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THE CONCEPT OF DIPLOMA THESIS USING DESIGN THINKING

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Abstract. The article substantiates the urgency of the problem in the context of contemporary public challenges, in particular, the improvement of the quality of the provision of educational services for the training of teaching staff. One of these challenges is practically oriented pedagogy, which involves a close combination of theory and practice in a particular socio-cultural situation. In this sense, the need to develop teachers' professional competence, creativity, critical and design thinking is emphasized by the authors. The aim of this article is to present the concept of diploma thesis using the Design Thinking method. The goal of Design Thinking is to create new solutions based on a deep understanding of users' problems and needs. The human-centered design consists of five stages: empathisation, defining the problem, generating the ideas, prototyping and testing. The article is based on the authors' experience of implementing Design Thinking in education.

The importance of design thinking in the educational process is stressed, in particular for the effective diagnosis of students' educational needs during the lessons preparation. It is mentioned that educators learning specific methods of work and project thinking could successfully organize lessons or create a school environment that addresses the interests and creative needs of students. The article is written using the practical experience of the authors to introduce design thinking into education. The researchers are convinced of the need to involve young people in the writing of diploma researchers on the development of design thinking, professional creativity. At the same time, it is also important to carry out pedagogical research in a particular field of scientific knowledge, since the scientific and pedagogical community needs experts and theorists in the field of education.

Keywords: design thinking, creative thinking, creativity, educational process, human-centered design.

1. INTRODUCTION

The question about the relationship between theory and practice is one of the basic issues in pedagogy. Currently, the aspect of educating teachers in the relationship between theory and practice is a big challenge for Polish universities.

Wolfgang Brezinka, writing about practical pedagogy, rightly notes that "Practical pedagogy is a theory that prepares for proper educational activities in a given socio-cultural situation. Whenever possible, it should be based on scientific knowledge, but must be free of unnecessary scientific ballast. It has four tasks to perform that exceed the capabilities of other sciences. Practical pedagogy should:

- offer the educators an evaluative interpretation of the socio-cultural situation;
- set and justify specific goals for education;

- provide practical assessments, rules or proposals concerning the educational activities and various forms of educational institutions;
- promote the professional virtues of educators and their specific orientation as to the social values, provide them with intellectual and emotional support" [1, p. 209].

On the other hand, Stanisław Nalaskowski proposes "to divide the views on the pedagogical studies into two groups, according to which:

- pedagogical studies are purely professional, so their goal is to educate candidates for a specific profession, in a narrow specialisation. After completing these studies, the graduates will be specialists-practitioners, professionals in the field of activity designated in the process of social division of labour (e.g. caring educator, andragogue, educational counsellor, etc.);
- pedagogical studies are studies of a specific field of knowledge, i.e. pedagogy as a science, so the graduates supply the scientific community of theoreticians, experts in this branch of knowledge and research methodology corresponding to the selected subdiscipline of educational science (e.g. educational historian, educational theorist, general pedagogue, etc.)" [11, p. 151].

Bogusław Śliwerski points out that "The current profession of pedagogue is increasingly seen as a competency. The need for specialist preparation for this role is emphasized in terms of desirable skills and abilities, which should be supported by general theoretical, disciplinary (pedagogical) and specialization knowledge as well as necessary personality traits, including the one connected with (preferably creative) thinking" [12, p. 37].

The Report to UNESCO, submitted by the International Commission on Education for the Twenty-first Century, chaired by Jacques Delors, emphasises that modern education should focus on four main aspects, which in the future will become the pillars of knowledge for each individual: learning to know, learning to do, learning to live together and learning to be [7, p. 103-112].

In the context of the above-mentioned demands, one more important dimension of university education should be added: learning to think! Above all, the university's goal for young people is "learning to think alone" [4, p. 129].

So what is thinking then? Thinking, i.e. talking with yourself, is a critical reflection on the world and human life. It is also a skilful way of expression. Smartness in thinking is proved by, among others, way of expression. Independence in thinking is therefore a difficult art that should be acquired in the course of study by every university graduate [9, p. 75-79]. This is even more important because contemporary entrepreneurs require universities to develop the creativity of individuals by strengthening cultural competences as well as creative, critical, independent thinking and acting skills [2, p. 10-12].

2. Current Challenges for Completing the Professional Practice

The amendment to the *Law on Higher Education* of 11.07.2015 introduced a distinction between the general academic profile and the practical profile of education. Pursuant to the provisions of the Act, the practical training programme includes modules for the student to acquire practical skills and social competences implemented on the assumption that over 50% of the study programme specified in ECTS points includes practical classes shaping these skills and competences, including skills acquired during workshop classes.

The Regulation of Minister of Science and Higher Education of 26 September 2016, on Conditions of Studies specifies that classes related to practical professional preparation are to be conducted: in conditions appropriate for the given scope of professional activity; in a way enabling students to perform practical activities; by people, most of whom have professional experience acquired outside the university, corresponding to the scope of the classes.

The vast majority of the State Schools of Higher Education decided to modify the curricula for a practical profile. Until the end of 2016, the schools were required to introduce the three-month professional practices in their first degree practical studies curricula.

In the general opinion of employers, the studies and the internships are too little practical, too little suited to the real needs of the constantly changing labour market. One of their postulates was that the content of teaching should be more adapted to real conditions in the workplaces. The analysis carried out by Katarzyna Klimkiewicz shows that there are serious discrepancies in the perception of the internships by employers, students and universities. An important difference between the professional practices programmes planned by the university and the ones organised by the employers is that they are much more focussed on achieving the objectives of the workplaces. The internships are an opportunity for the student to be acquainted with the real labour market [6, p. 93-101].

The support for the effectiveness and efficiency of the professional practices is the constant cooperation between the universities and the educators, teachers and directors of the institutions where the students realise their practices. It should be based on concluded contracts and agreements, by monitoring the implementation of individual stages of the practice, evaluation of defined activities, and validation of the practices implementation process [10, p. 675].

The student internships are an important element of the education program of the State Schools of Higher Education. The objectives of these professional practicecs focus on substantive issues related to learning processes and procedures (including health and safety rules), learning the specifics of the workplaces and the rules that apply in it, and gaining experience in the realisation of practical tasks, using the knowledge gained during studies.

In 2016, as part of a non-competitive conceptual project *The internship programme at the State Schools of Higher Education*, 27 public and professional schools of higher education were selected, which task was to conduct additional internship for students of faculties with a practical profile. The aim of the project was to develop a nationwide, uniform system of 6-month professional practices at the professional schools of higher education. The result of the project was the development of students' competences, increasing the schools' flexibility in creating education programmes, and strengthening cooperation between employers and universities. One of the tasks for the participating schools was to prepare the implementation works [8, p. 91-98]. The ideal solution for pedagogy students is to prepare a diploma thesis using the Design Thinking method.

3. Implementation Works Using the Design Thinking Method

"Design Thinking is an approach to creating new products and services based on a deep understanding of users' problems and needs" [13].

This is a design method developed by the Design Institute at Stanford University. Its creator is David M. Kelley, who, together with his brother Tom, by spreading this method widely, wished to give future innovators a chance to realise their passion. Design Thinking is based on a strong focus on the user, looking at the problem from many perspectives and experimenting constantly by building new prototypes.

Creativity is needed to create innovation, which should not be equated with talent reserved only for the few. The brothers refute the myth of creativity associated with artistic activities. According to them, everyone is creative, they just need to unleash the courage they call "creative courage" [5, p. 14]. Working in interdisciplinary teams and following the next steps supports the release of creative potential and gives the opportunity to develop custom solutions.

The first step should be the empathisation, which aim is to "enter the client's shoe." Thanks to exercises such as the circle of needs, ethnographic interviews, empathy map and persona, the needs that users alone cannot accurately name and describe. It is important to observe users in action, because they can apply some of their own improvements that can be an inspiration for new products. Defining the right problem is the second step in the Design Thinking method. It assumes that the collected information will be synthesised and the proper problem will be chosen. At this stage, it is important to break through the thought frames that limit the field of view. In the next step, one need to work out the largest possible number of solutions for the defined problem. The brainstorming process is the best way to achieve this goal. The team should agree on one solution that will be prototyped. To build a

prototype, you can use simple elements, cartons, straws, tapes, but you can also draw a solution or demonstrate it by playing a scene. After the presentation, all comments on the proposed solution should be collected. Once we have the prototype ready, we can go for testing. It should take place in a real environment. After a positive test result, we can say that the product or service is ready for implementation.

Giant corporations such as Google perfectly understand that the success of their products depends on the right matching their services together with the needs of users. Design Thinking could also be helpful in efficient diagnosis of the educational needs of students while preparing lessons. Educators learning the method of work and assumptions of project thinking could successfully arrange classes or school space based on the students' needs.

Piaget claimed that "the main goal of education in schools should be the creation of men and women who are capable of doing new things, not simply repeating what other generations have done. Men and women who are creative, inventive and discoverers. People who can be critical, validating, and not necessarily accepting everything that is offered to them" [6, p. 43]. Diploma theses that combine theory and practice and give the opportunity to create new things that are possible to implement at school can contribute to improving the quality of education.

Our diploma thesis using the Design Thinking method consists of four basic chapters: theoretical, diagnostic, research and describing the implementation of project activities.

The theoretical chapter discusses the adopted problem / topic in the light of the literature on the subject. This chapter contains some subchapters that detail the undertaken research subject in the context, such as the age group to which the author of the work relates or the specifics of work in a given institution. Student, when analysing the literature, should present its effects in a problem way. Individual subchapters should have a specific structure and be accompanied by introductions and summaries.

The diagnostic chapter's role is to define the design goal. Depending on the issue being examined, we can use Design Thinking such tools to diagnose the needs: wheel of needs, context map, persona, stakeholder map. In order to define the design goal, we can use design verbs to the phrase: "How could we... improve / transform / organize / increase, etc. ..."

The research chapter presents the basics of own empirical research. This chapter contains the following elements: subject and purpose of the research, characteristics of the study group, organisation and course of the research, research methods, techniques and tools, analysis of the research results.

In the last chapter, the problem raised in the subject of the thesis should be presented in the light of own activities carried out in the institution during the internship. Its structure should correlate with the research problems specified in chapter two. An important element of this chapter are the conclusions and recommendations, in which a summary of the entire project and suggestions should be made to improve the existing, diagnosed situation in the workplace. When formulating conclusions, there should be some reference to the theoretical part of the work in such a way that it forms a coherent whole.

An example of a diploma thesis layout:

Topic: Preventive actions in the field of ensuring the safety of pupils in the social therapeutic centre

Chapter I – Security in the light of the literature on the subject

1. The concept of security
2. Children's safety in legal regulations
3. Safety in the social therapeutic centre

Chapter II – Creating secure solutions using the Design Thinking project method

1. Empathisatio' - a problem of pupils' safety
2. Defining the design goal and the problem to be solved
3. Generating ideas to improve pupils' safety
4. Prototyping the activity, description of the prototype created
5. Testing the prototype in the therapeutic therapeutic centre

Chapter III – Methodology of own research

1. Subject and objectives of the research
2. Characteristics of the study group
3. Organisation and course of the research
4. Research methods, techniques and tools
5. Analysis of the research results

Chapter IV – Realisation of project activities

1. Realisation of the implemented activities
2. Realisation of the implemented activities
3. Planning for the implementation in the facility.

4. CONCLUSIONS

"Design Thinking was as originally popularized for creating commercial products (like the original apple mouse), and it is typically used to create market-based products and/or services. Human-Centered Design takes this a step further and provides a mindset and tools to ensure these products and/or services actually improve the lives of the end-users or beneficiaries. Combined, they offer a process and mindset that creates self-sustaining solutions to some of the world's greatest challenges" [17]. Human-centered design proves that building a successful product depends on insightful research (personas, scenarios, use cases, customer journey maps, user testing, and more) and a conscious approach that lies in understanding how your end-users feel and behave [16]. Creating any product by a person involves research, creativity [14].

"To make this clearer, any business can use Design Thinking to build a solution that is capable of making money. For example, a company may use Design Thinking to create a video game or TV show for kids. Applying Human-Centered Design on top of this will ensure that the show actually serves the needs of the people watching it (for example meeting the learning objectives of the children watching the show or playing the game)" [17]. Therefore, we are convinced that pedagogy should be practical. After all, education also should be linked to the life of the child.

From the point of view of the tasks that the modern school faces, it seems necessary to train future teachers in a way that will prepare them to create educational reality on their own. In the face of challenges posed by society towards the individual, it is not enough to pass on any ready knowledge, because individuals are increasingly required to independently search for and study the surrounding reality, to make direct observations and to use natural curiosity and creativity. It is also expected that in professional work a man will be able to think and act independently and make responsible decisions. In addition - due to the fact that more and more often work requires much cooperation - it is expected that teachers will shape students' attitude that will allow them to undertake group work, cooperation and team work, as well as the communication with each other. The teacher's task should, therefore, be to stimulate students to creative, multi-faceted search for answers to their bothering questions, and to look for solutions to emerging problems. Our professional experience confirms that the use of the Desing Thinking method in working with students prepares them to solve real educational problems, and allows them to develop their creative thinking.

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Дуда Анета, Мазур Піотр. Концепція дипломної роботи з використанням дизайнерського мислення. *Журнал Прикарпатського університету імені Василя Стефаника*, **7** (1) (2020), 192–198.

У статті обґрунтовано актуальність проблеми в руслі сучасних суспільних викликів, зокрема йдеться про підвищення якості надання освітніх послуг щодо підготовки педагогічних працівників. Одним із таких викликів є практико орієнтована педагогіка, що передбачає тісне поєднання теорії і практики у конкретній соціокультурній ситуації. У цьому сенсі наголошено на потребі розвитку професійної компетентності вчителів, здатності до творчості, критичного та дизайнерського мислення. Представлено концепцію дослідження за допомогою методу дизайнерського мислення. Автори вважають, що метою дизайнерського мислення є створення нових рішень на основі глибокого розуміння проблем та потреб користувачів. Дизайн, орієнтований на людину, передбачає п'ять етапів: співпереживання (емпатія), визначення проблеми (фокусування), генерування ідей, складання прототипів та тестування. Обґрунтовано значення дизайнерського мислення в освітньому процесі, зокрема для ефективної діагностики освітніх потреб учнів під час підготовки уроків. Наголошено на тому, що педагоги, котрі вивчають конкретні методи роботи та проектного мислення, могли б успішно організовувати заняття чи створювати шкільне середовище з урахуванням потреб і творчих запитів учнів. Стаття написана з використанням практичного досвіду авторів з упровадження дизайнерського мислення в освіту. Автори переконують на потребі залучення молоді до написання дипломних робіт з розвитку дизайнерського мислення, професійної творчості. Водночас йдеться також і про важливість здійснення педагогічних досліджень у певній галузі наукових знань, оскільки науково-педагогічне співтовариство потребує експертів і теоретиків у сфері освіти.

Ключові слова: дизайнерське мислення; креативне мислення; творчість; освітній процес; дизайн, орієнтований на людину.