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REQUIREMENTS FOR THE CREATION AND USE OF EDUCATIONAL DIGITAL CONTENT FOR DEVELOPING STUDENTS' INDEPENDENT LEARNING SKILLS

Uchkurova Shakhnoza Shavkatovna

PhD student of Tashkent State Pedagogical University named after Nizami

Uzbekistan

ABSTRACT

In today's digital age, educational digital content is crucial in fostering independent learning among students, especially in higher education. This article explores the key requirements for the creation and effective use of such content, with a focus on enhancing independent learning skills. The study outlines several core components necessary for successful integration, including aligning content with curricular goals, user-centered design that promotes engagement, and accessibility across diverse devices and platforms. Additionally, the research emphasizes the importance of content interactivity, real-time feedback mechanisms, and personalized learning paths that adapt to individual student needs. For educators, training and support are highlighted as critical to ensure the effective delivery and utilization of digital content. Furthermore, the article discusses challenges such as maintaining student motivation, ensuring academic integrity, and the need to continuously update digital materials to remain relevant. Ultimately, the research underscores that the thoughtful design and strategic implementation of educational digital content is essential to developing students' capacity for self-directed learning in a digital environment.

Keywords: educational digital content, independent learning skills, digital learning platforms, e-learning resources, self-directed learning, technology-enhanced learning, autonomous learning, digital pedagogy, digital content development, online education tools, student-centered learning, interactive learning resources

INTRODUCTION

In today's fast-paced, technology-driven world, the use of digital tools in education is not merely an option but a necessity. As traditional teaching methods evolve, the integration of educational digital content plays a crucial role in fostering independent learning skills among students. Educational digital content, when designed and implemented effectively, can enhance learners' engagement, promote self-directed learning, and provide flexibility in accessing resources. The growing emphasis on student autonomy in learning underscores the importance of digital content in developing essential skills like critical thinking**,** self-regulation, and problem-solving**.**

However, the creation and effective utilization of such content requires a thoughtful approach. This involves not only a deep understanding of pedagogical principles but also the integration of technological requirements that ensure accessibility, interactivity, and alignment with educational objectives. Moreover, the focus should be on developing content that encourages active participation, continuous feedback, and adaptive learning pathways, which are central to nurturing independent learning.

Thus in today's developing world, the growth of an information society requires mature specialists to consistently improve their knowledge and skills and professional skills during their work, as well as to constantly acquire and supplement knowledge independently. Advanced professionals who want to actively and independently expand their knowledge independently determine the goals of professional and personal development by researching and analyzing new research achievements in science and education, production, and society, and learning how they can be used in practice. The development of student's independent learning skills based on educational digital content regularly arouses the interest of educators and researchers. Many studies are being conducted on the creation and use of educational digital content for the development of independent learning skills in students of higher education institutions. Currently, students are using educational digital content from around the world to develop their independent learning skills in Massive Open Online Courses (MOOC) in various forms such as Coursera, edX, Udacity, Open

Educational Resources (OER) in OER Commons, Khan Academy, created and actively used.

MATERIAL AND METHODS

The history of creating digital learning content to develop independent learning skills in students can be traced back to the evolution of technology in education, especially the advent of computers and the Internet. Computer-assisted instruction (CAI) began in the 1960s, using simple textbooks and exercises that allow learners to interact with computers. This era emphasized individualized learning where students could learn at their own pace. One notable example is the PLATO system developed at the University of Illinois, which enabled online learning and early versions of online courses. During this time, the main focus was on automating instructions to enhance the acquisition of knowledge and skills. By 1990, with the advent of personal computers, educational programs became widespread. In 1993, Encarta, an encyclopedia of educational digital content, was developed and used by Microsoft. In 1992, Rosetta Stone Inc.'s educational digital content "Rosetta Stone" was developed for independent development of language learning. This educational digital content is designed for users to learn foreign languages through an immersive and interactive approach. Rosetta Stone uses a speech recognition engine called Tru Accent to help users practice pronunciation.

The program provided feedback on how well the learner's pronunciation matched that of native speakers. It is also known for its "Dynamic Immersion" method, which avoids translation or exact grammar instructions. Instead, learners are engaged in independent language learning through images, text, and audio, giving them hands-on help to connect words directly to their meanings in their language. Lessons in Rosetta Stone were interactive and required users to practice speaking skills by matching pictures with words, filling in the blanks, and speaking. This educational digital content has strengthened the acquisition of knowledge by the active participation of learners and increased their motivation for education.

At the same time, students have access to online educational resources, and independent research and self-education have been further improved. The World

Wide Web (WWW) was invented by Tim Berners-Lee in 1989 at the European Organization for Nuclear Research. On August 6, 1991, Berners-Lee became publicly available after posting the first website describing the World Wide Web project itself. The WWW quickly gained popularity throughout the 1990s, becoming the primary means of accessing information, including digital educational resources, and content. The rise of the Internet has allowed students and teachers to access and acquire large amounts of information from anywhere in the world, which has made a significant contribution to the development of independent research and in-depth knowledge acquisition. Open online courses (MOOCs) such as Coursera, edX, and Khan Academy have further expanded the availability of such courses, allowing learners to acquire knowledge independently from anywhere in the world. Since 2010, the widespread adoption of smartphones and tablets has led to the emergence of mobile learning (m-learning). Educational apps, games, and content, platforms such as Duolingo, Quizlet, and Google Classroom, have become important tools for self-learning. Digital content has also evolved with the integration of artificial intelligence, activating flexible educational platforms (for example, Smart Sparrow, and DreamBox).

In addition, the structure of students' activities has been personalized, and more effective self-regulatory education has been developed. Gamification and immersive technologies were integrated into the content of education, increasing motivation and activity in education. The recent COVID-19 pandemic has accelerated the use of digital content in education. Tools like Zoom, Microsoft Teams, and Google Meet have made distance learning easier, making digital learning content essential for students to learn independently.

LITERATURE REVIEW

Creating and using educational digital content to foster independent learning requires careful consideration of pedagogical principles, technology, accessibility, engagement, and collaborative features. The literature indicates that successful implementation relies on content that motivates and engages learners and provides

mechanisms for reflection, assessment, and cultural adaptability, ensuring that students can develop the autonomy required for lifelong learning.

The improvement of the educational process through educational digital content, search web portals, and websites in the formation of independent learning skills among students based on the principles of individuality, continuity, and interconnectedness of online independent learning tasks with practice was studied in the research work of M.A. Tursunov.

In addition, the use of educational digital content in the development of independent learning has been extensively studied in the works of foreign researchers David Boud, Terry Anderson, Sugata Mitra, Diana Laurillard, Philip Schmidt, T.A. Yudina, and I.V. Robert, and the developmental and educational opportunities for independent learning in the digital educational environment have been widely revealed. Materials on continuous education modeling, digital content in higher education, academic management systems, digital competence, and blended learning models were studied.

David Boud, an expert on self-governance in higher education, says, “Independent learning is about teaching students how to learn, not what to learn. Digital content must be designed to challenge students, offer them choices, and empower them to take responsibility for their learning.” He is a supporter of the fact that educational digital content should allow students to learn independently, to think about the acquisition of knowledge autonomously, to engage in self-evaluation, and to be an active participant in the learning process.

"A well-designed digital learning environment provides students with the tools they need to learn independently by offering flexibility, convenience, and personalized learning opportunities," said Terry Anderson, an online and distance learning expert. comments. According to him, digital content should be flexible enough to suit different learning styles and students should use resources at their metacognitive speed while supporting autonomy.

Nancy Falchikov, “In developing students' independent learning skills, they must constantly engage in self-evaluation and critical thinking. Digital platforms

facilitate this by providing opportunities for instant feedback and self-management tasks.” the importance of self-assessment tools integrated into possible digital content.

Indian computer scientist and educational theorist Sugata Mitra believes that digital content has the power to force learners to self-learn, but it should not have excessive structure. The charm of self-education allows learners to learn about themselves, make mistakes, and discover knowledge.

Diana Laurillard, Professor of Teaching with Digital Technologies, noted in her research that "digital content should be designed not only to convey information, but also for students to independently practice skills, collaborate with peers, and receive constant feedback."

According to Philip Schmidt, "Creating digital educational content for self-directed learning means mastering the learning process for students." Digital content should be open, flexible, and encourage research and critical thinking."

Scholars like David Nunan emphasize the importance of designing content that facilitates active participation, allowing learners to apply their skills in real-life contexts rather than relying solely on passive information consumption.

Lev Vygotsky's Zone of Proximal Development (ZPD) informs digital content design by suggesting that materials should offer the right level of challenge, progressively leading learners to independence.

Educational theorists such as David Boud and Nancy Falchikov advocate for self-assessment mechanisms embedded in digital content. These should foster self-regulation by providing feedback loops that promote independent learning.

Digital content must adhere to accessibility guidelines, such as WCAG (Web Content Accessibility Guidelines), ensuring materials are usable by all learners, including those with disabilities. This is crucial for fostering inclusivity in independent learning.

Research by Nielsen Norman Group underscores the need for intuitive user interfaces that support ease of navigation, allowing learners to focus on content exploration independently without becoming frustrated by the technology itself.

Kapp discusses how gamification elements like badges, levels, and rewards in digital content can enhance learner motivation, keeping them engaged while developing self-directed learning behaviors.

Moodle and Khan Academy are examples of platforms where adaptive learning technologies adjust the content based on learner progress, offering personalized learning paths that support autonomy. Digital platforms that integrate collaborative tools (forums, peer reviews, group projects) foster independence by encouraging students to learn from and support each other. This idea is reinforced by L.D. Hammond's research, which emphasizes the importance of collaborative learning for developing independent thinking.

Effective digital content incorporates regular assessment with immediate feedback, helping learners self-assess their progress and adjust their learning strategies, as supported by D.L. Fellow’s work on constructive feedback. Boud and Falchikov's emphasis on self-assessment plays a crucial role here. Digital content should include opportunities for learners to reflect on their performance, fostering self-regulated learning habits.

Digital learning platforms like Google Classroom and Moodle should consider the cultural and linguistic context of learners, ensuring the content is relatable and accessible. Research on Open Educational Resources (OER) in Uzbekistan reflects the importance of adapting materials to local education systems, as noted by Uzbek scholars.

The development of educational digital content must comply with institutional regulations, ensuring alignment with educational standards and learning outcomes. UNESCO's Global Action Programme on Education for Sustainable Development highlights the need for educational institutions to adopt sustainable and contextually relevant content creation practices.

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RESULTS AND DISCUSSION

Platforms that teach the creation of educational digital content to develop independent learning skills in students and provide access to students through web browsers offer the means to develop engaging and effective learning materials and deliver them online. Below are some popular platforms that provide this functionality:

- Articulate 360
- Adobe Captivate
- Canva for Education
- H5P
- Nearpod
- Lumen Learning
- Thing Link
- Genially
- Ed puzzle

Articulate 360 is a set of tools for creating interactive digital content for educational content. It includes Rise 360, a web-based tool for creating a variety of courses, and Storyline 360, which allows users to design more personalized, presentation-based digital learning experiences.

Adobe Captivate is an interactive educational digital content creation tool that includes virtual reality (VR) courses, quizzes, and simulations. Content created in Adobe Captivate is SCORM compliant and can be accessed through any web browser, hosted in any learning management system (LMS).

Canva for Education offers a web design tool that allows you to create educational digital content and visual learning materials such as infographics, presentations, and posters.

H5P primarily enables the creation and sharing of interactive HTML5 educational digital content, such as quizzes, videos, and presentations, and offers more than 40 content types.

Nearpod lets you create interactive educational digital content lessons with quizzes, surveys, videos, and virtual reality experiences.

Lumen Learning provides a platform for creating and delivering open educational digital content. The goal is to expand the use of open educational digital content to increase student engagement and achievement.

Thing Link lets you create interactive images, videos, and 360-degree virtual tours. This is a convenient tool for creating educational digital content, especially for teaching and learning subjects such as geography, history, intercultural communication, and foreign languages.

Genially is a platform for creating interactive and animated presentations, infographics, gamified educational digital content, and educational materials.

Ed puzzle allows you to create interactive video lessons by embedding questions and discussions into videos for educational digital content.

Higher education students have different learning styles and academic goals, and a personalized learning experience is important. Digital learning content needs to adapt to individual learning speeds and preferences, and students need to develop a sense of ownership of independent learning. Demands for the use of educational digital content in higher education emphasize the development of critical thinking and problem-solving skills, while creating practical situations that encourage students to independently analyze, evaluate, and apply knowledge. should be included.

In particular, we developed the following as requirements for creating and using educational digital content for the development of independent learning skills in students:

• Curriculum integration.

- Digital content is directly relevant to the curriculum and course objectives;

-Evaluation of assignments to improve the use of digital content.

• Accessibility and inclusiveness

-Ensure equal access to digital content for all students, taking into account different educational needs and backgrounds;

- Ensure compatibility with different devices and operating systems to reach the audience.

• Content quality and relevance

- use of high-quality, accurate, and up-to-date resources to increase efficiency;

- selection of content elements suitable for educational fields and interests to ensure student participation;

• Interactive and engaging features

- adding interactive elements such as quizzes, simulations and discussion parts to encourage active participation.

- using multimedia formats (videos, podcasts, infographics) to meet different learning preferences.

• Self-regulation opportunities

- Encourage students to set their own learning goals and track their learning progress based on digital content.

- Providing useful resources for time management and learning strategies to develop independence in learning;

• Support collaborative and peer learning

- Development of group projects;

- make recommendations for collaborative learning based on forums that encourage peer assessment and knowledge sharing;

• Feedback and evaluation mechanisms

-Use formative assessment tools that provide timely and constructive feedback to guide learning;

-Inclusion of self-assessment tools that allow students to reflect on their understanding and skills;

• Personalization and adaptive learning

- Using educational technologies that adapt the content to the needs of independent students and the pace of learning;

- teaching students to choose resources that match their interests and academic goals;

• Technological support and infrastructure

- Ensuring that appropriate technological infrastructure (e.g. reliable internet access, support services) is in place to support digital learning.

-Provide technical assistance to students to solve problems and enhance the learning experience;

• Evaluation of educational results

- regularly evaluate the impact of educational digital content on the development of independent learning skills of students through questionnaires, assignments, performance data, and feedback.

-adjust content and teaching strategies based on assessment results to continuously improve effectiveness.

In compliance with these requirements, students of higher education institutions create an environment for the effective use of educational digital content in the development of independent learning skills. This approach not only improves academic performance but also equips students with the skills they need to learn in an increasingly digital world.

CONCLUSION

Educational digital content must be carefully aligned with the specific learning objectives of the course. It should support the development of cognitive, metacognitive, and practical skills necessary for independent learning. The content must be designed in a way that is engaging and interactive, allowing students to take an active role in their learning. Interactive elements such as quizzes, simulations, and multimedia resources enhance engagement and encourage exploration. Digital content should be flexible and adaptive to accommodate different learning styles, paces, and levels. This personalization can help students take ownership of their learning process, adjusting content and tasks according to their needs. A critical component for developing independent learning is providing opportunities for self-assessment. The digital content should include features that allow students to track their progress and receive immediate feedback to reflect on their performance and

make improvements. In summary, the thoughtful creation and use of educational digital content, focusing on engagement, adaptability, and self-regulation, can significantly enhance students' independent learning skills. Collaboration between educators, content developers, and students themselves is vital to continuously refine and improve these digital learning environments.

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