

PEDAGOGICAL AND PSYCHOLOGICAL FOUNDATIONS OF DEVELOPING DIGITAL COMPETENCE

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Abstract. This article examines the pedagogical and psychological foundations of developing digital competence in modern education. The rapid development of digital technologies has transformed the educational process and increased the need for students and teachers to acquire digital skills. The article discusses the structure of digital competence, effective teaching methods, interactive technologies, and the role of motivation and cognitive development in digital learning. The study also highlights the importance of information literacy, media literacy, cybersecurity, and digital communication in preparing students for the requirements of the twenty-first century.

Keywords: digital competence, pedagogy, psychology, digital education, media literacy, information literacy, cybersecurity, ICT, blended learning

Аннотация. В данной статье рассматриваются педагогические и психологические основы формирования цифровой компетентности в современном образовании. Быстрое развитие цифровых технологий изменило образовательный процесс и повысило необходимость овладения цифровыми навыками студентами и преподавателями. В статье анализируются структура цифровой компетентности, эффективные методы обучения, интерактивные технологии, а также роль мотивации и когнитивного развития в цифровом обучении. Особое внимание уделяется информационной грамотности, медиаграмотности, кибербезопасности и цифровой коммуникации.

Ключевые слова: цифровая компетентность, педагогика, психология, цифровое образование, медиаграмотность, информационная грамотность, кибербезопасность, ИКТ

Annotatsiya. Ushbu maqolada zamonaviy ta'lim tizimida raqamli kompetensiyalarni shakllantirishning pedagogik va psixologik asoslari tahlil qilinadi. Raqamli texnologiyalarning jadal rivojlanishi ta'lim jarayonini tubdan o'zgartirib, talaba va o'qituvchilarning raqamli ko'nikmalarni egallash zaruratini oshirdi. Maqolada raqamli kompetensiyaning tarkibi, samarali o'qitish metodlari, interaktiv texnologiyalar hamda motivatsiya va kognitiv rivojlanishning o'rni yoritilgan.

Kalit so'zlar: raqamli kompetensiya, pedagogika, psixologiya, raqamli ta'lim, media savodxonlik, axborot savodxonligi, kiberxavfsizlik, AKT

Introduction

With many educators today, technology is an integral part of their daily life is a necessity that can no longer be differentiated from society's most basic needs. Various educational institutions at varying points in the world begin to incorporate digital tools into their classrooms from an effort to improve the process of education and better mold their students into a workforce. Technical competence in a global landscape has become a critical aspect of

success in the age of globalization. Such people should be adept in the technology of the society and get ahead and function in one or both. Education institutions ought to concentrate not simply on the provision of theoretical knowledge to students, but also the development of practical skills in detecting, analyzing, processing, and sharing information.

Digital competence development is inseparable from pedagogical and psychological problems. First of all, and from the pedagogical point of view teachers need to establish an active teaching and learning process, one built on interactions and cooperation among the participants of the educational process. Also, the impact of psychological factors, including motivation, attention, memory and cognition of learners cannot be neglected. And this is also why it becomes important to analyze these issues.

The Concept of Digital Competence

The concept of digital literacy refers to a set of dispositions, behaviours, and skills related to the use and safety of technology. Some of them are information literacy, digital communication, production of digital content, cybersecurity, and problem solving. Digital literacy is one of the competences required for lifelong learning as indicated in global education criteria (e.g., UNESCO, European Digital Competence Framework [DigComp]). Searching and judging digital content sources for digital resources and their quality levels is called information literacy. Having knowledge of the content and rules governing media and avoiding fake news is referred to as media literacy. Cybersecurity skills can aid in security issues. In addition, cyber skills like digital communication are critical when working in a virtual environment.

Pedagogical Roots of Developing Digital Competence

The current pedagogy focuses on learner-centered instruction in which learners are active participants in the learning process. Digital technologies can support individualized learning as well as differentiated instruction and interactive learning. Today's teachers have adapted learning to various digital solutions, including multimedia programs and virtual-led learning environments. So, for the development of digital literacy, we have to combine online learning with classical education in teaching courses.

Blended teaching is considered one of our best methods of achieving this. Students go it alone and have teachers assist them. Gamification of the learning processes (quizzes, rewards, gaming as educational process), serves to encourage students more than to teach them.

Project-based learning is a very helpful pedagogical approach. Through different projects and cooperation between the students, this process teaches skills of critical thinking, creativity, communication, and teamwork to students. The challenges of solving various problems with theory can be discovered in digital research and web quests.

Psychological basis of digital learning

Psychological Factors influence student digital competence, and the ability to learn and to produce digital skills. Factors like the attention span, memory, cognitive development and motivation of the learners have a significant impact on the ability of students able to absorb fresh information in the digital age. Different interactive technologies and media work well to focus the attention of the students and to entice them to explore the material. Motivational aspect is one of the main psychological forces in any learning process. If educational materials that are relevant to the reality are interactive, then students are also likely to use digital tools to learn more. In addition, students' age characteristics and preference need to be taken into consideration.

ICT tools and digital learning projects encourage and promote creative thinking and solving problems. Multiple simulations, instructional video games, and programming exercises can assist students in honing their skills in this area. In this way, interactive technologies and ICT tools can effectively promote educational processes within an institution. Multimedia presentations, animations, educational videos, and simulations, etc., have improved the interactivity and understanding of the knowledge, making the process of learning more interesting and easy to understand.

Electronic classrooms of Moodle and Google Classroom allow opportunities for learner-teacher communication. Interactive assessment, such as Kahoot and Quizizz, enables instructional designers to measure students' knowledge with high levels of motivation. Programming platforms like Scratch and Code.org help with basic programming and logical thinking. These advantages aside, challenges remain to develop digital abilities.

Digital learning can also take a hit due to limited access to technological resources, inadequate internet connectivity and digital literacy of teachers. In a few educational facilities, obsolete equipment remains a big problem as have ineffectual training programs. Cybersecurity and technology security, are also major issues. Some risks include dangers related to cyberbullying, fraud, and misinformation for students. So, educational institutions should give special emphasis to digital ethics, information security, and responsible online behavior.

Role of Teachers in the Development of Digital Competence

The role of teachers has become increasingly important and critical in modern education as it aids in the development of digital competence. Teachers are both knowledgeable holders and organizers, facilitators and guides who can be found in a digital context of learning. It is expected that educators possess technical knowledge and should integrate innovative teaching methods into school curricula. A teacher with good digital literacy can design digital lessons, manage web-based learning environments, and push the student into actively participating in educational activities. It is one of the main roles of teachers to help students think critically when teaching with digital materials.

Today, students are exposed to a huge amount of information on the internet; yet not all of it is reliable or scientifically accurate. Therefore, teachers must teach young people how to critically judge online material, as well as identify credible sources and avoid disinformation. Not only this but it helps students develop media literacy and an information culture. Teachers can also stimulate collaborative learning through digital technologies. Students use online discussions, virtual group projects, and interactive assignments to help hone their communication skills and teamwork. And these types of activities engage learners and build chances for independent and creative thought.

In addition, teachers need to constantly give feedback via digital assessment systems as well as online communication tools. Teachers' digital competence includes a professional development piece, too. Technological skills are evolving, and given this, teachers should consistently update their knowledge of digital skills through training sessions, workshops, and online classes which can help raise the level of their skills. Professional development programs provide teachers with the skills needed to stay competitive and adapt to what the modern education system needs.

Why is media literacy important in digital education? So media literacy has emerged as one of the major elements of digital competence in the information society of today. Social media, online news sites, and different electronic communication tools are also expanding exponentially at an extremely rapid pace, bringing a greater wealth of information to people.

Therefore, students need to be taught that media is not a neutral mass medium and should be analyzed, explained, assessed in an analytical sense, and interpreted and understood by them critically.

Media literacy helps students to make critical thinking processes and to separate reliable information sources from unreliable or misleading ones. In the online world, lies, manipulation, and misinformation are known negative motivators for opinion and people's actions. Hence, educational institutions must train students to identify biased or misleading content. This is most essential for the young for whom using social networks and digital media in their day-in and day-out is an everyday routine. An aspect of media literacy, ethical communication online, is also critical.

Students should know how to interact respectfully in online settings, what constitutes digital behavior, and the responsibility of sharing their creations. It's on schools to nurture digital citizenship and to teach the best ethical and safe use of digital technologies. Media appreciation also encourages creative self-expression. New digital instruments have empowered students to create films, presentations, blogs, podcasts, and more. By doing so, learners advance their technical skills as well as communication, creativity, and problem-solving skills. Thus, media literacy helps students be better in personal, academic, and professional terms.

Digital Education's Future

The future of education highly concerns the advancement of digital technologies and artificial intelligence. This technology is enabling modern educational systems to use online platforms, virtual classrooms, intelligent learning systems among others to improve quality of teaching and improve accessibility. Digital transformation opens up new pathways for students to study anytime and anywhere. Digital education increasingly relies on artificial intelligence technologies. AI-powered systems can monitor students' academic growth, recognize their strengths and areas of improvement, and make individualized learning recommendations. Such an approach improves educational efficiency and helps the student in attaining better academic results. As we move forward, the future holds out hope of bringing in more virtual assistants, automated assessment systems, intelligent learning platforms, and adaptive learning platforms in future time. The flexibility and universality of distance and blended learning models will remain flexible and available models of learning. These methods enable students to integrate classroom practice with remote, online learning, and independent virtual education. That kind of flexibility can be particularly useful for students in remote places or students who combine studying with the workforce. But digital education also needs to be challenged in the future. Schools should afford equal access to digital technology, enhance their internet infrastructure, and shield students from cybersecurity threats.

Conclusions

The formation of digital literacy is one of the most important concerns of contemporary education. Pedagogical and psychological measures have a key role toward enhancing students' digital literacy, critical thinking, creativity, and technological competence. It cannot be emphasized enough that teachers of course need to know how to use technology effectively for their students. A focus on pedagogical models of support for teaching (for students) and tools and equipment to get it right is crucial to support digital competence. Effective formation of digital competence is achieved through interactive teaching methods, multimedia resources, blended learning, and project-based education. Educational institutions must keep upgrading educational environments (learning management, teacher digital literacy, and

implementing new technologies in the educational process). The development of digital competence not only improves educational quality but also prepares students for successful participation in the global digital society.

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