

INFLUENCE OF ONLINE QUEST TECHNOLOGY ON THE QUALITY OF STUDENTS' TRAINING

INFLUÊNCIA DA TECNOLOGIA WEBQUEST NA QUALIDADE DA FORMAÇÃO DOS ESTUDANTES

INFLUENCIA DE LA TECNOLOGÍA WEBQUEST EN LA CALIDAD DE LA FORMACIÓN DE LOS ESTUDIANTES



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ABSTRACT: This article examines how online quest technology influences the quality of students' professional training in higher education. The study combines a literature review with an empirical comparison of two groups of second-year students majoring in economics and pedagogy. The research question is how online quests affect students' ability to search for information, work in teams, solve professional problems, and present results. The findings show that both groups completed the tasks at a sufficient level and that the technology supported motivation, independent work, digital information processing, and professional competence development. The discussion also identifies implementation limits, including access to devices, Internet connectivity, and participants' digital literacy. The article concludes that online quests can improve learning quality when they are clearly structured, aligned with disciplinary objectives, and accompanied by teacher guidance and transparent assessment criteria.

KEYWORDS: Online quest. Professional training. Digital pedagogy. Higher education. Student competence.

RESUMO: Este artigo examina como a tecnologia de WebQuest influencia a qualidade da formação profissional de estudantes no ensino superior. O estudo combina revisão de literatura com comparação empírica de dois grupos de estudantes do segundo ano, dos cursos de Economia e Pedagogia. A questão de pesquisa é como as WebQuests afetam a busca de informações, o trabalho em equipe, a resolução de problemas profissionais e a apresentação de resultados. Os achados mostram que ambos os grupos realizaram as tarefas em nível suficiente e que a tecnologia favoreceu a motivação, o trabalho independente, o processamento de informações digitais e o desenvolvimento de competências profissionais. A discussão também identifica limites de implementação, como acesso a equipamentos, conectividade e letramento digital. Conclui-se que as WebQuests melhoram a qualidade da aprendizagem quando são estruturadas, alinhadas aos objetivos disciplinares e acompanhadas por orientação docente e critérios transparentes de avaliação.

PALAVRAS-CHAVE: WebQuest. Formação profissional. Pedagogia digital. Ensino superior. Competência estudantil.

RESUMEN: Este artículo examina cómo la tecnología de WebQuest influye en la calidad de la formación profesional de estudiantes de educación superior. El estudio combina una revisión de literatura con una comparación empírica de dos grupos de estudiantes de segundo año de economía y pedagogía. La pregunta de investigación es cómo las WebQuests afectan la búsqueda de información, el trabajo en equipo, la resolución de problemas profesionales y la presentación de resultados. Los hallazgos muestran que ambos grupos completaron las tareas en un nivel suficiente y que la tecnología favoreció la motivación, el trabajo independiente, el procesamiento de información digital y el desarrollo de competencias profesionales. La discusión también identifica límites de implementación, como acceso a equipos, conectividad y alfabetización digital. Se concluye que las WebQuests mejoran la calidad del aprendizaje cuando están estructuradas, alineadas con objetivos disciplinares y acompañadas por orientación docente y criterios de evaluación transparentes.

PALABRAS CLAVE: WebQuest. Formación profesional. Pedagogía digital. Educación superior. Competencia estudiantil.

INTRODUCTION

Modern higher education requires pedagogical technologies that make learning more active, professionally oriented, and analytically demanding. The transition from memorization-centered teaching to problem-search and project-based learning has increased interest in technologies that combine subject knowledge, Information and Communication Technology (ICT), teamwork, and practical problem solving (Gasnov, 2024; Gorbunova & Yakimchuk, 2024; Shabalina et al., 2024).

Online quests are relevant in this context because they organize students' work with digital resources around a concrete disciplinary problem. Unlike an unstructured Internet search, an online quest gives students a route, roles, sources, assessment criteria, and a final product. This makes it possible to connect digital activity with professional competencies and learning outcomes (Khammatova et al., 2021; Stefos, 2024; Ukolova & Afanasyev, 2023; Zhang & Wu, 2025).

LITERATURE REVIEW

According to our analysis of scientific literature, the concept of online (web) quest has no unified theoretical approach. For example, researchers define an online quest as: a problem task with elements of role-playing game (Conceição et al., 2019) that makes use of online information resources (Stetter & Hughes, 2017); a project with the use of Internet resources (Kicherova & Efimova, 2016); a specially organized research activity, for which students carry out a purposeful information search online at the given links (Larionova, 2020; Rybakova et al., 2024); an educational website designed to organize students' research on a topic via hyperlinks to different pages (Maddux & Cummings, 2007); an information and learning technology, the main purpose of which is students' independent search for information necessary to perform the task at hand (Abdullayev et al., 2024; Akhmetshin et al., 2025; Khlupina, 2016).

A. B. Klimova (2016) suggests that an online quest is a didactic structure, within which the teacher organizes students' search activity, sets the parameters of this activity, and determines its time frame. Thus, it ceases to be a source of knowledge but creates the necessary conditions to search for it (Klimova, 2016). V. V. Miller (2015) believes that online quests turn students from passive objects of learning into active subjects, increasing not only motivation for the process of "mining" knowledge but also responsibility for the results of this activity and their presentation. Describing online quests, N.V. Matveeva (2014) notes that they must be

interesting, which means being based on real-life situations and combining different cognitive skills and the opportunity to use them in other areas (Goloshumova et al., 2019; Matveeva, 2014).

In our view, an online quest should be interpreted as an independent Internet search along one or several branches of a pre-established route to a goal defined at the beginning of the journey, during which the student must obtain and analyze information to determine the next step on the way to achieving this goal. Therefore, the main feature of the online quest is that instead of forcing students to endlessly wander the Internet in search of necessary information, the teacher provides them with a list of websites relevant to the project topic (Maevskaya et al., 2024; Priadilnikova, 2015).

As a result, when organizing an online quest using Internet resources and integrating them into the learning process, the teacher actively solves several practical tasks: teaching quest participants to go beyond the content and forms in which the teacher presents educational material (Kaivola et al., 2012); creating opportunities for participants to develop online communication skills, thereby realizing the communicative function (Bezrodnykh, 2016); supporting learning at the level of thinking, analysis, synthesis, and evaluation (Çığrık & Ergül, 2010); providing quest participants with an additional opportunity for a professional expertise of their abilities and skills (Goltsova & Protsenko, 2020; Záhorec & Kuruc, 2023); teaching students to use the informational space of the Internet to broaden the sphere of their creative work (Subramaniam, 2012); significantly increasing students' motivation to achieve better learning outcomes by posting the quests online (Petrova, 2014).

Overall, work with online quests is aimed at developing analytical and creative thinking skills, for which it provides: the required wide information field for activity; different sources of information, views, and points of view on one specific problem, encouraging students to think independently (Afanasyev & Karpova, 2024) and find their own reasoned position (Efanova & Lavrishchev, 2022).

S.A. Osiak *et al.* (2015) argue that the online quest technology allows one to fully realize the demonstrativeness (various types of demonstration, presentations, videos, graphic materials in any quantity), multimediality (the use of audio, video, and animation effects), and interactivity of learning. Online quests allow, first, to use class time productively, second, to use the obtained information for practical purposes, and, third, to build the information competence of future specialists (Vavulina & Nikolaenko, 2017).

The characteristic features of the online quest technology are the modality, descriptiveness, and structuredness of educational material. Modality provides the use of as many sensory channels of information perception as possible, supporting the visualization of the material, which, according to Goltsova and Protsenko (2020), improves the accessibility and understanding of learning material and the informal assimilation of educational content by students (Goltsova & Protsenko, 2021). Descriptiveness allows to demonstrate dynamic processes and static images in the shortest possible time using an online quest, which gains particular importance when developing the ability to compare and contrast objects and phenomena, generalize facts, highlight the key points, and uncover associative links (Skylar et al., 2007). Structuredness is ensured by the fact that the information provided in an online quest has a branched structure, realized with the help of hyperlinks, which contributes to: the organization of clear logical connections; a cohesive understanding of the educational material; prompt regulation of the scope of the content on the studied topic; the independent construction of individual learning trajectories by students themselves (Ostapovich & Miller, 2016).

As suggested by Petukhova (2011), classes with the online quest method have several effects, such as breaking stereotypes about the organization of classes, allowing students to use the acquired knowledge to solve the task at hand and learn different ways of solving the problem, as well as increasing motivation to work independently.

Drawing from the experience of applying online quests in university teaching, Bezuglova et al. (2021) note that their effectiveness is largely driven by a theoretically grounded and practically tested methodology that addresses many parameters of the learning process, such as: the expediency and purpose of the online quest in the study of a particular discipline, informational and methodological resources for the online quest, the age characteristics of students, etc.

The research question guiding the study is: how does the use of online quest technology influence the quality of students' professional training in higher education? Accordingly, the objective is to theoretically and empirically substantiate the pedagogical value of online quests by examining their structure, implementation stages, assessment criteria, and effects on students' performance.

METHODS

The study employs a combined methodological design. First, a literature review was conducted to clarify the concept, structure, and pedagogical functions of online quests. Second, an empirical study was organized to determine how students perform when this technology is used to solve professionally oriented tasks.

For the empirical study, we recruited two groups of students. The first group consisted of Economics students, and the second included Pedagogy majors.

Thus, the practical success of students in the use of the studied pedagogical technology was assessed on a sample of 50 second-year students majoring in Economics (25 people) and Pedagogy (25 people).

At the first stage of the empirical study, assessment criteria were developed to evaluate online quest completion. The criteria measured understanding of the task, reliability and relevance of information, logical structure, clarity of presentation, teamwork, and professional justification of the final product. Three performance levels were used: satisfactory, sufficient, and high.

The second stage involved training two groups of students with the help of online quests. The online quests were created using the Google Blogger app.

Economics students were offered an online quest for the discipline “Economic analysis” on the topic “Financial analysis and assessing the probability of bankruptcy”. This analytical online quest explored the interrelationship of enterprise business processes within the given topic. The central task of the online quest was formulated as a communicative task with a role-playing component (Smolyaninova & Ivanova, 2024), namely, to diagnose the probability of bankruptcy of the enterprise by analyzing its financial situation. In this task, the participants had to show their ability to determine financial ratios using the developed computer program and information gathered on the Internet. This task simulates: 1) the real-life situation of conducting financial and economic analysis at an enterprise; 2) working in a team of five participants; 3) the interdisciplinary nature of the task. Thus, Economics students had to study the methods of financial analysis and bankruptcy diagnostics, identify their features, understand cause-and-effect relationships, and discuss their role.

Pedagogy students were invited to participate in the online quest “Innovative pedagogical technologies in school teaching”. The purpose of this quest was to analyze, define the essence, and model innovative pedagogical technologies in action in the educational process of a secondary school. The technologies identified by the participants included: project-based

learning, case study, simulation, game-based learning, master classes, and critical thinking. The participants were then tasked with creating PowerPoint presentations (3–4 slides) with information regarding a particular innovative pedagogical technology. In these presentations, they were asked to: briefly describe the essence of the technology studied by the sub-group, identify possible threats and problems arising from its use in schools, and explain under what pedagogical circumstances this technology should be used in the educational process in a general education institution.

When preparing the online quests, the teacher determined the area of information search in advance and offered students a specific list of websites (articles, information) to summarize the information, process it, and develop solutions based on the recommended sources.

The work in both groups was team-based. Team members were offered the following roles: researcher, editor, graphic designer, methodologist (for teachers)/analyst (for economists), and speaker. In total, there were five teams in each specialty group.

Team members had to work together, taking responsibility for the results of their work published online. When working on the online quest, students in both groups worked with the proposed materials independently, irrespective of the place and time, building their ability to work with information and search engines. If necessary, the teacher could provide advice and assistance.

At the third stage, students' performance in the online quests was evaluated, and the results of the empirical study were summarized.

RESULTS

At the first stage, we developed the criteria and indicators to evaluate students' performance in the online quest as a pedagogical technology (assessment of online quest completion) (Table 1).

Table 1.*Assessment criteria for the completion of the online quest*

Assessment criteria	Satisfactory level	Sufficient level	High level
Understanding of the task	The materials included are not directly relevant to the topic; only one source is used, the information gathered is not analyzed or evaluated, 1 point	Some materials included are directly relevant to the topic and some are unrelated; the number of sources used is limited, 2 points	The work demonstrates a clear understanding of the task, 3 points
Completion of the task	Materials are selected randomly; the information is inaccurate or unrelated to the topic; answers to the questions are incomplete; no attempts are made to evaluate or analyze the information, 1 point	Not all information is taken from reliable sources; some information is inaccurate or not relevant to the topic, 2 points	Works from different periods are evaluated; conclusions are justified, 3 points
Results of work	The material is not logically organized and presented in an unappealing manner; no clear answer is given to the tasks presented, 1 point	The information is accurate and structured; the presentation is appealing. Personal position and evaluation of the information is not expressed enough. The work is similar to those of other students, 2 points	The information is presented in a clear and logical way; all information is strictly relevant to the topic, accurate, and structured and edited well, 3 points
Creative approach	The student simply copies information from recommended sources; no critical perspective on the problem is provided; the work has little relevance to the quest topic, 1 point	Only one point of view on the problem is expressed; comparisons are made, but conclusions are not drawn, 2 points	Different approaches to solving the problem are presented. The work is distinguished by strong individuality and expresses the group's point of view, 3 points

Note. The authors.

The second stage of the empirical study consisted in evaluating the performance of Economics students (Table 2) and Pedagogy students (Table 3) in the online quest using the outlined assessment criteria.

Table 2.*Assessment of Economics students' performance in the online quest*

Criterion	Mean score				
	Group I	Group II	Group III	Group IV	Group V
Understanding of the task	2.4	2.6	2.2	2.8	2.4
Completion of the task	2.2	2.4	1.8	2.4	1.8
Results of work	2.0	2.2	2.4	2.6	2.2
Creative approach	1.6	1.8	1.6	2.2	2.0
Total score (mean)	8.2	9	8	10	8.4
Mean for all groups	8.72				

Note. The authors.

Table 3.*Assessment of Pedagogy students' performance in the online quest*

Criterion	Mean score				
	Group I	Group II	Group III	Group IV	Group V
Understanding of the task	3.0	2.2	2.8	2.4	2.6
Completion of the task	2.6	2.0	2.8	2.2	2.4
Results of work	2.6	2.0	2.6	2.4	2.4
Creative approach	2.4	1.8	2.2	2.0	2.2
Total score (mean)	10.6	8	10.4	9	9.6
Mean for all groups	9.52				

Note. The authors.

The results show that students in both fields reached a sufficient level of performance and that there were no statistically significant differences between economics and pedagogy students (Mann-Whitney U-test: $U = 7$, $p > 0.05$). This directly supports the study objective: online quest technology can be applied across different professional programs, provided that the task is adapted to disciplinary content and assessed through transparent criteria.

DISCUSSION

The online quests were carried out in three stages: orientation-motivational, execution, and presentation-evaluation.

For the orientation-motivational stage of work, “Introduction”, “Quest goal, objectives, and rules”, and “Roles” pages were created to introduce students to the research task and the final result that would be the focus of their learning activities. At this stage, students were briefed on the basic concepts of the quest, distributed team roles, and discussed the rules of group work.

The primary execution stage used the “List of resources” page connected to the previous ones. In other words, the task could not be performed without using the resources provided. All students performed the task at the same time according to their given roles. Since an online quest is not a competition, in the process of working on it, students learned from each other to work with software and the Internet (Emel'yanenko et al., 2024). This stage involved searching for information on the given topic, developing the structure of the presentation, and creating materials for the presentation in the form of analytical tables, schemes, diagrams, graphs, etc. If necessary, the results of individual tasks were revised. The team then jointly summarized the results of each task, sharing the findings and materials collected.

The final presentation-evaluation stage of the online quest was the continuation and completion of the work on preparing presentations and justifying the obtained solutions. At this

stage, students presented the results of the online quest, drew conclusions, and made proposals. The evaluation portion involved peer assessment based on the parameters offered on the “Assessment criteria” page (evaluation of the understanding of the task, the reliability of the information used, its compliance with the given topic, logic, structure, clarity of positions, individuality, and the professionalism of its presentation), self-assessment and reflection, as well as evaluation of all students in the group by the teacher.

Importantly, the teacher who develops and uses online quests in the educational process gains opportunities to: easily share their experience and methods of teaching the subject among other teachers (Silva & Costa, 2022), as online quests can be used many times; implement a variety of teaching methods simultaneously across all categories of students, i.e., to individualize the learning process (Arkorful et al., 2024); reduce the amount of material presented using demonstration modeling; practice various skills and abilities with students using PCs as simulators; exercise constant and continuous control over the process of knowledge assimilation; reduce the amount of paperwork and increase the amount of creative and individual work with students; make students’ independent work more effective, as it becomes both controllable and manageable (Neborsky, 2024; Osiak et al., 2015).

Using online quests in the learning process allows students to: work at their optimal pace, taking breaks when necessary (Cheremisin et al., 2022); return to the previously studied material and get the help needed (Farhat & Gonçalves, 2022); more easily overcome psychological barriers (shyness, indecisiveness, etc.) (Munizi & Cruz, 2023); work on necessary skills and abilities (Goltsova & Protsenko, 2020).

The student products indicate that the online quests achieved their pedagogical purpose. Participants selected, analyzed, and presented information relevant to the assigned professional problem. At the same time, the results show an area for improvement: students relied mainly on Russian-language sources and rarely used specialized foreign-language materials, which limits the international and comparative dimension of their work.

The practical impact of the online quest was most visible in students’ motivation and organization of independent work. The technology required them to distribute roles, search for evidence, prepare visual materials, justify solutions, and present results publicly. These activities connect the empirical findings with the stated objective of improving professional competencies rather than merely increasing the amount of digital activity.

Several limitations should be considered before scaling the technology. Online quests require stable Internet access, appropriate devices and software, and sufficient digital literacy

among both teachers and students. Future applications should include an initial digital-skills diagnosis, technical support, curated multilingual resources, and differentiated guidance for students who experience difficulties with online information search or teamwork.

FINAL CONSIDERATIONS

The study confirms that online quest technology can positively influence the quality of students' professional training when it is integrated into disciplinary learning objectives rather than used as an isolated digital activity.

Its pedagogical value lies in combining independent information search, teamwork, role distribution, problem solving, presentation, self-assessment, and teacher feedback. These elements support motivation, critical thinking, digital competence, and the practical application of professional knowledge.

For effective implementation, teachers should formulate a clear professional problem, provide reliable digital resources, define team roles, make assessment criteria explicit, and include reflection after presentation. These strategies help connect the online quest with measurable learning outcomes.

The main limitations concern access to equipment, Internet connectivity, and participants' digital literacy. Future research should test online quests with larger and more diverse samples, compare them with traditional project-based learning, and examine how the technology affects long-term competence development.

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