THEORETICAL FOUNDATIONS OF LESSON INTEGRATION AND PEDAGOGICAL DESIGN

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Abstract: This article analyzes modern forms of designing teacher activities within the process of lesson integration from a scientific-pedagogical perspective. It outlines the content, didactic foundations, and pedagogical design principles of integrated education, while highlighting the theoretical and practical significance of approaches such as project-based learning, modular instruction, interdisciplinary integration, the STEAM approach, problem-based learning, collaborative learning, digital pedagogical design, and reflective practice in developing the professional competencies of future teachers. Furthermore, the stages of the teacher activity design process and their role in organizing integrated lessons are substantiated through scientific sources.

Keywords: integration, pedagogical design, lesson integration, teacher activity, future educator, interdisciplinary integration.

The reforms being implemented in the global education system identify the modernization of educational content, the strengthening of interdisciplinary integration, and the organization of the educational process based on a learner-centered approach as one of the priority directions. A modern teacher should not only be an expert in his or her own subject but also a specialist capable of scientifically designing the educational process, integrating the content of various disciplines, and organizing instruction on the basis of a competency-based approach.

Today, particularly in primary education, the organization of interdisciplinary integrated lessons is recognized as an effective means of developing students' critical thinking, creativity, communication, and collaboration competencies. Therefore, methodically preparing future teachers to design integrated lessons in higher pedagogical education institutions has become one of the urgent scientific and pedagogical issues.

Designing pedagogical activity is a complex professional process that includes scientifically planning the educational process in advance, determining objectives, selecting content, choosing methods and instructional tools, and evaluating learning outcomes. In integrated lessons, this process becomes even more complex because it requires ensuring the interconnection of several subject areas, developing common competencies, and achieving a unified didactic goal.

Integration in education refers to the combination of different disciplines, concepts, methods, and types of activities based on a common objective. The primary purpose of integration is to develop students' holistic understanding of the world and to ensure that knowledge is acquired not as isolated fragments but as an interconnected system.

Pedagogical design is a systematic activity aimed at scientifically planning, organizing, implementing, and evaluating the educational process. In modern education, pedagogical design is characterized by the teacher's ability to carefully plan lessons in advance, clearly define educational objectives, select appropriate teaching methods and instructional tools based on students' needs and abilities, effectively organize learning activities, and analyze the final learning outcomes. Particularly in the process of lesson integration, pedagogical design enables teachers to establish interdisciplinary connections, develop students' comprehensive knowledge and competencies, and improve the quality of education.

Determining educational objectives. The first and most important stage of pedagogical design is the determination of educational objectives. The objective specifies the knowledge, skills, abilities, and competencies that learners are expected to acquire by the end of the lesson. A properly formulated objective determines the direction of the entire educational process and serves as the foundation for all subsequent stages of the teacher's instructional activities [11].

In integrated lessons, the objective is aimed not at achieving the outcomes of an individual subject but at developing general competencies through the integration of the content of several disciplines. Therefore, educational objectives should be specific, measurable, achievable, relevant to the educational content, and attainable within a defined period of time.

Selecting educational content. The next component of pedagogical design is the scientific and methodological selection of educational content. Educational content is selected in accordance with state educational standards, curricula, and subject concepts. During this process, learners' age and psychological characteristics, existing level of knowledge, interests, and individual needs are taken into consideration.

In integrated education, interdisciplinary relationships play a particularly important role in the content selection process [12]. The teacher identifies similar concepts, principles, and topics studied across different subjects and combines them into a unified didactic system. As a result, students acquire knowledge not as separate fragments but as an interconnected and holistic system.

Determining teaching methods and technologies. One of the essential stages of pedagogical design is selecting teaching methods and educational technologies that correspond to the instructional objectives. The effectiveness of a lesson largely depends on the extent to which the selected methods correspond to its objectives and content [9].

In contemporary education, interactive methods, problem-based learning, the project method, inquiry-based activities, the STEAM approach, digital technologies, collaborative learning and competency-based instructional methods are widely implemented [3]. In integrated lessons, however, it is necessary to combine several teaching methods in a complementary manner.

For example, combining the project method with problem-based learning or information and communication technologies promotes students' independent thinking, creativity, and practical skills. Such integration also enhances learners' ability to apply knowledge in real-life situations and encourages active participation throughout the learning process.

Organizing learning activities. Careful organization of learning activities in pedagogical design is one of the key factors that ensures the successful implementation of a lesson. At this stage, students' individual, pair, small-group and whole-class activities are planned in advance [1]. The teacher determines each stage of the lesson, the sequence of tasks, time allocation, the use of instructional materials, and the mechanisms of collaboration among students.

In integrated lessons, learning activities are designed to encourage students to apply knowledge acquired from different subject areas in a comprehensive manner. Such activities contribute to the development of learners' analytical thinking, problem-solving abilities, communication skills, and teamwork.

Developing assessment criteria. An integral component of pedagogical design is the development of assessment criteria for evaluating learning outcomes. Assessment is not only a means of determining final achievement but also an effective tool for managing and improving the learning process [4]. Therefore, assessment criteria should be developed before the lesson begins and presented to students in a clear and understandable manner.

In integrated lessons, assessment should evaluate not only subject-specific knowledge but also key competencies such as communication, collaboration, critical thinking, creativity, problem-solving, and information literacy. In this regard, the combined use of diagnostic, formative, and summative assessment methods is considered appropriate [2]. In addition, incorporating peer assessment and self-assessment helps develop students' sense of responsibility and reflective skills.

Reflection and analysis. The final stage of pedagogical design is reflection and analysis. During reflection, both teachers and students evaluate the activities that have been carried out, analyze the achieved outcomes, and identify existing shortcomings [7].

The teacher analyzes the extent to which the lesson objectives have been achieved, the effectiveness of the selected teaching methods, students' level of participation, and the overall effectiveness of the integrated approach. At the same time, students reflect on their own knowledge, learning experiences and performance, enabling them to recognize areas that require further improvement [6].

The results of reflection provide an important methodological foundation for planning future lessons and create opportunities for the continuous improvement of pedagogical practice [5].

Future teachers should be capable of designing all these components in accordance with the requirements of integrated education.

Overall, these components of pedagogical design constitute a unified and interconnected system. Clearly defined educational objectives serve as the basis for selecting educational content, while the selected content determines the appropriate teaching methods and technologies [8]. The chosen methods facilitate the effective organization of learning activities, whereas the assessment criteria ensure objective evaluation of educational outcomes.

Reflection and analysis, in turn, function as essential mechanisms for improving the entire pedagogical process and provide the basis for more effective planning in subsequent instructional design. Particularly in preparing future teachers to organize integrated lessons, a thorough understanding of these components of pedagogical design plays a significant role in developing their methodological competence, professional expertise, and readiness for innovative educational practice.

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