

RESEARCH ARTICLE

The Role of Time Management Technologies in Developing the Independent Learning Competence of Future Teachers

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Abstract

This article highlights the pedagogical significance of using time management technologies in developing the independent learning competence of future teachers. The study analyzes issues related to the effective organization of students' independent learning activities, the rational use of time resources, and the development of self-management skills. A methodological model consisting of diagnostic, motivational, informational-educational, practical, and reflective stages for integrating time management technologies into the independent learning process is substantiated. In addition, the study demonstrates the potential of time management methods such as the Pomodoro technique, the Eisenhower Matrix, time audit, and time blocking, as well as the author's methods (3B, Stop-factor, Dual Task Balance, 3T, and Development Indicators) in developing students' competencies in self-management, reflective thinking, and activity planning. Within the framework of the research, the interactive web application "Time Management" developed by the author is described as a didactic tool that supports the systematic organization of independent learning, task planning, and the improvement of the effectiveness of students' learning activities.

KEY WORDS

Time management, independent learning competence, future teachers, self-management, pedagogical technologies, Pomodoro technique, Eisenhower matrix, digital learning tools.

INTRODUCTION

In the modern higher education system, the effective organization of students' independent learning activities is recognized as one of the important pedagogical tasks. In the context of rapid social development, it is particularly important to prepare individuals who are capable of independent thinking, responsible for their own activities, and socially active. Therefore, it is necessary to develop students' awareness of their own activities, as well as the need to purposefully plan and continuously improve them. In the process of independent learning, a student's ability to manage their own activities, make independent decisions, and take

responsibility for their outcomes is considered one of the key indicators of personal and professional development. Ensuring the effectiveness of this process largely depends on pedagogical support. Such support contributes to activating students' learning activities, identifying their individual capabilities, and guiding them toward independent action. In this context, time management technologies play a significant role as an effective methodological tool. A student who has developed rational time management skills can systematically plan their activities, identify priority tasks, and meet established deadlines. As a result, these skills contribute not

only to success in the learning process but also to achieving high efficiency in future professional activities. From this perspective, the integration of time management technologies into the educational system in order to develop students' independent learning competence is considered one of the urgent pedagogical issues.

METHODS

During the course of this study, a methodological approach based on time management technologies was developed in order to effectively organize students' independent learning activities and to improve their skills in the rational use of time resources. This methodological approach contributes to the systematic organization of the educational process, the development of students' self-management competence, and the effective planning of independent learning activities. The research methodology consists of several interrelated stages, including diagnostic, motivational, informational-educational, practical, and monitoring-reflection stages. Each stage is aimed at the gradual development of students' independent learning competence.

Diagnostic stage. At the initial stage of the study, students' existing knowledge, skills, and abilities in the field of time management were identified. In this process, questionnaires, tests, observation, and interview methods were used. These methods made it possible to analyze the level of students' learning activity planning, their ability to prioritize tasks, and the efficiency of their use of time resources. The results of the diagnostic analysis revealed that a significant proportion of students had insufficiently developed time management skills. In particular, problems such as improper time allocation for completing independent assignments, procrastination, and a lack of systematic planning were observed.

Motivational stage. The next stage was aimed at developing positive motivation toward independent learning activities among students. At this stage, students were informed about the importance of independent learning for their personal and professional development. In addition, examples were provided to demonstrate how effective time management in the learning process can lead to higher academic outcomes. Within the framework of motivational activities, particular attention was given to setting clear learning goals, planning one's activities, and developing a responsible approach to learning.

Informational-educational stage. At this stage, students

were introduced to the theoretical foundations of time management technologies and the methods of their practical application. Students were familiarized with the following modern methods: activity planning techniques; prioritization of tasks; the Pomodoro technique; the Eisenhower matrix; and conducting time audits. These methods enable students to use time resources effectively and to organize their learning activities in a systematic manner.

Practical stage. During the practical stage, students had the opportunity to apply time management technologies in their own learning activities. They actively participated in developing daily and weekly work plans, distributing learning tasks according to deadlines, and monitoring the completion of assignments. In addition, students attempted to optimize their activities by applying the Pomodoro technique, prioritization methods, and time audit practices while completing independent assignments.

Monitoring and reflection stage. At the final stage of the research, students' learning activities were monitored and a reflective analysis was conducted. Students were trained to analyze their own activities, evaluate time expenditure, and draw conclusions on improving the effectiveness of their learning performance. This stage contributed to the development of students' competencies in self-management, reflective thinking, and independent decision-making.

RESULTS

The results of the conducted research demonstrated that the integration of time management technologies into the independent learning process ensures significant pedagogical outcomes in the effective organization of students' learning activities. The findings of the study indicate that an educational process organized on the basis of time management methods fosters a conscious and responsible approach to learning among students. In particular, students developed skills in planning their learning activities, prioritizing tasks, and using time resources rationally.

In addition, the following pedagogical outcomes were observed during the research:

- the process of students' development as active subjects of independent learning intensified;
- learning activities acquired a more systematic and planned character;
- the culture of effective time resource utilization improved;

- cases of disorganization and delays in completing independent assignments decreased;
- skills of self-control and reflection were developed;
- the level of intrinsic motivation toward learning activities increased.

Within the framework of the study, an interactive web application called "Time Management" was developed. This platform is designed to enable students to independently study the theory and practice of time management and includes learning materials, interactive activities, and self-assessment tools. The application incorporates the following functional features:

- theoretical lecture materials;
- presentations and video lessons;
- a system of independent assignments;
- a "To-do List" task management tool;
- a Pomodoro timer;
- an Eisenhower matrix;
- test tasks and interactive exercises.

The platform allows students to plan their learning activities, monitor time expenditure, and effectively organize the process of independent learning.

DISCUSSION

The results of the study demonstrated that a learning environment based on time management technologies possesses significant methodological potential for organizing students' independent learning activities. The application of effective time management methods in the educational process contributes to optimizing students' learning activities and developing their independent work skills. During the research, a number of effective methods were identified. In particular, the Pomodoro technique helps to concentrate attention and reduce fatigue by promoting intensive work within short time intervals. The ABCDE method allows tasks to be organized according to their priority levels and contributes to the effective organization of students' activities. The interval method helps to balance learning activities and rest periods. The "Eat the Frog" technique increases work efficiency by encouraging students to complete the most important tasks at the beginning of the day. The "Elephant technique" facilitates the completion of complex and large

tasks by dividing them into smaller stages.

In addition, several authorial methods were developed within the framework of the research. These include:

1. The 3B Method – integrates the processes of analyzing learning activities, implementing them, and evaluating the results;
2. The Stop-Factor Method – aimed at identifying and eliminating factors that lead to inefficient use of time;
3. The Dual Task Balance Method – helps organize multiple learning tasks simultaneously in a balanced manner;
4. The 3T Method – includes the stages of analyzing activities, distributing tasks, and implementing them in practice;
5. The Development Indicators Method – designed to assess the dynamics of students' development in independent learning activities.

These methods contribute to the development of students' reflective thinking, the conscious management of their activities, and the formation of effective time resource management skills.

CUNCLUSION

The results of the conducted research demonstrate that a methodological approach based on time management technologies has significant pedagogical effectiveness in the process of developing students' independent learning competence. The findings obtained during the study confirm that organizing learning activities based on the principles of rational time resource management increases students' engagement in the independent learning process and fosters a conscious approach to their learning activities. The integration of time management technologies into the educational process enables students to clearly plan their learning activities, prioritize academic tasks, and use time resources effectively. As a result, students develop the ability to organize their activities systematically, meet established deadlines, and responsibly complete independent learning assignments. This, in turn, contributes to increasing the effectiveness of the learning process and improving the overall quality of education. Furthermore, the methodological approach based on time management technologies has a positive impact on the development of students' self-management competence. Students learn to analyze their own activities, evaluate the effectiveness of completed tasks, and

draw conclusions aimed at improving their future performance. Such a reflective approach increases students' responsibility toward their learning activities and enhances their ability to make independent decisions.

The research results also indicate that the application of time management technologies contributes to the formation of a culture of time management among students, reduces disorganization within the learning process, and ensures a more effective organization of independent assignments. In addition, this approach strengthens students' intrinsic motivation toward learning activities and positively influences their personal and professional development. From this perspective, the widespread implementation of time management technologies in organizing students' independent learning activities in higher education institutions should be considered one of the important pedagogical tasks. Such an approach contributes not only to the effective organization of students' learning activities but also to the development of essential competencies required for their future professional careers, including time management, self-control, and independent decision-making.

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