectives can facilitate the process of developing and implementing innovative solutions.
4. **Understanding user needs:** An effective design and innovation professional must have a deep understanding of end-user needs, preferences, and behavior. The ability to put the user at the center of the design process and develop solutions that effectively meet these needs can generate significant competitive advantages. The professional who is centered on the needs and experience of the end user is at an advantage in the market, because he can create products and services that respond effectively and satisfactorily to the requirements and expectations of users.
5. **Adaptability and flexibility:** In an ever-changing environment, the ability to adapt quickly to new technologies, trends, and market requirements is crucial to the success of a design and innovation professional. Flexibility in approach and openness to continuous learning can help maintain a competitive advantage in the long term. Flexibility in approaching problems and adopting new technologies and methodologies can lead to innovation and excellence in design.
6. **The ability to stay up-to-date with the latest trends and technologies**: it is essential for long-term success in the field of design and innovation.

Through these qualities and skills, a design and innovation professional can stand out in today's market and provide significant value for both the organization they work for and their clients.

Overall, those interviewed appreciated that having these qualities and skills can give a design and innovation professional a strong competitive advantage in today's market, allowing them to create innovative solutions and stand out in a competitive environment.

Question no. 9: How have design thinking and graphic design contributed to the entrepreneurial endeavors you are familiar with?

The interviewees appreciated that design thinking and graphic design have had a significant impact on entrepreneurial efforts in the field of web design by facilitating the development of web products and services that effectively meet the needs and expectations of users. Here are some ways in which these two aspects have contributed to entrepreneurship in the field of web design, in the opinion of respondents:

1. **Deep understanding of users:** Projective thinking places a strong emphasis on deeply understanding users' needs, wants, and experiences. By applying the principles of projective thinking in the process of developing web products and services, entrepreneurs can better identify user requirements and preferences and design solutions that effectively meet these needs.

2. **Iteration and continuous improvement:** Projective thinking promotes an iterative development process, where ideas are quickly tested and user feedback is constantly integrated into the design process. This approach allows entrepreneurs to adjust and improve their web products and services in real-time based on user needs and requirements.

3. **Creating quality user experiences:** Graphic design plays a crucial role in creating attractive and functional user experiences. A well-crafted graphic design can improve user navigation, interaction, and understanding within a website, which can help increase user engagement and higher conversions for businesses.

4. **Strengthening brand identity:** Graphic design is essential for creating a strong and memorable brand identity for business. A coherent and well-thought-out graphic design can help entrepreneurs differentiate their business in the market and create a lasting impression on their users and customers.

5. **Innovation and competitiveness:** By applying projective thinking and graphic design in the process of developing web products and services, entrepreneurs can create innovative and competitive solutions that respond to the ever-changing needs and trends of the market. These solutions can help entrepreneurs stand out and thrive in a competitive environment.

Overall, projective thinking and graphic design are key elements in entrepreneurial web design endeavors, contributing to the development of successful web products and services that provide real value to users and drive business growth and innovation.

Question no. 10: How is cultural and social context incorporated into the design projects in your courses?

The interviewees appreciated that, in the creative process, I take into account cultural and social aspects to ensure that they are socially responsible.

Thus:

A. Before you start creating your design:

- Before I start creating the design, I conduct extensive research to understand the target audience and the cultural and social context in which they fall. This includes understanding the audience's cultural values, aesthetic preferences, and social sensitivities.
- encourage diversity and inclusion in their designs, avoiding stereotypes and negative or discriminatory representations of different social groups.
- include diverse perspectives and experiences in designs, to reflect the multicultural world we live in.
- promotes positive and inspirational messages that bring value and encourage positive change in society.
- Avoid content that could be offensive or contribute to the perpetuation of negative stereotypes.

B. During the creation of designs:

- take into account the impact on the environment. They choose to use sustainable materials and production techniques, promote messages and initiatives that encourage environmental responsibility and environmental protection in all aspects of advertising campaigns.
- It collaborates with non-profit or social organizations to develop advertising campaigns that support important social causes and provide solutions to problems such as poverty, social injustice or the protection of human rights.

C. After creating designs: Monitor and analyze feedback to understand the impact of designs on the audience and society at large. This allows them to make adjustments and continuously improve practices to be more socially responsible.

By adopting these practices and approaches, they ensure that their designs are socially responsible and contribute positively to society and the world around them.

4.2 QUESTIONNAIRES APPLIED TO STUDENTS IN VET EDUCATION

For activity **A.3.1 NEEDS ASSESSMENT**, questionnaires were applied, based on the Interview Guides carried out, on a sample of 62 VET students.

The purpose of applying the questionnaire presented in the annex was to gather valuable insights and feedback from VET and vocational students, information that will be essential in shaping the curriculum development for the DigitalCRAFT project **: Enhancing Vocational Skills Through Design Thinking and Graphic Design.**

The insights gained, which have been analysed in this material, will contribute to the creation of a more relevant, comprehensive and forward-looking curriculum that meets the demands of a modern workplace and has as its main objective the improvement of the skills and competences of VET students in these creative areas.

The answers provided by VET students will be analysed in the following to identify the specific trends and needs of your target group.

The questionnaire covered the following **ASPECTS**:

1.1. Troubleshooting

Design thinking offers a systematic approach to problem solving. It helps students think critically and creatively and develop solutions that are not only effective but also innovative. These skills are valuable in any professional context, not just in design-related fields.

1.2. Resiliency

The modern labor market is dynamic and requires workers who can adapt to new technologies and methodologies. Design thinking and graphic design skills ensure that VET students are well-prepared to accept changes and new challenges in various industries.

1.3. Communication

Graphic design skills are essential for effective visual communication. With the growing importance of digital media, the ability to create clear and compelling visual messages is valuable in sectors ranging from marketing and communication to data presentation and user interface design, including unrelated fields such as electrical, mechanical, and hydraulic studies.

1.4. Relevance of interdisciplinarity

Design thinking encourages an interdisciplinary approach, combining knowledge from different fields to create holistic solutions. This is increasingly important as the boundaries between traditional roles blur and collaboration between different sectors becomes more common.

1.5. User-centricity

Design thinking focuses on the user experience, ensuring that products, services, and systems are designed with the end user in mind. A focus on customer experience is crucial to the success of any business.

1.6.Innovation

Both design thinking and graphic design are the drivers of innovation. They encourage thinking outside the box and developing new ideas, which can lead to breakthroughs in any sector.

1.7.Digital competence

In today's digital age, graphic design skills are intertwined with digital literacy. Understanding the tools and principles of digital design is now a fundamental skill, as digital content dominates in communication, marketing, and product development.

1.8.Competitive Advantage

In a crowded job market, having design thinking and graphic design skills can differentiate VET students from their peers, giving them a competitive advantage when looking for a job.

1.9.Entrepreneurship

These skills are also key to entrepreneurship. Design thinking helps identify market opportunities and develop innovative business models, while graphic design is crucial for branding and customer engagement.

1.10.Cultural and social empowerment

Design thinking often involves considering the cultural and social context of products and services, which is important for creating socially responsible and culturally sensitive solutions.

4.2.1. ANALYSIS OF DATA/INFORMATION PROVIDED BY STUDENTS

The results obtained from the application of the questionnaire used in the research are presented below:

Question no. 1:

When faced with a difficult task or school project, how do you usually find a solution?

A) I think I try until I find something that works.
B) I try things I've seen before.
C) They come up with different ideas and choose the best one.
D) Ask for help from friends or teachers.

The answers showed that 26 of the 62 respondents (41.94%) prefer to ask for help from friends or teachers when faced with a difficult task or project at school, 38.71% of the respondents try different ideas, choosing the best one, respectively 11.29% try to apply things previously seen/learned:

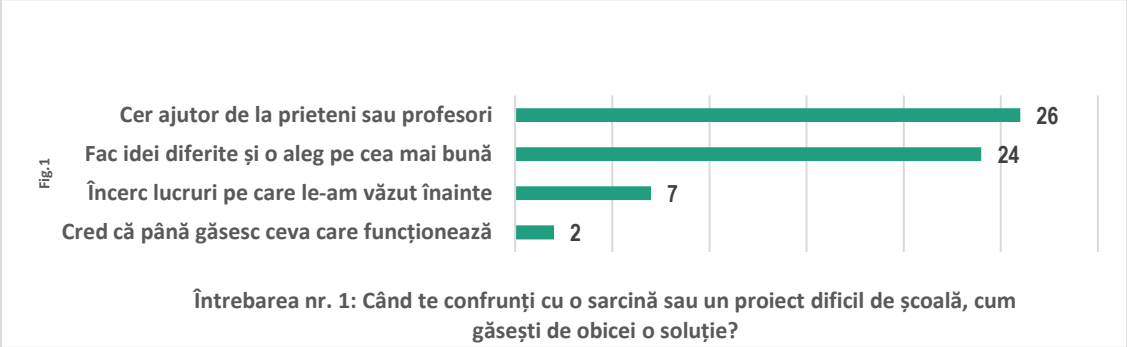


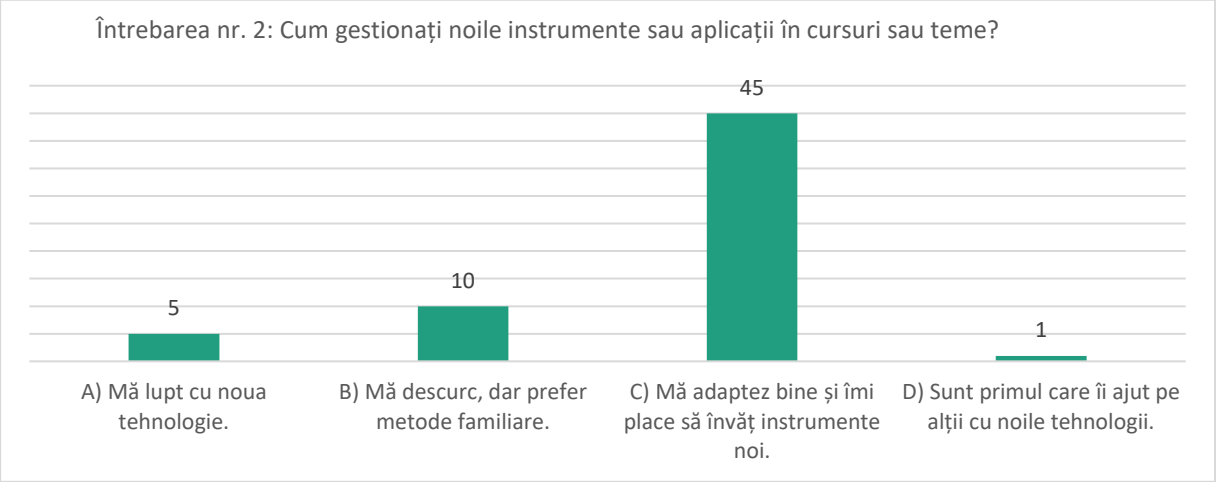
Fig.1

Question no. 2:

How do you manage new tools or apps in courses or assignments?

A) I'm struggling with new technology.
B) I can handle it, but I prefer familiar methods.
C) I adapt well and I like to learn new tools.
D) I am the first to help others with new technologies.

The answers to this question highlight the fact that 72.58% of respondents (45 students out of 59) adapt well and like to learn new tools or applications in courses or assignments, 16.13% of respondents manage, but prefer familiar methods, respectively 8.06% try to understand the new technology:

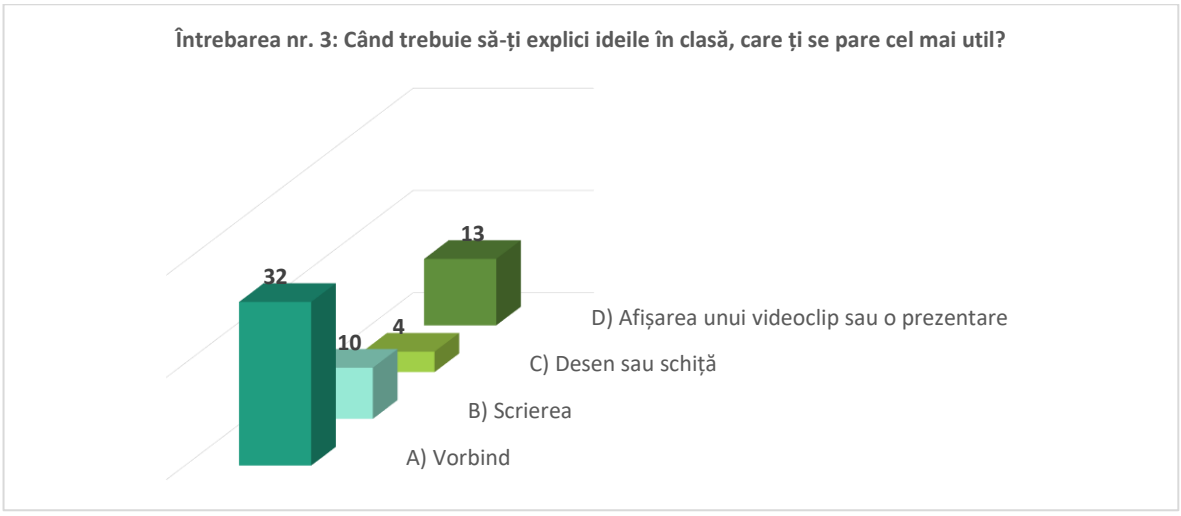


Question no. 3:

When do you need to explain your ideas in class, which do you find most useful?

A) Speaking
B) Writing
C) Drawing or sketch
D) Showing a video or presentation

The answers to this question showed that 32 students out of the total 62 respondents (51.62%) prefer oral speech as a method, when they have to explain/present their ideas in class, 10 students (16.13%) prefer writing as a method, 4 students (6.45%) chose drawing or sketching and only 13 students (20.97%) chose to display a video or a presentation as a method.

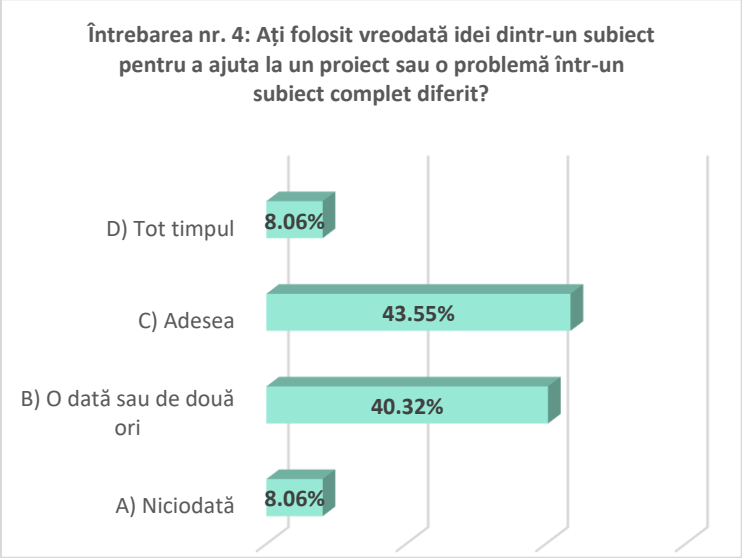


Question no. 4:

Have you ever used ideas from one topic to help with a project or a problem in a completely different topic?

A) Never
B) Once or twice
c) Often
D) All the time

The answers to this question showed that 43.55% of the respondents (27 students out of a total of 62) frequently use ideas from a topic to help with a project or a problem in a completely different topic; A fairly high percentage of respondents, respectively 40.32% (25 students) used ideas from a topic quite rarely (once or twice) to help with a project or a problem in a completely different topic, only 8.06% of students using this method always. It should be noted that 8.06% of the surveyed students have never used this method.

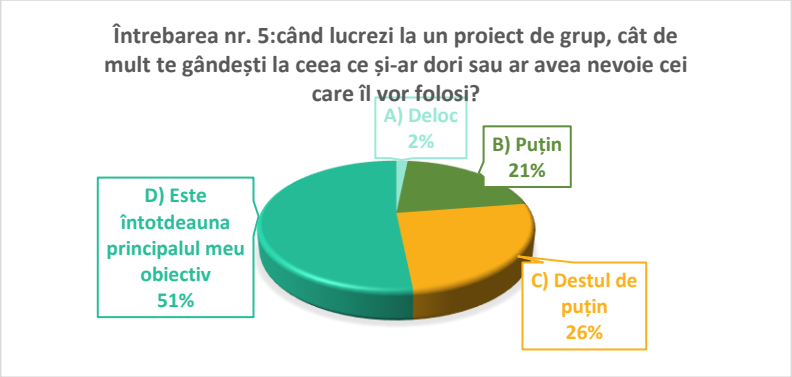


Question no. 5:

When working on a group project, how much do you think about what those who will use it would like or need?

A) Not at all
B) A little
C) Quite a little
D) It's always my main goal

The answers to this question showed that, when working on a group project, for 51% of the respondents (32 students out of a total of 62), the main objective is to think about what those who will use the project would like or need, 26% (16 students), think quite little, 21% a little and 2% not at all.



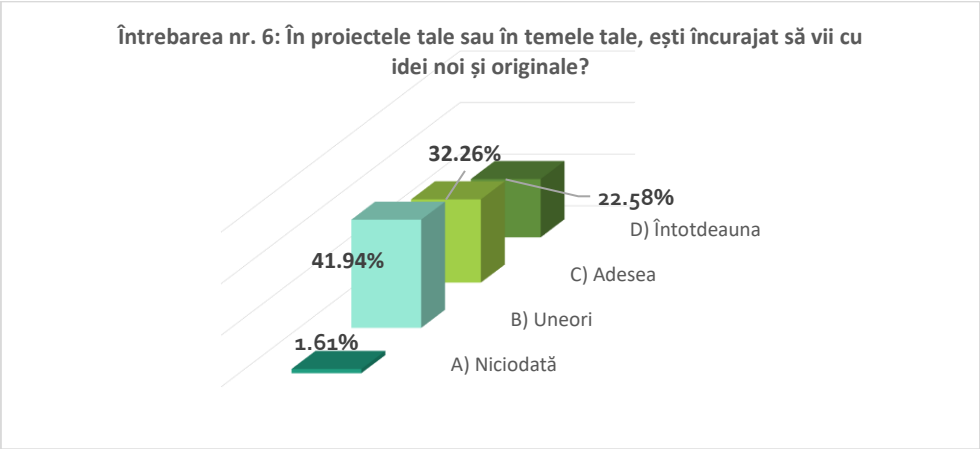
Question no. 6:

In your projects or in your themes, are you encouraged to come up with new and original ideas?

A) Never
b) Sometimes
c) Often
D) Always

The answers to this question highlighted the following aspects:

- 32.26% of the surveyed students are often encouraged to come up with new and original ideas;
- 41.94% of the surveyed students are encouraged less;
- 22.58% each time
- 1.61% not at all.

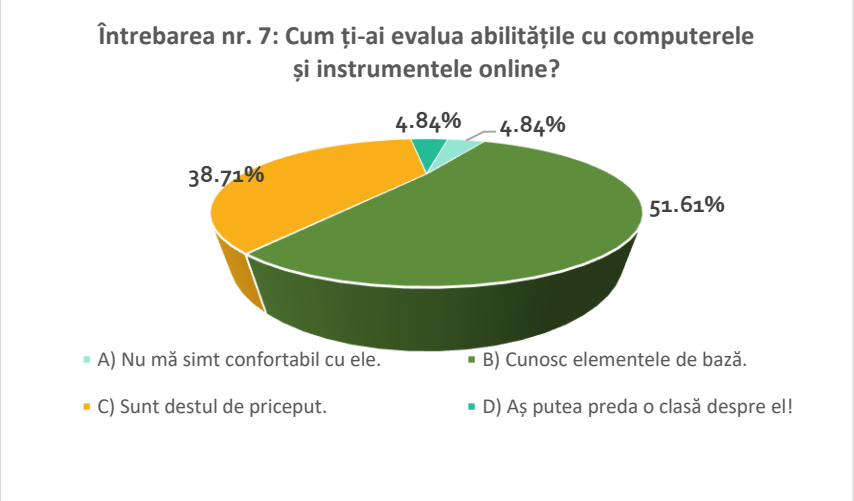


Question no. 7:

How would you assess your skills with computers and online tools?

A) I don't feel comfortable with them.
B) They know the basics.
C) I'm quite skilled.
D) I could teach a class about him!

The answers to the question on self-assessment of digital skills (working with computers and online tools) showed that more than half of the respondents (51.61%) know the basics, 4.84% consider themselves to be extremely experienced, 38.71% of the students consider themselves quite skilled, and 3 students out of the total of 62 (4.84%) do not consider themselves competent from this point of view.



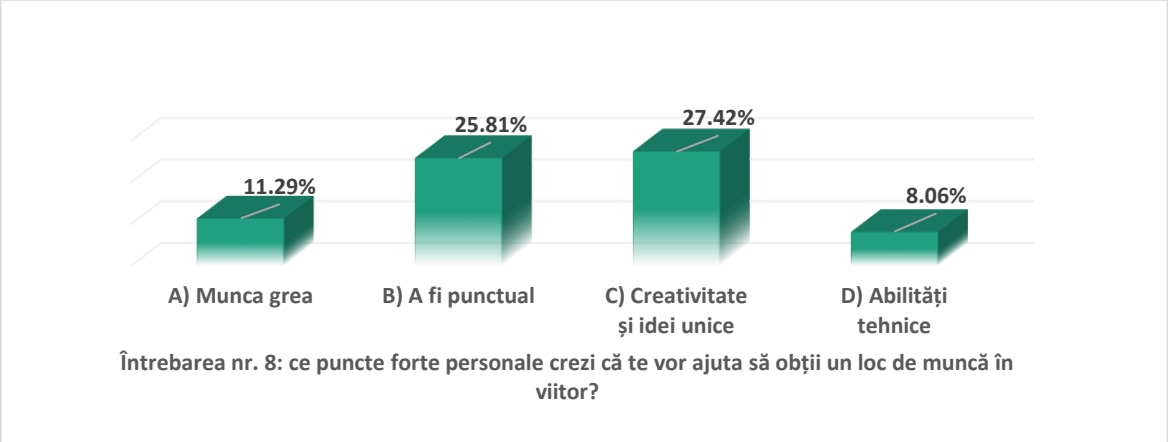
Question no. 8:

What personal strengths do you think will help you get a job in the future?

A) Hard work
B) Be punctual
C) Creativity and unique ideas
D) Technical skills

The question on self-assessment of personal strengths that could help them get a job in the future revealed the following:

- 11.29% (7 students) - hard work
- 25.81% (16 students) - punctuality
- 27.42% (17 students) - creativity and originality
- 8.06% (5 students) - technical skills



Întrebarea nr. 8: ce puncte forte personale crezi că te vor ajuta să obții un loc de muncă în viitor?

It is worth mentioning that 17 students considered that there is not only one answer to this question, choosing several options, thus appreciating that there is not only one strength, but a work complex that could help them find a job. Thus:

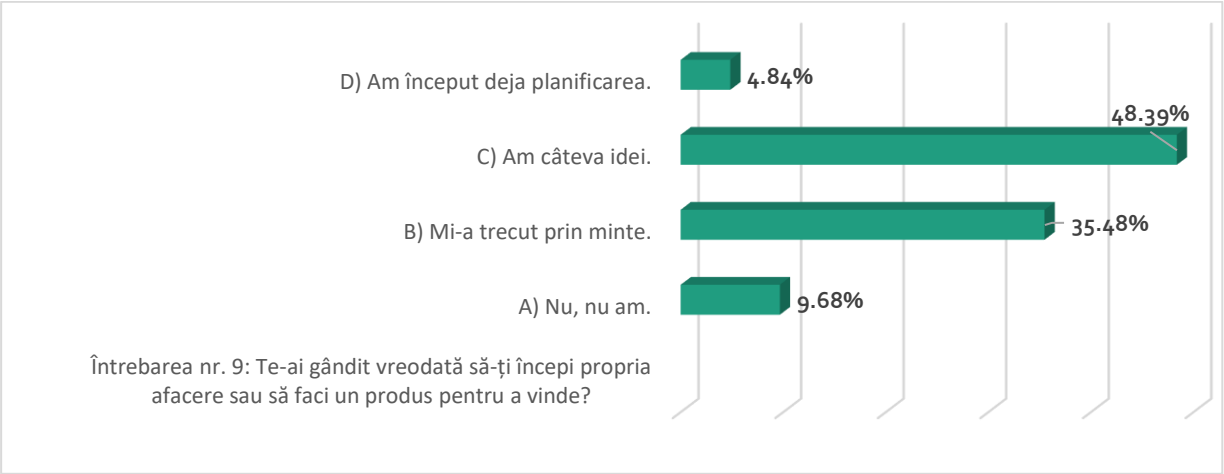
- 3 students considered that the strengths are hard work, creativity and originality and technical skills;
- 3 students chose punctuality, creativity and originality and technical skills as strengths;
- 2 students chose hard work and technical skills as strengths;
- 3 students chose hard work, creativity and originality as strengths;
- 2 students considered hard work and punctuality as strengths;
- 4 students appreciated that all 4 aspects mentioned - hard work, punctuality, creativity and originality and technical skills - are strengths.

Question no. 9:

Have you ever thought about starting your own business or making a product to sell?

A) No, I don't.
B) It crossed my mind.
C) I have some ideas.
D) We have already started planning.

Question no. 9 concerned entrepreneurship and the intentions of the students surveyed regarding starting a business or creating a product to sell it. The students' answers show that 30 students (48.39% of respondents) have this intention, 22 students (35.48%) are thinking about this option, while 6 students (9.68%) do not have such ideas, and 4.84% say they have already started planning. The students' answers practically confirm the entrepreneurial intentions of the young people.



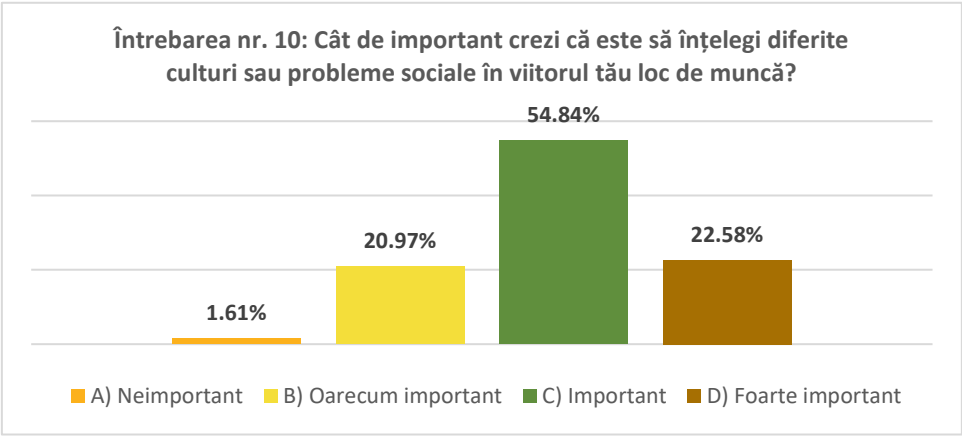
Question no. 10:

How important do you think it is to understand different cultures or social issues in your future job?

A) Not Important
B) Somewhat important
C) Important
D) Very important

The last question concerned **cultural and social accountability** - taking into account the cultural and social context of products and services, which are important for creating socially responsible and culturally sensitive solutions.

Thus, the students' answers highlighted the fact that understanding different cultures or social issues is important in the future job is important for 34 students out of the 62 respondents (54.84%), respectively very important for 14 students (22.58%); This aspect is considered less important for 13 students (20.97%), while 1.61% of respondents do not consider this aspect important.



5. CONCLUSIONS AND SPECIFIC TRENDS AND NEEDS OF THE TARGET GROUP

The integration of the principles of design thinking and graphic design into the curriculum for VET education could aim to develop students' personalities, train and develop both digital skills and skills necessary for lifelong learning, in integration into a knowledge-based society. It is absolutely necessary to adapt the curriculum to the expectations of society, the needs of students, but also to the traditions of the national school, so as to achieve a transition from education for all to education for everyone, through student-centered instruction.

The qualitative analysis of the results of the questionnaires applied to the students reveals the following aspects:

- In school, students are very little encouraged to use their creativity and come up with new and original ideas;
- students' technical/digital skills are insufficiently developed, despite the digitization/computerization trends existing in today's society;

- The knowledge that students acquire is not transferable and applicable or is, but to a small extent.

Design thinking could be the tool that teachers can use to understand students' needs and provide them with the structure on which they can build their skills – no matter what level they are at – and integrate their passions into learning.

Therefore, it is necessary for teachers:

- Teach students to use projective thinking when working on a creative project to develop empathy, as they should understand their audience or those for whom they are designing.
- try to develop their students' skills to understand that it is important to be able to listen to others and understand their needs;
- to be able to work creatively and to nurture/develop students' creativity and mindset to do;
- be able to plan, facilitate and evaluate this process to ensure that students learn and achieve benchmarks.

Design thinking can be a very effective learning process that improves creativity, develops skills and helps students think "outside the box".

However, the lack of experience among teachers in using design thinking and graphic design in the teaching-learning process in schools is another challenge that teachers face.

Additionally, it takes a lot of time for teachers to adapt design thinking to classroom learning to ensure that students understand projective thinking.

In addition, the lack of training in projective thinking in education is a problem for teachers, and there is a need in the Romanian education system for them to think in a more creative and innovative way in the classroom teaching process in order to have an impact on students and, especially, on their school performance and integration into the labor market.

The specific trends and needs of students may vary depending on the specific educational and cultural context. However, in general, there are some relevant aspects to consider:

1. **Access to technology and digital resources**: Students need access to relevant technology and software to develop their skills. Thus, schools should be equipped with appropriate IT equipment and software to allow these students to practice and express their creativity.
2. **Quality materials and equipment**: An essential part of learning involves working with quality materials and equipment. It is important for schools to provide access to drawing tools, printers, paper and other materials needed to enable students to express their ideas creatively and develop practical skills.
3. **Mentoring and constructive feedback**: Students need guidance and constructive feedback to improve their skills and develop confidence in their own abilities. Teachers should provide support and encourage students to explore and develop their creativity.

4. **Practical experiences and relevant projects**: Students need opportunities to work on practical and relevant projects. This may include working with local organizations to create marketing or graphic design materials for school or community events.
5. **Flexibility and adaptability in the learning process**: Students should be encouraged to be flexible and adaptable in their learning process. This may include exploring different techniques, approaches, and technologies within their creative process.

Overall, it is important that education is geared towards developing students' practical skills, creativity and critical thinking, providing them with opportunities to express their ideas and contribute to solving problems in an innovative and effective way.

Integrating design thinking and graphic design into the school curriculum can bring multiple benefits, helping students develop essential skills for problem-solving, creative thinking, and innovation.

Integrating graphic design into the school curriculum can be a great way to develop creative, technical, and communication skills in students. Here are some specific questions you can consider when planning to integrate graphic design into your curriculum:

1. **Goals and objectives**: What are the specific goals we want to achieve by integrating graphic design into the curriculum? Do we want to develop artistic, technical, communication skills or all of these?
2. **Curriculum Structure**: How can we structure the curriculum to integrate graphic design effectively? Which existing subjects or disciplines can be adapted to include graphic design elements?
3. **Content and teaching materials**: What specific content should be covered in graphic design courses? What teaching materials and technological resources are needed to support the learning process?
4. **Teaching methods and strategies**: What are the most appropriate teaching methods and strategies to promote the learning and practice of graphic design? How can we create a stimulating and interactive learning environment for students?
5. **Assessment and feedback**: How can we effectively assess students' progress and results in terms of their graphic design skills? What are the most appropriate assessment criteria and tools to measure these skills?
6. **Connecting with the real world**: How can we link graphic design activities to real problems and contexts in everyday life or in the professional field? How can we provide opportunities for students to apply their knowledge and skills in practical projects?
7. **Collaboration and interdisciplinarity**: How can we encourage and support collaboration and interdisciplinarity between students and teachers in graphic design activities? How can we promote diversity and inclusion in the design process?
8. **Resources and infrastructure**: What resources and infrastructure are needed to support the integration of graphic design into the curriculum? How can we ensure access to relevant equipment, software and work materials for all students?

9. **Training and professional development**: How can we develop capacities and expertise among teachers to support the integration of graphic design into the curriculum? What are the effective ways of training and professional development in this field?
10. **Sustainability and continuity**: How can we ensure the sustainability and continuity of integrating graphic design into the curriculum in the long term? How can we adapt and improve the curriculum according to changes in the field of graphic design and the needs of students?

These questions could guide the process of planning and implementing the integration of graphic design into the school curriculum, ensuring that it is done in an effective and beneficial way for student development.