🔓 **Research Article**

THE CURRENT STATE OF THE ISSUE OF DEVELOPING STUDENTS' COMPETENCE IN INDEPENDENT LEARNING IN THE CONTEXT OF EDUCATIONAL DIGITALIZATION

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ABSTRACT

This article explores the current state of the issue of developing students' competence in independent learning in the context of educational digitalization. Based on research findings, suggestions have been developed to enhance students' competence in independent learning.

KEYWORDS

Independent work, independent learning, student, teacher, competence in independent learning.

INTRODUCTION

In global educational development, the significance of fostering a culture of independent thinking for determining a country's progress and its socio-economic, national cultural position, and prospects is invaluable. The success of higher education systems in developed countries (such as Harvard University in the USA, Cambridge University in the UK, The Australian National University in Australia, Tsinghua University in China, and others) is fundamentally determined by the development of independent activity competence in graduates. Competence in independent learning helps students engage in self-development and enhances the efficiency of professional activities. Developing effective technologies for teaching "specialty" subjects with a professional orientation and fostering independent cognitive activity in students is of urgent importance.

Currently, students' independent work is recognized as the primary form of organizing practical educational

processes. Thus, enhancing its effectiveness remains one of the pressing issues. This urgent task necessitates integrating a strategy for independent learning into the practical education structure.

Independent learning plays a vital role in developing students' competence in independent learning. According to R.Kh. Djurayev, "Independent learning is a personal process directed at studying the experiences of ancestors and the achievements of science and technology through chosen methods and resources. In this process, a person's inner world, emotions, and ability to think independently play a key role" [4; pp. 43-47].

B.R. Muqimov's studies emphasize aligning independent work with the development of competencies, designing activities, utilizing ICTs and the internet for educational purposes, role-playing games, practical exercises, computer games, and other interactive methods and techniques to improve the effectiveness of students' professional-pedagogical competence development [3].

N.A. Muslimov, M. Usmonboyeva, and M. Mirsoliyeva, in their research, discussed the organizers of independent learning in the classroom (collaborative independent learning) and beyond the classroom (individual independent learning). "The successful implementation of independent learning largely depends on the development of self-management skills. Didactic principles, as well as theoretical and pedagogical technologies, play a key role in independent learning" [1].

According to N.A. Muslimov, "Independent learning is an organized process of subjective, regular, independent, and autonomous activity aimed at acquiring knowledge, developing concepts, and forming skills and abilities" [2; p. 85].

Students' independent work can be implemented in the following forms:

-Independent work directly carried out by the student (via a mobile device);

-Independent work under the guidance of a teacher in a traditional format;

-Independent work in electronic form (via a mobile device) under the guidance of a teacher.

Table 1

Independent work under the guidance of a teacher in a traditional format:

№	Forms of Independent Work	Content of Independent Work
1	Problem-solving	Solving tasks provided based on the topic of practical lessons and presenting the solutions in written form.

2	Essay	Written explanation of a problem, including a review of literary sources or analytical presentation of scientific works and books.
3	Colloquium	Organizing a discussion to assess the understanding of the theoretical part of the educational module.
4	Personal essay	Expressing personal thoughts on a relevant topic in written form, using critical, journalistic, or other genres.
5	Presentation	Delivering a presentation using slides or video materials on a given topic.
6	Case study	Analyzing and finding solutions to tasks related to problematic situations encountered in real-life or professional contexts.
7	Role-playing games	Gaining professional skills by simulating professional processes, staging scenarios, and performing roles.
8	Glossary	Brief explanation of terms related to a given topic.
9	Group project	Collaborative project work conducted by a group of 3-5 students.
10	Calculation and graphic tasks	Preparing graphic and calculation tasks, typically in technical subjects such as engineering graphics, electrotechnics, and information

		technologies, following specified methodological guidelines.
11	Course paper	Writing assignments based on the problems of a subject or a group of subjects (e.g., preschool education, general secondary education) as outlined in specified methodological guidelines.
12	Course project	Preparing a project in technical or professional subjects (e.g., technical mechanics, technological processes, and devices) involving calculations and graphic drawings, based on specified methodological guidelines.
13	Diploma project	Creating a project related to a specific professional subject, aimed at designing a production facility or its component, including graphical and calculated tasks as outlined in specified methodological guidelines.
14	Internship report	Writing a report based on internship activities (introductory, production, pre-graduation), following specified methodological guidelines.
15	Participation in subject circles	Preparing visual materials such as models, slides, and samples in academic circles.
16	Participation in competitions	Engaging in competitions under the scientific supervision of a teacher (e.g., "Young Inventor," student startup projects, etc.).

17	Participation in subject Olympiads	Competing in subject Olympiads organized among higher education institutions (e.g., pedagogy, etc.).
18	Delivering reports at scientific conferences	Presenting scientific research topics at institutional, national, and international scientific and technical conferences.
19	Publishing scientific theses and articles	Publishing theses in conference proceedings and articles in scientific journals related to research topics.
20	Participation in the preparation of educational materials	Contributing to the preparation of textbooks, study guides, methodological guides, instructional manuals, and other educational resources.

Independent Work of Students under the Guidance of a Teacher in Electronic Format
Table 2

№	Forms of Independent Work	Content of Independent Work
1	Virtual problem-solving	Solving tasks provided through electronic platforms or applications, and submitting written solutions online.
2	Digital essays	Preparing and submitting essays on assigned topics via online platforms, incorporating digital resources and references.
3	Online colloquium	Participating in virtual discussions or assessments organized to evaluate theoretical knowledge of an educational module.

4	E-portfolios	Developing an electronic portfolio of completed tasks, projects, and assignments using digital tools.
5	Multimedia presentations	Creating and presenting slides, videos, or other multimedia materials on given topics through virtual platforms.
6	Online case studies	Analyzing and solving case study tasks provided in digital format, often using collaborative online tools.
7	Virtual simulations	Engaging in professional activity simulations using software or web-based interactive modules.
8	Glossary building	Using online tools to create a glossary of terms related to the subject, including multimedia enhancements.
9	Collaborative e-projects	Conducting group projects using collaborative digital platforms, such as shared documents or virtual meeting tools.

Independent Work Conducted Directly by Students Using Mobile Devices
Table 3

№	Type of Independent Work	Content of Independent Work
1.	Preparation for lessons	Studying lecture texts, vodcasts, video materials, and descriptions of practical and laboratory work.
2.	Information search	Exploring internet resources through provided digests based on individual interests.

3.	FAQ (Frequently Asked Questions)	Searching for answers to personal inquiries using educational programs or applications.
4.	Forum participation	Exchanging opinions on subject topics via Telegram channels or distance learning platforms.
5.	Solving tests	Reinforcing subject module materials through exercises in educational test programs.
6.	Preparation for assessments	Preparing for upcoming midterm and final assessments in the subject.

In the credit-module system, the volume of independent work types for students increases to 50-60%, while in the current education system, this indicator constitutes approximately 40%. Therefore, without paying sufficient attention to independent learning and developing its methodological types, it is impossible to fully implement the credit-module system.

The time norms for students' participation in scientific circles, competitions, scientific conferences, presenting papers, publishing theses, and articles are not considered, and performing these tasks is accounted for in the educational, methodological, scientific-research, and "mentor-student" activities of university professors and teachers.

Independent work types that can be carried out by students in distance learning, such as Link, Chart, Q/A, Review, SWOT, Interview, Google Apps, Digest, and Report, can be performed with the guidance of instructors using the time allocated from contact hours (classroom sessions).

Organizing students' independent work in a distance format and achieving educational outcomes (based on Bloom's taxonomy) is considered the most optimal option for students motivated to learn. This method allows students to acquire 21st-century skills by offering various programs and applications, potentially surpassing even classroom lessons in effectiveness.

Currently, interactive teaching methods widely used in language learning and economics education are becoming popular. Many of these methods can also be effectively applied in teaching technical knowledge.

To organize independent work in a remote system, it is necessary to define learning outcomes through Bloom's taxonomy and select an appropriate educational application within the Android system using "Bloom's verbs" for forming knowledge and skills. For instance, activities such as marking a document, making copies, defining, identifying

relevance, approving, explaining, recording, recalling, recognizing, reporting, asking, re-asking, searching, identifying, naming, repeating, extracting, searching, marking, referencing, recalling, imagining, describing, locating, positioning, and other activities related to the *KNOWLEDGE* category can be organized through Android applications like Notepad+, Mental Note, Word, Google, Excel, PowerPoint, Polaris Office, ShowMe, Quick Sketch, Blogpress, SmartOffice2, Show of Hands, Zoho Docs, Prezi, and Flashcards+.

Activities like classifying, categorizing, presenting, searching for information, connecting, providing evidence, explaining, summarizing, discussing, identifying new aspects, interpreting, evaluating, extending, demonstrating, grouping, differentiating, collecting information, drawing conclusions, annotating, expressing differently, translating, comparing, defining features, predicting, generalizing, and confirming, which belong to the *COMPREHENSION* category, can be organized through Android applications like Twitter, Google Docs, PhatPad, Categorize App, Story Planner, Quickvoice, Photocard, Google Photos, Debate Champ, iTranslate, Errands To-do, YouTube Capture, and eBook Magic.

Activities such as performing, managing, presenting, applying, executing, mapping, assembling, calculating, selecting, modifying, summarizing, demonstrating, constructing, implementing, proving, forming, conducting surveys, discussing topics, conducting experiments, formalizing, influencing, inquiring, sending, downloading, sketching, exchanging ideas, drawing, activating, completing, and utilizing, which belong to the *APPLICATION* category, can be organized using Android applications like Interview Assistant, Ann's Flash Cards, ScrapPad, Keynote,

Picture Collage, Flashcard Machine, Things, Inspiration Maps, OneNote, Wolfram Alpha, WunderList, Presentation Timer, Revision Quiz Maker, Pages, iWish, FlipBoard, PaperHelper, Flashcards Deluxe, iDesign, and 2Screens.

Activities like identifying characteristics, linking via references, ranking, determining relevance, comparing, explaining, categorizing, determining levels, making conclusions, classifying, identifying reasons, establishing connections, providing ratios, showcasing examples, isolating, evaluating, distinguishing, organizing, investigating, critically annotating, breaking down, planning, highlighting, announcing, segmenting, creating questionnaires, defining boundaries, determining structure, emphasizing, and analyzing, which fall under the *ANALYSIS* category, can be organized through Android applications such as Simpleminds+, NotesPlus, Numbers, Use Your Writing, Dropbox, BigWorld, Dragon Dictation, Data Analysis, Easy Chart, Quick Graph, Simple Note, myHomework, Priority Matrix, Course Notes, Ideament, Educreations, and Assignments.

For activities such as creating video materials on a topic, managing ideas, performing, expressing ideas in new forms, collaborating, simulating, blending, developing, building, constructing, programming, creating, inventing, combining, generalizing, modifying, synthesizing, initiating, refining, writing theses and articles, adapting, resolving, solving, delivering lectures, directing, providing assistance, writing, accelerating, publishing, creating designs, negotiating, holding discussions, and planning, which belong to the *SYNTHESIS* category, Android applications like iMovie, Flipbook, Do Ink, Explain Everything, Drawing Pad, Creative Book, Padlet, Story

Creator, Audio Boom, Video Shop, Shadow Puppet, WebAlbums, EasyStudio, Book Creator, and iStop Motion can be used.

For activities like confirming, controlling, differentiating by levels, systematizing, re-expressing, reflecting, forecasting, convincing, measuring, justifying, predicting, supporting, criticizing, investigating and clarifying, defending, approving, debating, reviewing, concluding, correcting, managing, evaluating, recommending, testing in practice, and proving, which belong to the *EVALUATION* category, Android applications like WhatsApp, Facebook, iBrainstorm, Skype, YouTube, FB Messenger, Google+, Roambi Analytics, Strip Designer, Moodle Mobile, Clear Sea, Group Board, PressReader, Green Screen, Edublogs, Tools 4 Students, and Blogpad can be used.

When organizing students' independent work remotely, it is advisable to adapt to the student's device capabilities. Since many students currently have Android-based mobile devices, using compatible applications in the m-learning system is highly convenient for them.

It should be noted that the issue of students' independent learning is widely discussed among psychologists, educators, didactics specialists, and methodologists. Their research helps shape the general didactic goals of independent learning in the educational process.

When forming knowledge and skills, students independently plan and implement the tasks they need to perform, adhering to the principle: "I know why I need to learn what I am learning, and I know where and how to apply it." This indicates that independent learning is the foundation for developing intellectual independence skills in students.

The "Primary Education" and "Primary Education and Sports Educational Work" educational programs approved by Fergana State University on August 30, 2023, were analyzed. According to the analysis, the maximum workload for undergraduate programs in 4th-year courses is set at 54 hours per week, while for 1st, 2nd, and 3rd-year courses, it is 60 hours per week. Of this, 32 hours are allocated to classroom learning for 4th-year students and 26 hours for 1st, 2nd, and 3rd-year students. The remaining hours—22 hours for 4th-year students and 34 hours for 1st, 2nd, and 3rd-year students—are designated for independent learning outside the classroom, with 12–24 hours specifically for independent work. The total workload amounts to 6,588 hours for 4th-year students, with 3,348 hours allocated to independent learning, constituting 50.8% of the total workload. For 1st, 2nd, and 3rd-year students, the total workload is 6,120 hours, with 3,240 hours allocated to independent learning, accounting for 52.9% of the total workload.

For instance, the "Pedagogical Skills" course for 4th-year students has a total workload of 120 hours, with 60 hours (50%) allocated for independent learning. The "Primary Education Pedagogy" course for 2nd and 3rd-year students has a total workload of 360 hours, with 194 hours (53.8%) allocated for independent learning. The "Innovation and Integration in Primary Education" course for 3rd and 4th-year students has a total workload of 300 hours, with 180 hours (60%) allocated for independent learning.

This demonstrates that across all undergraduate programs, the hours allocated for independent learning constitute an average of 50–55% of the total

academic workload, providing significant opportunities for students to independently master their knowledge.

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