

SCHOOL CURRICULUM BASED ON LAYERED LEARNING: PLANNING AND MANAGING TIME BETWEEN THEORETICAL AND APPLIED SUBJECTS

CURRICULUM ȘCOLAR BAZAT PE LAYERED LEARNING: PLANIFICAREA ȘI GESTIONAREA TIMPULUI ÎNTRE DISCIPLINELE TEORETICE ȘI APLICATIVE

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Viorica REABOI-PETRACHI

ORCID: 0000-0001-8493-0982

E-mail: viorica.reaboi.petrachi@usm.md

Moldova State University, Chisinau, Republic of Moldova

Summary: Contemporary education is undergoing a profound transformation, driven by the social, economic, and technological changes of the 21st century. In the Republic of Moldova, educational reforms aim to modernize the school system through a competency-based curriculum, the integration of subjects, and the use of digital technologies. In this context, **Layered Learning** emerges as an innovative approach capable of addressing the diverse needs of students while leveraging the principles of differentiation and personalization. By balancing theoretical and applied subjects, this method facilitates both deep learning and the development of competencies essential for real-life applications.

Keywords: Layered Learning, competency-based curriculum, stratified learning, subject integration, differentiated assessment, educational personalization, educational time management.

INTRODUCTION

Contemporary education is facing major challenges driven by social, economic, and technological changes that are shaping 21st-century society. In the Republic of Moldova, ongoing educational reforms aim to modernize the school system and align it with European standards. Among the priority directions are: moving to a competency-based curriculum, integrating disciplines, using digital technologies, and promoting student-centred teaching methods [1].

In this context, the concept of *Layered Learning* (stratified learning) gains special relevance. This approach, relatively new in the Moldovan educational environment, allows the learning process to be adapted to the diverse needs of students and leverages the principles of differentiation and personalization in education. At the same time, Layered Learning facilitates more efficient planning of study time and creates a balance between theoretical and practical/applied subjects.

Layered Learning is based on the idea of layering knowledge and learning activities. Students are not required to follow the same uniform path; rather, they can advance

gradually depending on their level of preparation and their capacity to process information. Thus, „layers” of learning are created:

1. Basic level – understanding fundamental concepts, memorizing and reproducing information.

2. Intermediate level – applying knowledge in simple contexts, solving typical problems.

3. Advanced level – analyzing, synthesizing and transferring knowledge to new contexts.

4. Creative level – designing innovative solutions, developing original products, critical thinking.

This hierarchy of levels recalls Bloom’s taxonomy [5, 7] and the principles of differentiated education, but adds curricular flexibility and the possibility to more easily integrate theoretical and applied disciplines.

The educational reform in the Republic of Moldova promotes moving to a competency-based curriculum, where emphasis is placed on what the student *can do* with what they have learned, and not only on the quantity of knowledge accumulated [2, 4].

CURRICULAR CHANGE DIRECTIONS AND COMPATIBILITY WITH LAYERED LEARNING

Curricular reform in the Republic of Moldova focuses on several major directions aimed at adapting schools to contemporary realities and European educational standards. One of these directions is the restructuring of framework curricula to introduce greater flexibility in organizing the educational process. This flexibility allows teachers to adapt content to the class level, differentiate teaching strategies, and avoid the rigidity of traditional programs.

Another significant innovation is the introduction of integrated subjects, such as “Science,” which combines physics, chemistry, and biology into a unified domain. This interdisciplinary approach aims to connect knowledge, highlight relationships between natural phenomena, and facilitate their comprehensive understanding, overcoming the fragmentation characteristic of traditional subjects. Students thus have the opportunity to perceive reality holistically and apply theoretical concepts in various contexts.

Additionally, there is an increasing emphasis on developing European key competencies [10]. These include digital competencies, essential in today’s information society; social and civic competencies, necessary for active participation in community life; entrepreneurial competencies, which stimulate initiative and creativity; and cultural competencies, vital for cultivating identity and openness to diversity.

In this transformative framework, Layered Learning proves to be fully compatible with the new directions. By organizing content into levels of difficulty, students can progress at their own pace, avoiding the uniformity of the educational process. At the same time, the layered approach promotes the integration of disciplines through applied projects, where theory and practice complement each other, stimulating students’ inter-

est and motivation. Last but not least, Layered Learning supports differentiated assessment, centered on each student's progress, and not exclusively on performance measured against a single standard. This perspective addresses both the need for educational equity and quality, offering each student the chance to maximize their potential.

This approach aligns with the Council of Europe's standards, particularly the Charter on Education for Democratic Citizenship and Human Rights Education (EDC/HRE) and the Reference Framework of Competences for a Democratic Culture (RFCDC), which emphasize the development of democratic competences across various educational contexts.

By integrating these elements, Moldova's curricular reform aims to create a more flexible, integrated, and competency-based educational system that prepares students for the challenges of the modern world.

TIME MANAGEMENT AS A PEDAGOGICAL RESOURCE – AN ESSENTIAL PRINCIPLE IN A LAYERED LEARNING-BASED CURRICULUM

In the educational process, time constitutes one of the most valuable and simultaneously most limited pedagogical resources. The manner in which it is planned and distributed among various subjects directly influences the quality of learning, student motivation, and teaching efficiency. In a Layered Learning-based curriculum, intelligent time management becomes an essential principle, as the layered model avoids standardization and allows for a balance between the theoretical and practical dimensions of education.

On one hand, theoretical subjects—such as mathematics, Romanian language and literature, history, or geography—provide the cognitive and cultural foundation for students. They develop logical thinking, argumentative skills, communication competencies, and the conceptual framework necessary to understand social, cultural, and scientific phenomena. These subjects require intellectual rigor and careful planning of study time to facilitate the gradual accumulation and consolidation of fundamental concepts.

On the other hand, applied subjects—such as experimental sciences, arts, computer science, or technological education—create a practical environment where students can test their knowledge, experiment, and produce tangible results. They add motivation and relevance, as they address the frequent student question: “What is the use of what I learn?” Through practical, interdisciplinary, and creative activities, students develop autonomy, initiative, and critical thinking.

A striking example is found in the field of physics: a concept like Ohm's law can first be introduced theoretically in a classroom lesson, where students learn the formulas and basic concepts. Subsequently, it can be reinforced through solving mathematical problems, and in the final stage, applied in a science laboratory where students build simple electrical circuits. This alternation between theory and practice not only ensures a deep and lasting understanding but also increases student interest and involvement.

Thus, Layered Learning facilitates a balanced distribution of time: neither theoretical subjects monopolize the school schedule, nor are applied activities relegated to a secondary role. On the contrary, the two dimensions complement each other in an interdependent relationship that maximizes the quality of the learning process. In this way, students benefit from a balanced educational path that develops both abstract thinking and the ability to apply knowledge concretely.

Furthermore, time planning also means adapting the learning pace to the students' level. By stratifying tasks, some can work on basic exercises, others on complex applications or interdisciplinary projects. Thus, time becomes flexible and personalized, instead of uniform and rigid [9].

A stratified curriculum in the Republic of Moldova could foresee:

- Allocating a balanced percentage of time for theoretical and applied subjects (e.g., 60% theoretical – 40% applied);
- Introducing integrated modules (e.g., “Science”—combining physics, chemistry, and biology);
- Utilizing “project windows” in the timetable, dedicated exclusively to interdisciplinary activities;
- Providing flexibility for schools to adapt the time proportions based on student profiles and available resources.

Time planning and management in a Layered Learning-based curriculum is not just about the mechanical division of hours; it is a pedagogical strategy that emphasizes balance, relevance, and applicability. Thus, students do not merely memorize but understand, apply, and create, and the school becomes a space for authentic learning.

ADVANTAGES AND CHALLENGES IN IMPLEMENTING LAYERED LEARNING IN SCHOOLS

The introduction of the Layered Learning model in schools in the Republic of Moldova brings multiple benefits, both for students and teachers. One of the most important advantages is the personalization of the educational process. Students are no longer required to complete the same tasks uniformly, but can advance at their own pace, depending on their level of understanding and cognitive abilities. This differentiation contributes to inclusion, offering real chances of progress to both students with learning difficulties and those with high performance.

Another major advantage is the optimization of school time. The stratification of content and activities allows for a better dosage of effort and reduces the risk of overloading students, a phenomenon frequently encountered in traditional schools. By alternating between theoretical and applied moments, learning time becomes more efficient and more attractive.

Layered Learning also contributes to the development of life skills [8], because the emphasis is not exclusively on memorizing information, but on applying it in real con-

texts. Students are encouraged to analyze, create, and take responsibility, which prepares them for future academic and professional challenges.

Motivation and engagement are also stimulated by the integration of practical applications and interdisciplinary approaches. Students feel more connected to what they are learning and find the relevance of their learning more easily. In addition, Layered Learning encourages interdisciplinarity, facilitating connections between fields and developing critical thinking and cognitive flexibility [3].

Although promising, the Layered Learning model also raises a number of challenges in the Moldovan school context. One of the most significant is related to teacher training. Many teachers are used to traditional frontal teaching methods and may encounter difficulties in adopting differentiated strategies and applied projects. For the success of the reform, continuous training programs, mentoring, and communities of professional practice are needed.

Another challenge is educational resources. Not all schools have modern laboratories, digital equipment or textbooks adapted to the layered model. Without the necessary infrastructure, implementation risks remaining only at the theoretical level.

The current assessment system is also largely based on standardized grades and summative tests. This approach may conflict with the principles of Layered Learning, which emphasize differentiated and formative assessment, centered on the individual progress of the student.

Last but not least, there are also cultural barriers and traditional mentalities. Both teachers and parents may show resistance to change, preferring the safety of known methods. Overcoming these obstacles requires dialogue, community involvement and awareness campaigns on the benefits of the new model.

SOME INTERNATIONAL GOOD PRACTICES FOR IMPLEMENTING LAYERED LEARNING IN SCHOOLS

Countries with strong educational traditions, such as Finland, Estonia or the Netherlands, already apply similar principles to Layered Learning. In Finland, curricular flexibility and competence orientation are considered pillars of the education system. Students often work on interdisciplinary projects, which combine mathematics, science and arts, developing both knowledge and practical skills.

In Estonia, the digitalization of education is a priority. Students use online platforms to learn at their own pace, and teachers can monitor differentiated progress. This model approaches Layered Learning by layering content and focusing on applicability.

The Netherlands promotes student-centered education and gives schools curricular autonomy. Here, interdisciplinarity and creativity are encouraged, and students are assessed based on portfolios and personal progress, not just through standardized exams.

Also in Canada, especially in the provinces of Ontario and British Columbia, schools adopt a flexible and competency-based curriculum, where the emphasis is on

personalized learning. Students are guided to build their own educational paths, integrating theoretical subjects with applied activities and community projects.

In Singapore, one of the most performing education systems globally, there is a balanced combination of academic excellence and the development of practical skills. Here, “teach less, learn more” is a central philosophy, which involves careful selection of content and providing time for applications, experiments and critical reflection [11].

In Denmark, the emphasis is on collaboration and experiential learning. Students frequently participate in interdisciplinary projects related to community or global issues, which facilitates the application of theoretical knowledge in practical contexts and stimulates critical thinking [6].

These examples demonstrate that Layered Learning is not an abstract concept, but a practice successfully applied in various educational contexts. The Republic of Moldova can take over these good practices, adapting them to its cultural and institutional specifics, while capitalizing on the opportunities offered by digitalization and European integration.

DIRECTIONS FOR DEVELOPING LAYERED LEARNING IN SCHOOLS IN THE REPUBLIC OF MOLDOVA

To successfully implement Layered Learning, the Republic of Moldova needs a series of strategic measures. First, continuous training of teachers is essential, not only through theoretical courses, but also through practical workshops, exchanges of experience and the use of digital resources.

Secondly, it is necessary to adapt the framework plans so that they allow for flexibility and interdisciplinarity. The programs must be open enough to integrate applied activities and projects, but also clear enough to ensure the coherence of the educational process.

At the same time, equipping schools with modern material resources is a basic condition. Science laboratories, digital equipment and interactive educational platforms can transform learning into a more relevant and attractive experience.

Another important aspect is partnerships with the community and the private sector. By collaborating with local organizations, companies and institutions, the school can develop applied projects that connect theory with practice.

We conclude that a reassessment of the evaluation system is necessary, by introducing portfolios, projects and formative assessments, which reflect the real progress of students.

CONCLUSIONS

The implementation of the Layered Learning model in Moldovan schools represents not only a methodological change, but a profound transformation of the entire educational system. By intelligently balancing time between theoretical and applied subjects, students have the opportunity to build solid knowledge, but also to capitalize on it

in practical contexts, relevant to everyday life. This balance is essential in a society in constant change, where success depends on the ability to combine critical thinking with creativity and to apply knowledge in complex situations. A first major benefit of Layered Learning is the development of transversal skills, aligned with European standards: digital, social, civic and entrepreneurial.

Students are no longer trained as passive recipients of information, but become active participants, able to collaborate, solve problems and innovate. At the same time, the stratification of the learning process ensures educational inclusion, giving all students the chance to progress at their own pace.

Layered Learning also creates the premises for a real modernization of the school culture in the Republic of Moldova. Teachers become facilitators of learning, students are encouraged to take responsibility for their own training, and the school, as an institution, becomes closer to the needs of the community and the labor market. This transformation strengthens the social relevance of education and contributes to reducing the gap between school and socio-economic reality.

The long-term impact of this approach is visible not only at the individual level, but also at the societal level. A generation of graduates trained through Layered Learning will be better prepared for the challenges of the future: accelerated digitalization, changes in the labor market, the need for continuous adaptation and active participation in democratic life. In this sense, the implementation of Layered Learning is not just a methodological option, but a strategic investment in the human capital of the Republic of Moldova.

However, the success of this reform depends on several essential conditions: teacher training, adaptation of framework plans, equipping schools with modern resources and changing traditional mentalities. Only through a coordinated effort between the Ministry of Education, teachers, the community and social partners, can Layered Learning become a functional and efficient reality.

In conclusion, Layered Learning offers the Republic of Moldova the chance to build a flexible, inclusive and future-oriented educational system, in which students acquire not only knowledge, but also authentic skills for life. It is a necessary step for the modernization of education and for the integration of the country into a European area of quality learning.

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