Pedagogical Design in the Training Courses Development Process using Mind Mapping

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ABSTRACT: The article is devoted to the urgent problem of integration in teaching the ideas of pedagogical design and the technology of mind maps in the design and implementation of the educational process in higher education. The need for such integration is due to the contradiction in the practice of higher education between the information richness of the educational environment, which requires the formation of learners' ability to isolate the main, fundamental, practice-oriented knowledge, on the one hand, and the insufficient development of didactic and methodological tools to solve this problem, on the other hand.
In this context, the article reveals the main characteristics of pedagogical design (appropriate structuring of educational material, integrity, aesthetics, multi functionality) and Tony Buzan's mind maps as a didactic visualization tool that serves as a holistic representation of educational content, enhances cognitive interest and motivates educational and professional activities, development of imagination and spatial thinking, etc.
On the example of designing the content and the learning process of the discipline "Educational Law", the technology of using mind maps in accordance with the typical model of pedagogical design ADDIE is shown. It involves the following steps that are taken in succession: A (Analysis - preliminary analysis and thought over of the necessary steps to move towards the goal); D (Design - goal setting and learning objectives, choice of course format and learning strategies); D (Development - development of course materials and methods of their presentation in the educational process); I (Implementation - implementation of developed materials); E (Evaluation - assessment of learning outcomes). It was revealed that such an integration of design ideas and mind maps contributes to the more successful formation of applied competencies among students, increases the cognitive interest and motivation of educational and professional activities.

Keywords: pedagogical design, course design, research project, research competence, mind map, project planning, educational law, teacher education.

I. INTRODUCTION

In modern conditions, new teaching models provide students with educational institutions of higher education ample opportunities for education and training. We made an attempt to design training in the discipline "Educational Law" taking into account pedagogical design [10] based on a competency-based approach [3, 4]. The organizational basis for project activities in the framework of the discipline was the normative description laid down in the text of the Federal State Educational Standards in the direction of training "Pedagogical Education with Two Training Profiles"; professional standard of the teacher; curriculum; undergraduate educational program.

An analysis of the practice of implementing the design methodology in federal universities showed that there is a shortage of management mechanisms and institutions that can integrate the formats of project activities and pedagogical design in the educational process. In addition, there is no culture of project activities and pedagogical design in the higher education system and low entrepreneurial activity of students. The administrations of federal universities recommend that full-time teachers take additional training in project teaching methods and pedagogical design technologies. It is proposed to expand the formats of projects, actively introduce a digital organization of design and design

activities, develop online courses for the curators of these activities, include design and design activities in master programs, and introduce the idea of interdisciplinarity into projects and design pedagogical work.

Mixed teams from among IT students, designers, technologists, psychologists, and teachers are involved in this kind of work.

II. METHODS

Analysis of scientific and pedagogical literature on the problem, generalization, transfer, modeling, extrapolation.

III. RESULT AND DISCUSSION

In modern conditions, when the rate of change has sharply increased in all spheres of human life, the need for continuing education, the development of new knowledge, skills, and competencies is objectively increasing. This leads to an exacerbation of the contradiction between this requirement and the limited capabilities of traditional training and educational technologies that are suitable for relatively simple, "linear" training methods. In this regard, technologies associated with the concept of "pedagogical design of the discipline" are finding wider application. Several specialized specialists take part in the creation of the

pedagogical design of educational programs and courses, who, as part of the development team, apply the ideas and technologies of pedagogical design at all phases of the creation of educational programs: design, implementation, reflection [13]. The essence of pedagogical design is the idea of drawing on and using at all stages of the project life cycle knowledge about the conditions for increasing the effectiveness of activities, designing the learning process with an "open architecture", and creating an effective learning environment.

The traditional structure of pedagogical design (abbreviated as ADDIE, Rus. ADRVO) includes five interrelated phases:

(1) Analysis - identifying the level and profile of students, analyzing the goals and objectives of training, pondering the steps necessary to achieve the goal;

(2) Design - development of the purpose and objectives of training, the choice of the format of the training course and training sessions, the choice of learning strategies;

(3) Development - design and development of training materials for the course, technology for their development by students;

(4) Implementation - implementation of the developed training materials in a real educational process;

(5) Evaluation - assessment and self-assessment of learning outcomes. This stage, despite the fact that it occupies the last place in the structure of the ADDIE model, takes place at virtually all stages, since reflection should accompany all activities in order to be able to promptly make the necessary adjustments to the created project of the educational process [1, 5].

In our study, we define a research project as a joint educational and cognitive, creative activity of students and teachers, having a common goal, agreed methods, methods of activity aimed at achieving a common result to solve any problem that is significant for project participants [8].

As one of the tools for developing the pedagogical design of a research project, we propose a "mind map" technique developed in the 1960s by British psychologist Tony Buzan. Its advantage is that it is universal, can be applied at various stages of a project: planning, generating ideas (brainstorming), preparing for a project presentation (defense). Moreover, the compilation of mindmaps contributes to the development of creative imagination, which is also necessary for the future teacher. In addition, the use of this method can diversify practical and seminar classes. Students are happy to perceive new foreign innovative methods, especially if they are associated with creativity.

Studying the experience of using mindmaps allows us to conclude that they are used to solve various tasks of the educational process. However, they are mainly focused on measuring educational outcomes, where completed projects act as a criterion for their success.

Often the technique of mindmaps is compared with the reference signal method developed by V.F. Shatalov in the 70s of the last century. It should be noted that the method of V.F. Shatalov allowed to significantly increase the effectiveness of the educational process, and in different classes, with different students. Shatalov set to work with the most difficult-to-manage classes and everywhere achieved positive results: his students passed the educational program much faster than their peers, entered prestigious universities of the country.

What was the essence of the method of reference signals of V.F. Shatalov ? Due to what did he achieve high results? The main idea was to enlarge the educational material and present it in a visual form in the form of a reference abstract (reference signal). A reference signal is a capacious and visual representation of basic concepts and relationships on a specific topic of a lesson (or a larger unit of the educational process). They differed from the traditional synopsis by their systematic nature, the allocation of basic concepts and the well thought-out relations between them.

A feature of the method of V.F. Shatalov was also the fact that the students mastered the teaching material mainly during the lessons, so that they did not need to memorize the material at home - it was enough to look at the "memory card" - and all the lesson material was quickly displayed in memory.

With all the attractiveness the method of V.F. Shatalov had such a disadvantage as the lack of specific rules for creating "memory cards". The absence of such rules led to the fact that the reference signals developed by teachers did not always lead to an increase in the effectiveness of the educational process.
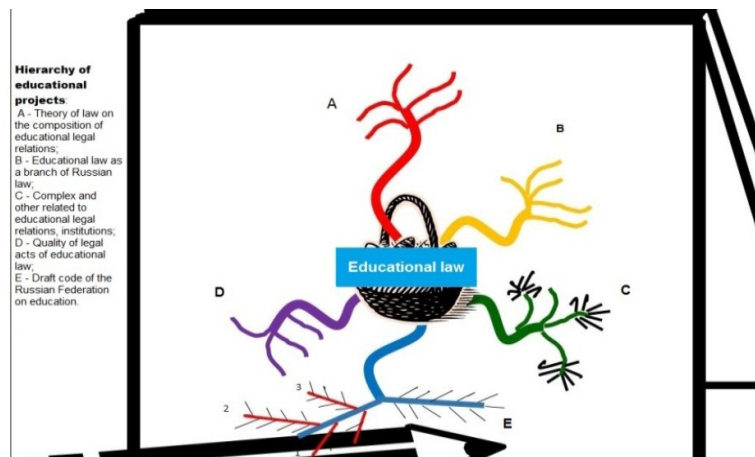

Fig. 1. Example of an mind map of the educational law training course.

The difference between the methodology of Tony Buzen's mindmaps is precisely in the fact that the development of mindmaps is based on specific and clear development rules.

Let's consider the practice of organizing the educational process at seminars on the design of the educational course "Educational Law" using mindmaps (Fig. 1).

It is known that seminars on educational law can be theoretical and applied. The goal of theoretical seminars is to make students understand the meaning of the training material. To achieve this goal, mind maps are built in the form of abstracts containing leading concepts and revealing their meaning in a visual form.

Seminars of an applied nature pursue a slightly different task - to form the ability to apply theoretical material to solve a practical legal problem. In this case, the construction of the map mind should be such that it reflects the process of solving a practical problem. Moreover, the modeling of the solution process may include a combination of forms of work - individual, group, steam [12].

Mindmap requires a complete overview on a specific issue and is an effective visual tool for remembering information [2, 6, 11]. It is a multi-colored scheme with small pictures-images, in the center of which is the main concept with an illustration, from which 5-7 multi-colored wide branches, on which the associations to the central concept are written, each of the branches is also divided into smaller associative branches.

As shown in the figure, the training course consists of five multi-colored wide branches "A", "B", "C", "D", "E".

Each of the wide branches is divided into smaller associative branches. Branch "A" is represented by the main content, which involves the development of pedagogical design in the process of designing questions of the theory of law on the concept and composition of educational legal relations. This branch is divided into five sub-branches, including various elements of educational relations - object; content; subjects; kinds; grounds, change or termination of educational legal relations.

Education law as a branch of the Russian legal system [7] is represented by broad branch "B", which is divided into five associative sub-branches. Speaking about the role and place of educational law in the legal system of the Russian Federation, it should be noted that a rather large array of legislative materials on issues of the levels of systemic organization of this array is debatable. In particular, does it include the norms and institutions of an independent branch of law or does it belong to a complex branch of legislation.

Most Russian legal experts consider educational law to be an integral part of the administrative, civil, labor and other branches of law that do not have sufficient features characteristic of an independent branch of law - namely, the original subject and method of legal regulation. However, in our opinion, a significant part of relations in the field of education has a specific character and does not apply directly to the sphere of public administration. For example, relations associated with the activities of educational organizations of various types, the organization of the educational process, the work of teachers, their training, retraining and certification, etc. Referring educational law to an independent branch of law, we distinguish the following associative branches: systematizing signs of the area of law, subject of legal regulation of educational law, principles of educational law, methods of legal regulation of educational law, education as Social Institution.

Complex and other institutions related to educational relations are represented by branch "B" which is divided into three branches that are in a stable, constant relationship with other branches of law - these are complex institutes of the branches of educational and civil law, complex institutes of the branches of educational and administrative law, complex institutes of the branches of educational and labor law. Each of the three branches is divided into seven to eight associative branches. The rules governing civil law relations in the field of education form seven comprehensive institutions, including: the founders of educational organizations; legal status of educational organizations as legal entities; charter of educational organizations; creation, reorganization and liquidation of educational organizations; own; civil liability of educational organizations for low-quality education; individual entrepreneurs engaged in educational activities.

The issues of managing the education system are highlighted in an independent and rather voluminous chapter in the federal law "On Education in the Russian Federation". The rules governing the specifics of administrative-legal relations in the field of education form seven legal institutions. Among them, we especially highlight the institution of state control over the quality of education, the institution of authority of the governing bodies of educational organizations and the procedure for their formation in accredited educational organizations.

The next, third branch are complex institutes of educational and labor law establishes the features of labor regulation for educational workers, and especially teachers. It is divided into seven branches: the powers of educational organizations in the field of labor law; features of the employment contract in the educational field; features of remuneration of teachers; special requirements for persons engaged in pedagogical activities; features of regulation of relations associated with the establishment of working hours and rest time; the procedure for applying disciplinary sanctions to employees of educational organizations; academic freedoms, as well as additional guarantees and social benefits for teachers.

Branch "B", in addition to the three branches of complex institutes, is also represented by questions of relations between students and educational organizations.

The quality of normative legal acts of educational law is represented by the broad "D" branch, on which there are five associative sub-branches: problems in the rule of law; contradictions; declarative norms; fuzzy or unclear prescriptions; gaps due to the lack of regulations.

Branch "E" - on the transfer of the idea of codification of educational legislation into the sphere of practical legislative activity, actualizes attention and raises the importance of research on the development of methodological and theoretical problems of codification of educational law. The thesis about the need to prepare and adopt the Code of the Russian Federation on education belongs to Syrykh [9].

Using mindmaps, students can jointly develop a visual work plan for a research project. At the planning stage, it is difficult to take into account all the necessary factors, and the mindmap allows you to depict all the constituent elements and stages of work in a single space, which helps students create a holistic view of the work ahead (Fig. 2).

A mindmap can also help in generating ideas, if you use this recording method during a brainstorming session. Tony Busan suggests using the technique of mindmaps to work in a team when you need to develop a creative

project, make a group decision, joint project management, solve a problem or analyze something to generate ideas (Fig. 3).

Fig. 2. Planning goals and activities with Mindmap.

Fig. 3. Brainstorming with Mindmap.

At the stage of defense (presentation) of the project, the mindmap is able to replace the classic text of the speech, acting as a reference scheme for speech. If in front of you is anmindmap compiled on the basis of some material, then the performance in this case becomes lively, colorful and laid-back. It should be noted that in this case there is a development of oratory, without which the teacher, even having extensive subject knowledge, is not able to convey the material to his students.

IV. CONCLUSIONS

The study allows us to conclude that the design and use of the proposed model of the curriculum at the undergraduate level, ensuring the variability of the trajectories of students and their inclusion in the design work, allows the student to form an individual educational trajectory.

V. SUMMARY

In conditions of optimization and differentiation of education, informatization of society, the design of training courses through pedagogical design provides the opportunity to combine related training courses and training programs within the courses and programs themselves.

This, in turn, strengthens the design component in the bachelor's program and allows you to form applied competencies in the course of the implementation of design, design and research work.

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REFERENCES

[1]. Makarenko A.A. (2017). Pedagogical design as a means of increasing the efficiency of the organization of the educational process. Bulletin of Kostroma State University. Series: Pedagogy. Psychology. Sociokinetics. No. 4, pp. 13-16**.**
[2]. Mind Maps. A Complete Guide to a Powerful Thinking Tool, Tony Buchan; trans. from English Yu. Konstantinova. - M.: Mann, Ivanov and Ferber, (2019), 208 p.
[3]. Ibragimov G.I. (2016). On the role and place of problem-based learning in modern higher education, G.I. Ibragimov. Alma Mater. No. 12, pp. 21-26**.**

[4]. Ibragimov G.I., Ibragimova E.M., Bakulina L.T. (2017). Trends in the development of a system for monitoring and evaluating the results of education in higher education. Alma Mater. No. 12, pp. 10-15**.**

[5]. Pakhomova N. Yu. (2005). The method of the educational project in an educational institution: a manual for teachers and students of pedagogical universities. - 3rd ed., Rev. and add. - M.: ARKTI, 112 p (Method. Library).

[6]. Buzan Tony, Abbott Susanna. (2005). The Ultimate Book of Mind Maps. 218 p.

[7]. Syrykh V.M. (2002). Introduction to the theory of educational law. M., 340 p. Syrykh V.M., Kudryavtsev Yu. A.

[8]. Project Training: (2018). Implementation Practices at Universities /Ed. L.A. Evstratova, N.V. Isaeva, O.V. Leshukova. M.: Skolkovo Open University, 152 p.

[9]. Concepts of the Code of the Russian Federation on education, Ed. Syrykh V.M. and Kudryavtseva Yu. A. – .

M., 2001.Assaad, Manal &Mäkelä, Tiina & Pnevmatikos, Dimitris & Christodoulou, Panagiota. (2018). Pedagogical Design Principles Guided Integration of Social Media Concepts in a Hybrid Learning Environment Analysing and Reporting Focus Group Results.

[10]. Eppler, M. J. (2006). A comparison between concept maps, mind maps, conceptual diagrams, and visual metaphors as complementary tools for knowledge construction and sharing.*InformationVisualization*, *5*(3), 202–210.

[11]. Koehler M. J., Mishra P., Cain W. (2013). What is technological pedagogical content (TPACK) ? *J. Educ.* 193, 13-19.

[12]. Lakkala M., Toom A., Ilomaki L., Muukkonen H. (2015). Re-designing university courses to support collaborative knowledge creation practices. *Australian Journal of Educational Technology, 31*(5), 521-536