Effectiveness of the Use of Creative Projects as a Way to Develop Creative Design Thinking of Higher Education Students

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Creativity training in many aspects relies on the education, school achievements and natural characteristics of each individual. In fact, the method of creative projects is one of the special techniques that can be actively used at the stage of university education. In research logical research methods were used: analysis, synthesis, induction and deduction. The article also uses the method of abstraction, which involves the ascent from abstract concepts and theses to concrete conclusions. The conclusions indicate that the effectiveness of the use of creative projects as a way to develop creative design thinking of higher education is quite high, and design thinking can be considered quite popular in the labor market. Many top managers point to the positive changes that have occurred as a result of its active use. At the same time, the paper also demonstrates opposing views of experts who consider design thinking to be only part of a larger process of creation, which does not need to focus too much.

Keywords: creative project method, creative design thinking, higher education, efficiency

INTRODUCTION

Modern university education must meet the requirements of the time, in particular the challenges of the information society. The ability to process large amounts of data is becoming an everyday practice in education, but since the beginning of the XXI century, the public emphasis (primarily on employers) has turned to the problem of developing creative design thinking designed to accelerate and improve both production processes (including advertising or distribution through Internet resources) and the service

sector. In general, it has been argued that design thinking is a combination of appropriate thinking and design. The former is a way of thinking that focuses on people, the human community, full of optimism and experimentation. At the same time, structural design consists of discoveries, interpretations, ideas, experiments, and gradual evolution of views. The difficulty of applying creative thinking in this direction is the right combination of them and the ability to find new possibilities, ideas, and knowledge. Teaching creativity in many aspects relies on upbringing, school achievement, and the natural characteristics of each individual. One special technique that can be actively applied at the stage of university education is the method of using creative projects. The relevance of this method of training and development of creative skills in design thinking is obvious because many experts in training courses actively use it. Therefore, the purpose of this article is to analyze the effectiveness of using creative projects as a way to develop the creative design thinking of higher education applicants.

MATERIALS AND METHODS

The theoretical time of the study is built on a systematic review of the New Year's pedagogical literature and on a synthesis of recent experiences of researchers. Larraz-Rábanos (2021) characterized the process of formation of creative skills, he explained the peculiarities of the study of creativity through a variety of modern approaches. However, the main focus is on the development of creativity in terms of the educational approach. In the study, the author also provided a description of the most important strategies for the formation of creative abilities. Blizard (2018) investigated the importance of developing student creativity in higher education institutions. He believes that creativity is a weighty skill recognized because of the need to prepare young people for the complex world of work, which requires individuals to be able to use their creative abilities. In his work, this researcher described the main methods of creativity formation and characterized the main obstacles to their implementation. In addition, the methodological basis of the work was based on the research of contemporary pedagogical such as (Cherng & Davis, 2019). At the same time Warren (2017) analyzed the main challenges to modern education through the prism of multiculturalism. Note that Ukrainian educators have also played a role in the study of the phenomenon of creativity. In particular Vovchasta et al. (2022) characterized the peculiarities of creativity formation in students of higher education institutions. They summarize that creativity is one of the valuable skills in the XXI century, which is perceived in the form of higher-order thinking, built on a complex and post formal opinion associated with the formation of new value concepts in the creative work. The study is built on the use of logical research methods: analysis, synthesis, induction and deduction. Based on the method of concretization the peculiarities of the formation of creativity in future designers in Ukraine were investigated. The method of abstraction is also used in the article. It implies ascending from abstract concepts and theses to concrete conclusions. Directly the method of abstraction is used in the study of general theoretical approaches and theories and the creation of concrete recommendations for the use of creative projects in higher education institutions. For example, the issue of further implementation of the project method (both individual and collective) as a way to develop creative-design thinking of higher education applicants is covered based on the predictive research method. Also, the study is built as a result of the use of the statistical method, consisting in a broad analysis of data.

RESULTS

Currently, the basic requirements for professional and creative competence of designers have increased noticeably, especially taking into account the general development of the educational sphere. Consequently, the organizational pedagogical condition for the development of designers' creativity during professional training is the formation of such an educational space, which will allow them to master the key abilities, skills, and knowledge of this creative-professional work, develop their abilities, meet the needs of young people in self-identification in a wide scope. Yes, creativity is one of the important conditions for the stable development of the design profession.

Creativity is a type of human activity, the result of which has novelty and originality, personal and social significance. The development of creative abilities is one of the ways to motivate students in the learning process. The strategy of modern education is to provide all students without exception to show their abilities and their full creative potential (Vovchasta et al., 2022). Let us note that the development of creative capabilities is important at all stages of education, but the formation of creativity in higher education institutions is of particular importance since it is then when students consciously choose professional orientations.

At the same time, a creative educational environment plays an important role for creativity formation. The latter consists of many factors, which can be divided into two types: internal and external. In particular, the first ones include the social, legislative, and economic conditions of higher education institutions. In addition, a rather significant external factor is the position of the professional environment. It is about the volume of the market of various designer services, the scale of competition, and the basic requirements for professional competence. Directly internal factors come to the competence of higher education. Among them, the leading ones are: educational and pedagogical factors and material and technical support. The former consist in revealing the educational possibilities of the environment as a factor of education and creative development of design students under the conditions of humanistic-oriented pedagogical orders, in compliance with appropriate methodological approaches (artistic and aesthetic, competence, design, personality-oriented, etc.), general pedagogical conditions, requirements of state standards. At the same time, material and technical support is understood as a set of basic conditions for the process of providing educational processes with material and technical means in accordance with sanitary, and ergonomic requirements.

An important role in the development of creativity is played by active teaching methods, including non-simulation methods. The project method stands out among the latter. It is a special system of learning, a flexible form of an educational organization focused on the creative realization of the individual, the formation of his mental abilities, volitional characteristics, and creative skills in the work of creating new project products (Marchenko, 2022). Thus, the project method is a special means of achieving the didactic purpose of the method of didactic technology development, which should end with a perfectly possible practical result. At the same time, through the active nature of learning and cognitive work of the method of creative projects ensures their effectiveness. In addition, such projects contribute to the acquisition of skills of independent acquisition of knowledge, orientation in the information environment, and design-thinking abilities.

The project method cannot be considered fundamentally new in the teaching system. It was first applied in the USA in the 1920s. Its appearance was associated with the ideas of humanism in philosophy and pedagogy, which were emphasized by the American philosopher and teacher J. Dewey. This method of teaching has gained considerable popularity today due to the rational combination of theoretical knowledge and opportunities with their practical application to certain given tasks. In American pedagogical opinion it has been reduced to the thesis: everything I learned, I know where and how to apply (Mullen, 2018).

There are two varieties of creative projects: individual and group. An individual project is designed, carried out, and presented by only one student. The group project method refers to a project distributed among several students. Note that directly group design is a special creative process, requiring each student to original, unique solutions, it is also a process of collective creativity, which forms the ability of future designers to group activities in a creative community. In addition, in a group project, students also demonstrate the ability to subordinate personal creativity to the interests of fulfilling the overall goal of creating a design product.

Let us note that it is the project method (both individual and group) that should be the key to providing professional training in higher design education. At the same time, the comprehensively used project method has a great learning, educational and developmental potential (Vovchasta et al., 2022). Also, the specified method leads to the formation of project thinking of the future designer, forms the skills of creativity, and contributes to the improvement of technical professional abilities.

Directly creative design technology is aimed at the creation of students original and new design solutions, which in the future will affect their ability to independently acquire the necessary knowledge,

formulate personal skills, fully express themselves and develop a set of design skills (we are talking about research, planning, management, communication, reflective) (Malik & Ubaidillah, 2020). Any creative project should consist of a key idea (idea), the means of its implementation, and the result obtained. Special features of a creative project are its creative nature; the presence of problematic circumstances requiring creative approaches, a manifestation of non-standard thinking, and the ingenuity of its participants.

Note that each creative project consists of such periods as aspiration, knowledge, and skill. In particular, during the first period (aspiration) students should form the main idea of the project and develop the main future project actions. Note that at the same time the instructor should support students' ideas during this period or correct their methods of implementation by giving advice.

During the knowledge period, a clear idea of the basic plan of the project to be created is created. At the same time, its participants should plan the necessary actions, calculate a variety of resources and determine possible deadlines for the tasks. However, during the skills period, students directly perform project actions, carry out key tasks, and form the final project product. At the same time, such projects may consist of isolated parts of the product, in particular sketches (Vovchasta et al., 2022). They may also contain basic calculations, implications of in-person testing or research, parts of product reconstruction and improvement, etc.

Note that when performing the design work of the above period, the performer (or performers) should strictly reflect on the final result, as well as personal actions for its implementation. Besides the implemented project during this period its presentation and the process of evaluation of the carried out work of the participants remain important. Forms of presentation of project products can be different. Consequently, we believe that a creative project for a student is a key opportunity to independently manifest his or her own creativity. This can be done in two ways: individually or in a group, and both in the first and in the second case should make full use of their own abilities. Thus, from the teacher's side, the creative project serves as an integrative didactic way of students' development, in general, it contributes to their independent learning and education.

The main criteria for evaluating a creative project are originality, uniqueness of the idea or idea, independence, dedication, and ability to enthuse the students to their project. Constructive factors are also important, in particular the suitability of the manufactured object for use, reliability, convenience, etc. On the other hand, technological, aesthetic, and economic factors should also be an important consideration when evaluating a creative project. To build a relaxed environment of student work, motivation can be resorted to. For example, students who have made special progress on a creative project can be singled out not just with high grades, but with certain memorials with diplomas or other minor gifts. Accordingly, if the project is a group project, then such a “reward” should receive from everyone who participated in its preparation. At the same time, experts advise against turning the educational process into a “race” for special distinctions (Larraz-Rábanos, 2021). The best way is to allocate several nominations, perhaps even rigging them so that all worthy projects win in one of them. In addition to these kinds of prizes, a general award can be organized - for the successful completion of a project. This can even be certain kinds of vacations - visiting an exhibition, a museum, etc.

Note that creative design thinking gives students advantages in subsequent employment. First of all, it is not so much about government jobs, but rather about prospects in private business. For example, the international agency Forrester, known professional services in the field of business-consulting, cited several priority facts of the positive effect of using design thinking in business: to improve customer satisfaction (38% of surveyed managers); to identify and prioritize business strategy opportunities (32% of respondents); reduce time to market new products (32% of respondents). More than 80% of managers surveyed also identified clear positive consequences of implementing design thinking: gaining new experiences for customers and company employees, improving understanding of their own employees' needs, new business growth prospects, prioritizing successful ideas over guidance from above, defining a common goal and uniting the team around it, developing and implementing new products and strategies, and developing the latest ideas and technologies (Stanford d.school, 2018)

TABLE 1
PECULIARITIES OF THE ASSESSMENT OF CREATIVE PROJECTS

Criteria	Definition
Originality of the project	Compliance with the uniqueness, originality of the idea, idea.
Constructive criteria	Compliance with the purpose, reliability, ease of use
Technological criteria	Compliance with safety measures, quality of materials, their combination, and the complexity of the work performed
Aesthetic criteria	Original color scheme, the choice of appropriate style,
Economic parameters	the need for the executed object, the possibility of using it
Environmental criteria	It is a question of the requirements of compliance with environmental friendliness, the possibility of recycling materials, the possibility of reuse, etc.

Indra Nooyi, CEO of Pepsico Corporation, argued that the ancient company had little regard for the user experience of their products. At the same time, the continued focus of work on the taste and characteristics of their products caused management to rethink their attitude on the issue of shapes, packaging, and function of their products (Kolko, 2018). It turned out that everything matters for direct product sales and, importantly, for the production itself. Consequently, design thinking was brought back into the product manufacturing and supply chains.

Another example is the IVM experience. This now well-known corporation was one of the first to apply the practice of design thinking. With this approach, it adjusted its business strategy, reduced investment risks, implemented a corporate creative culture, increased product sales, improved the customer experience, streamlined internal administrative processes, and accelerated project execution (Stanford d.school, 2018). Through such actions, it was able to increase its own revenues by more than $35 million, so the practice of design thinking has been met with optimism by managers. Based on this, we can argue that today's employers will definitely look out for potential employees who have experience with creative design thinking.

It should be noted that in university education, the positive experience of stakeholders is taken into account when designing curricula. It is true that modern teachers and scholars still tend to combine old and new teaching methods, although they prefer the latter (Kolko, 2018). For example, Roger Martin, dean of the Rothman School of Business, believed that the dominant form of thinking in business is not exclusively analytical thinking. This thought is deeply rooted and has been used many times, it is based on the foundations of deductive and/or inductive logic. At the same time, he argues, the counterbalance to analytical thinking is intuitive thinking (that is, relying on a solution without knowledge) rather than design thinking (Kolko, 2018). It is through intuitive thinking that we imagine the future, particularly by going down the path of invention, the most disruptive and unsystematic form of creativity. Thus, design thinking will act as a productive combination of analyticity and intuitiveness.

However, we should also consider the negative aspects of the use and uncontrolled tolerance of creative design thinking. The famous design expert Peter Merholz questioned the appropriateness of using the term “design thinking” at all. He reasoned that if design thinking is to be considered an interdisciplinary and synthetic concept, then the limitations of design, which is one of many elements to be considered, must be taken into account. He holds the belief that the notion that design thinking is creative is exaggerated, and we are only talking about simple marketing, above all marketing to design companies. If we discuss interdisciplinary thinking in general, which is sought to be achieved in studies, then it is beyond the competence of designers, so it should not be considered purely design thinking. Harvard University senior researcher Jeff Kohoe agrees: that creative design thinking should not come as in opposition to analytical thinking in business. He advocates the need for an interdisciplinary and synthetic approach to defining and

solving problems and innovations (Giddings, 2022). In particular, Edwin Catmell, president of Pixar, has commented rather critically that many of today's top performers sometimes do not understand the value or contributions that can be made in the production process, that is, they too radically separate production and economic power from cultural power. In his view, the universal prevalence of this incorrect viewpoint will eventually lead American society to become a society of buyers or consumers of finished products, service providers, or conventional advertising agents and marketers (Kolko, 2018). Such a perspective is absolutely negative, so next to design decisions should be recognized and popularized about the creative input that consistently occurs at every stage of product production and delivery, including also at the direct manufacturing stage (Marchenko, 2022). We believe that such opinions from globally respected managers carry weight and should be considered in the design creative learning of students.

DISCUSSION

Creative, aesthetically enriched individuals are capable of solving both everyday domestic and global problems, which guarantees opportunities not just for physical survival, but also for general progress, thanks to which it is quite realistic to create full economic and cultural conditions for the lives and activities of a maximum number of citizens. Modern society needs specific programs aimed at improving levels of creativity and creativity. As our research has shown, only a certain percentage of students have a sufficient level of creative design thinking, and this situation needs to be improved. The first stage for the formation of creativity should be kindergartens and schools, and then - institutions of higher education.

Creativity is the creation of the new, it determines not only social and meaningful discoveries but also those that one makes for oneself. Elements of creativity are manifested in children in play, labor, and learning activities, where there is a manifestation of activity, independence of thought, initiative, originality of judgment, and creative imagination. Accordingly, such psychological traits of schoolchildren as curiosity, orientation to the outside world, increased reactivity and rich imagination, as well as a successful level of adaptation to social life and adequate self-esteem help to reveal their capabilities and creative abilities. We believe that training students in modern interactive teaching methods will contribute to their creative potential. This can be achieved through increased individual work - probably also through the individual work of parents, teachers, or private teachers. The latter factor will be very important in the near future, in our opinion, if the orientation in regular schools to an individual approach to each student is not realized. Trained students who have already learned to display their own creative abilities will be much better able to demonstrate them already in college age. At the same time, certain aspects of using creative projects as a way to develop creative design thinking at the student level rightly raise certain reservations (Larraz-Rábanos, 2021). One is a commitment to prompt but superficial assessments of the situation. It is important to explain and practically demonstrate to students that this methodology may not be appropriate to use because it is blatantly different from, for example, thorough marketing research or long-term cultural studies. Some of the risks in using creative projects may be related to the unpreparedness of a group of students to work collaboratively. Yes, commonly known methods can be used to stimulate creative thinking, but some ways of group work require an initial familiarity. Accordingly, when team members do not have the right skills (in particular, did not acquire them during school), the execution will become more difficult, which can negatively affect future results. Optimism and team spirit in project work will inspire participants, but getting a positive impression of the process itself does not mean that certain valuable results will be obtained. That is, when introducing project methods, it is important to orient students precisely to obtaining the final result, i.e., the search process is important, but it must also have legitimate consequences. The use of creative projects as a way to develop the creative design thinking of higher education applicants has another peculiarity. In particular, making quick prototypes, for example in the form of a 3D product, etc., cannot be considered a universal training method especially when it comes to obtaining prototypes for further information work or use in complex engineering solutions. Design thinking demonstrates positive results when there is a need to improve existing products or a range of services, to bring them into line with the wishes and reviews of customers who have used them. So the actualization of design thinking in general

for making completely new products or taking difficult engineering and design decisions, introducing technological innovations without customer experience is a questionable matter.

CONCLUSION

The effectiveness of using creative projects as a way to develop creative design thinking of higher education applicants is quite high, and it is design thinking that can be considered quite in demand in the labor market. The latter is quite relevant for student youth who are looking for a job. The method of creative projects itself has a long history of use, appearing in the United States back in the 1920s. At the same time, the newest requirements of the information society to creativity and independence in decision making again attracted the attention of specialists-teachers and scientists to its use. Every creative project has several constituent parts: an idea, ways of its implementation and the result obtained. Special signs of the creative project are its creative character; the presence of the problem circumstances demanding creative approaches, the display of non-standard thinking, and inventiveness of participants. In the period of knowledge, there is a creation of a clear idea of the basic plan of the created project. At the same time, its participants must plan the necessary actions, calculate a variety of resources, and determine possible deadlines for completing the tasks at hand. Mastering design thinking is an important component in acquiring a future profession. In particular, many leading managers of private companies note the positive changes that have occurred as a result of its active use. At the same time, the paper also demonstrates the opposing views of specialists who consider design thinking to be only a part of a larger process of creation that does not need to be overemphasized. In higher education pedagogy they recommend combining old teaching methods with the latest trends (in particular, the method of using creative projects). We believe that it is better to use the method of creative projects as a way to develop creative design thinking from school. At the same time, already at the university education applicants will be able to "polish" its use - that is a gradual development that will lead to the formation of creative design thinking is needed. At the same time, it is necessary to consider possible negative manifestations of its usage, e.g. experience of preliminary projects, and group work, to realize that design thinking also has a limited functionality. It is true that the latter issues are still material for discussion, and will need to be explored further.

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