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ENHANCING RESEARCH AND CRITICAL THINKING SKILLS THROUGH PROJECT-BASED LEARNING AND TED TALK-BASED DIGITAL ACTIVITIES

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Annotation

This article examines the role of project-based learning (PBL) and TED Talk-based digital activities in developing research and critical thinking skills in English as a Foreign Language (EFL) education.

The relevance of the study is determined by the growing need to develop learners' analytical and communicative competences within modern digital learning environments. The purpose of the article is to investigate how project-based learning integrated with TED Talk-based digital activities contributes to the development of learners' research abilities and critical thinking skills in EFL contexts.

The study is based on communicative language teaching principles, project-based learning methodology, and the integration of authentic TED Talks within collaborative digital activities. The instructional framework incorporates guided analysis, structured questioning, reflective writing, project presentations, and evidence-based discussions. Data were collected through classroom observation, analysis of learners' written assignments, project tasks, and reflective responses.

The findings demonstrate that project-based learning supported by TED Talk-based digital activities promotes learner autonomy, research competence, analytical reasoning, and active engagement in the educational process. Learners showed improved ability to evaluate information critically, synthesize evidence from multiple sources, and construct reasoned arguments. The study concludes that integrating digital technologies into project-based learning environments significantly enhances both language acquisition and the development of higher-order cognitive skills essential for modern education.

Keywords: project-based learning, critical thinking, research skills, digital tools, TED Talk, EFL education.

Introduction

The development of critical thinking and research skills in education is widely recognized as essential, particularly in English as a Foreign Language (EFL) contexts. Critical thinking enables learners to analyze, evaluate, and construct meaning, while research skills allow learners to investigate problems, collect information, evaluate sources, and develop evidence-based conclusions. Together, these competencies support learners' ability to analyze information, evaluate evidence, and formulate reasoned judgments [1]. In education, this approach shifts the focus from viewing language as a system of grammar and vocabulary toward understanding it as a dynamic social and cultural practice. By engaging analytically with texts and participating in inquiry-based activities, learners can enhance their understanding and cultivate the capacity to explore various viewpoints [2].

Concerning project-based learning, in recent years, it has gained increasing attention as an effective learner-centered instructional approach that promotes inquiry, collaboration, and problem-solving while supporting both cognitive and language development [3]. Project-based learning encourages learners to investigate authentic problems, gather and analyze information from multiple sources, conduct research, and apply knowledge in meaningful contexts. As a result, learners become more active participants in the learning process and develop greater autonomy and responsibility for their learning outcomes. The essential elements of project-based learning include sustained inquiry, challenging problems, authenticity, learner voice and choice, critique and revision, and the creation of a public product [4].

Thus, research has shown that integrating critical thinking instruction into project-based learning can strengthen learners' ability to analyze and evaluate information, thereby improve their critical thinking skills [3]. In addition to fostering critical thinking, project-based learning also supports the development of essential research competencies. Learners learn to formulate inquiry questions, compare information from multiple sources, evaluate credibility, organize findings, and

present conclusions through collaborative projects. Such activities contribute to independent learning and prepare learners for academic and professional communication in digital environments.

Concerning research skills, educational research design operates not as an isolated event but as a continuous, cyclical process. According to Creswell [5] it involves a structured progression that begins with inquiry, continues through data collection, and ends with systematic analysis to generate meaningful insight. When this process relates to earlier definitions of research as a disciplined cognitive activity requiring specialized tools [6], project-based learning emerges as a suitable instructional framework for developing research competence in educational settings.

Within project-based learning environments, research skills are understood not as passive information consumption but as active information literacy. Learners are expected to search for, evaluate, and synthesize digital information critically [7]. This shift transforms learners from information consumers into active knowledge constructors. Information literacy therefore becomes central to modern education, especially in language contexts where learners must navigate large amounts of digital content and assess its credibility. Rather than conducting simple web searches, learners are required to work in complex digital environments where they must filter misinformation, evaluate sources, and synthesize reliable information. Frameworks such as DigComp 2.1 (Digital Competence Framework for Citizens) and the AASL Standards highlight that information handling is a key component of 21st-century literacy [8], [9]. In project-based tasks, learners use digital tools to formulate inquiry questions, evaluate data, and construct structured, evidence-based outputs.

Authentic multimedia resources, particularly TED Talk, provide rich multimodal input that helps learners interpret both verbal and non-verbal communication simultaneously [10, p.308]. Exposure to authentic discourse enables learners to engage with global issues, evaluate arguments, and construct informed opinions through critical analysis.

Although previous studies have explored project-based learning, critical thinking instruction, and digital tools separately, limited research has examined the integration of project-based learning with TED Talk-based digital activities for simultaneously developing research and critical thinking skills in EFL contexts. Therefore, further investigation is needed to understand how authentic multimedia resources can support inquiry-based learning, analytical reasoning, and evidence-based communication.

Therefore, the purpose of this article is to examine how project-based learning integrated with TED Talk-based digital activities contributes to the development of learners' research and critical thinking skills in EFL learning contexts. In order to reach this goal, the subsequent objectives were set:

1. To assess the research skills evidenced by learners in project-based EFL activities;
2. To evaluate the critical thinking and logical deduction shown during TED Talk-related activities;
3. To investigate the role of digital tools and collaborative project tasks in aiding learners' assessment and synthesis of information;
4. To identify the main challenges encountered by learners during TED Talk-based research and project activities.

In line with this objective, the study explores the subsequent research questions:

1. What indicators of research skills are evidenced by upper-secondary EFL learners while engaging in TED Talk-based project activities?
2. What signs of critical thinking and analytical reasoning are shown by learners during these TED Talk-based project activities?
3. In what ways do digital tools and collaborative project activities aid learners in assessing and synthesizing information?
4. What obstacles do learners encounter during research and project activities centered around TED Talks?

The contribution of this study lies in the integration of project-based learning, communicative language teaching principles, and authentic multimedia resources through the systematic use of

TED Talks to develop communicative competence, research abilities, and critical thinking skills in EFL learners.

Methodology

The methodological design of the study is based on combining principles of communicative language teaching with direct instruction in research and critical thinking, utilizing authentic multimedia discourse exemplified by TED Talks. The research employed a qualitative design focused on classroom-based investigation. It examined learners' performance and educational work produced during TED Talk-based project activities, with particular attention to research competence, critical thinking, source evaluation, evidence use, and communicative performance.

The study involved 67 Grade 10-11 upper-secondary EFL learners aged 15-17. The learners were taught at an approximately B2-C1 level, based on the course requirements and their demonstrated classroom performance. The study was conducted in a high school in Kazakhstan. The instructional activities were implemented over one academic year and consisted of 10 TED Talk-based project units. One TED Talk was selected for each project unit according to its relevance to learners' language proficiency, age appropriateness, topical relevance, and potential for discussion, inquiry and research.

The instructional framework is based on the five-step model of critical thinking development proposed by [11, p.165], which includes:

1. defining higher-order learning objectives;
2. structured questioning;
3. guided analytical practice;
4. reflective evaluation;
5. constructive feedback and self-assessment.

The study also incorporated principles of Bloom's taxonomy, particularly analysis, evaluation, and creation, together with project-based learning and communicative language teaching. These principles were implemented through guided analysis, mini-research tasks, collaborative discussion, reflective writing, and project presentations. Each project followed a progression from comprehension and inquiry to critical evaluation and evidence-based communication. Following TED Talk analysis, learners formulated questions, investigated related issues, searched for information from multiple sources, evaluated source credibility, compared perspectives, synthesized evidence, and presented their conclusions. So, guided questioning, collaborative discussion, reflection, feedback, and project work were used to gradually support more independent evaluation and argument construction.

In relation to reflective writing, the data consisted of learners' written assignments, analytical paragraphs, reflective responses, oral arguments, discussion activities, and project-based tasks completed during TED Talk-centered lessons. Classroom observations were also used to document learners' participation, analytical reasoning, evidence use, and communicative performance.

Learner written work was evaluated using a critical thinking writing rubric developed by the author as part of the instructional guide. The rubric was created specifically for the instructional context and was not intended as a standardized or externally validated assessment instrument. It included seven criteria: content, organization, critical thinking, reflection, vocabulary, sentence fluency, and language conventions. Each criteria was assessed across five performance levels, ranging from 'exemplary' to 'weak'. The rubric was used as an analytical framework for examining learners' written critical thinking performance (see Table 1).

Table 1. Critical thinking writing rubric

Criterion	Exemplary	Strong	Satisfactory	Developing	Weak
Content	Original, insightful ideas; Fully developed and focused; Strong use of TED Talk evidence and logical reasoning.	Clear ideas; Mostly supported with relevant evidence; Some reasoning.	Main idea present with some supporting evidence; Mostly descriptive.	Limited development; Minimal supporting evidence; Weak reasoning.	Lacks central idea; No evidence; Purely summary.
Organization	Logically structured; Smooth flow; Engaging introduction and conclusion.	Clear structure; Easy to follow; Good introduction and conclusion.	Organization mostly clear; Introduction and conclusion present.	Some organization; Introduction/conclusion weak.	No clear structure; Hard to follow.
Critical thinking	Insightful evaluation of arguments, assumptions, and evidence; Connects ideas to reasoning or broader perspective.	Clear analysis; Considers assumptions and evidence.	Some analysis, Limited evaluation; Mostly descriptive.	Minimal analysis; Little engagement with evidence.	No analysis; Only retells content
Reflection	Evaluates bias, Alternative viewpoints, and implications thoughtfully.	Some recognition of bias, assumptions, or perspectives.	Limited recognition of bias or alternative views.	Minimal reflection; Mostly personal opinion.	No reflection or awareness of perspective.
Vocabulary	Precise, varied, vivid language; Enhances meaning.	Functional and mostly appropriate words.	Basic vocabulary; Limited precision.	Simple or repetitive words; Limited clarity.	Very limited vocabulary; Unclear meaning.
Sentence fluency	Smooth, varied sentences; Easy and enjoyable to read aloud.	Sentences flow well; Some variety in length and structure.	Some variation; Mostly standard sentence patterns.	Many repetitive structures.	Sentences ramble; Very hard to follow.
Conventions (grammar, spelling, punctuation)	Very few or no errors; Conventions fully controlled.	Few minor errors; Does not affect readability.	Noticeable errors but writing is readable.	Frequent errors; Some meaning lost.	Errors make understanding difficult; Minimal control.

Research-oriented project tasks were analyzed separately from the writing rubric. The analysis focused on learners' ability to formulate inquiry questions, locate information from multiple sources, evaluate source credibility and relevance, compare perspectives, synthesize information, and use evidence to support conclusions. These aspects were examined through learners' project work, research notes, written assignments, presentations, and classroom observations.

The qualitative analysis involved repeated review of learners' written work, research tasks, project activities, reflective responses, and classroom observations to identify repeating patterns. Evidence proof to the study was organized into categories that aligned with the research questions. These categories included research skills, critical thinking, evaluation of digital information, and the challenges faced during project activities. The analysis focused on evidence of inquiry, source evaluation, evidence use, synthesis, argumentation, reflection, and communicative performance. Evidence was interpreted in relation to the study's research questions and the criteria specified in the writing rubric.

Thus, the writing rubric was used primarily to examine learners' written critical thinking performance, while learners' research competence was assessed qualitatively across the broader set of project-based learning activities. The study was conducted as part of regular classroom instruction. The learning activities were integrated into scheduled lessons and did not involve procedures beyond the normal educational process. Learners' educational work and classroom

performance were analyzed for research purposes, with no personally identifiable information reported in the study.

Results and discussion

Analysis of learners' project work, research notes, written assignments, presentations, and classroom observations provided evidence of learners' research skills. Across the project activities, learners demonstrated their ability to formulate inquiry questions, consult multiple sources, record and organize relevant information, evaluate source credibility and relevance, compare perspectives, and synthesize information when preparing their conclusions. Evidence of these procedures was observed particularly in learners' research notes and final project presentations. Learners also used evidence to support arguments and presented research outcomes in written and oral forms. In addition, learners demonstrated research-related practices such as note-taking and data organization. Collaborative project activities also supported communication, teamwork, creativity, and digital literacy skills.

This finding may be explained by the project-based structure, which provided repeated opportunities for learners to engage in research-related activities, including inquiry, source evaluation, information synthesis, and evidence-based communication. The combination of TED Talks with extra digital research allowed learners to explore topics more deeply than the initial multimedia content and motivated them to engage with further resources.

This interpretation is consistent with the importance of digital literacy and information evaluation emphasized in the DigComp 2.1 framework [9] and the AASL Standards [8]. It also corresponds with previous research on project-based learning in EFL education. Song et al. [3] reported that project-based learning supports critical thinking and language development through inquiry, collaboration, and active participation. The present findings extend this literature by showing how project-based learning can be combined with authentic TED Talk-based multimedia activities and digital research tasks to address research competence and critical thinking simultaneously in an EFL classroom context.

Analysis of learners' written work using the critical thinking writing rubric provided evidence of analytical reasoning, use of supporting evidence, and reflection on alternative viewpoints, particularly in the critical thinking, reflection, and content criteria. Learners' stronger responses generally moved beyond summary of TED Talk content by evaluating arguments, referring to evidence, and considering different perspectives. At the same time, weaker responses often stayed more descriptive and showed a restricted assessment of evidence or differing perspectives. The results indicate that the writing activities offered learners the chance to progress from mere comprehension and summarization to evaluation, evidence-based reasoning, and consideration of alternative perspectives. The differences in the strength of responses suggest that the performance in critical thinking varied among learners in the class, with some individuals needing extra support to engage more thoroughly with evidence and alternative viewpoints.

Analysis of classroom observations, combined with the reflective feedback from learners, revealed that there was consistent active participation during the project activities. Learners participated in discussions involving evaluation of controversial issues, analysis of evidence, and construction of reasoned responses. Learners' participation was especially noticeable when the subjects of TED Talks were linked to current and globally significant matters. Several challenges encountered during the project activities, several issues emerged, including differences in learners' prior experience with digital research tools and obstacles in assessing online sources. Although learners were generally able to locate online information, they experienced greater difficulty in evaluating its credibility, relevance, and evidentiary value. In the context of the present study, locating information and evaluating its quality represent distinct aspects of research competence. Although learners had access to digital resources, they often lacked adequate strategies to evaluate the quality and relevance of online sources. In the current classroom environment, simply providing access to digital tools is not enough to cultivate effective research skills, highlighting the need for explicit instruction on evaluating sources and synthesizing evidence.

Limitations of the study

The research presents several limitations. First, it was carried out in a single high-school context in Kazakhstan and involved 67 upper-secondary EFL learners, which limits the generalizability of the results to other educational contexts. Second, while the study provides evidence of learners' demonstrated research and critical thinking practices, it does not permit causal inferences regarding the effectiveness of the instructional approach. Third, the critical thinking writing rubric was developed by the author for the specific instructional context and was not externally validated or standardized, which may limit the reliability and comparability of the assessment. Fourth, learner attendance varied across individual lessons and project activities, meaning that not all learners participated in every instructional session. As a result, the evidence available for each learner varied in both quantity and type throughout the project activities. Finally, the direct involvement of the researcher in the instructional process may have led to subjective interpretations of classroom observations and learners' work. Future research may overcome these limitations by incorporating larger and more varied samples, as well as employing quantitative or mixed-method research approaches.

Conclusion

Taken together, these studies suggest that integrating project-based learning with TED Talk-based digital activities can provide relevant opportunities for upper-secondary EFL learners to demonstrate research and critical thinking skills. In particular, the analysis provided evidence of learners' ability to formulate inquiry questions, search for and evaluate information from multiple sources, assess source credibility, synthesize evidence, and present research findings in written and oral forms. Project-based activities also supported learners' analytical reasoning, evidence-based argumentation, collaboration, and active participation in learning. The results also suggest that analytical engagement was evident when guided questioning, reflection, and scaffolding were incorporated into the instructional activities. Digital tools supported information gathering, collaboration, organization of research findings, and presentation development. Together, these findings indicate that the combination of project-based learning, authentic multimedia resources, and structured digital activities can provide meaningful opportunities for learners to practice research and critical thinking skills. At the same time, the study identified challenges related to differences in learners' digital literacy, difficulties in assessing online information, and the need for continuous teacher support and guidance. Thus, these findings indicate that the use of digital technologies and authentic multimedia resources should be accompanied by clear instructions on evaluating sources, evidence selection, and research strategies.

Overall, the study suggests that TED Talk-based digital activities can support project-based EFL instruction by integrating language development with research, critical thinking, and evidence-based communication. Future research could examine the long-term effects of this method on research competence, critical thinking, learner autonomy, and academic performance using larger and more diverse groups of learners and, where appropriate, quantitative or mixed-method research designs.

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ЖОБАЛЫҚ ОҚЫТУ ЖӘНЕ TED TALKS НЕГІЗІНЕ БАҒЫТТАЛҒАН ЦИФРЛЫҚ ТАПСЫРМАЛАР АРҚЫЛЫ ЗЕРТТЕУ ДАҒДЫЛАРЫ МЕН СЫНИ ОЙЛАУДЫ ДАМУ

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Аңдатпа

Бұл мақалада ағылшын тілін шетел тілі ретінде (EFL) оқытуда оқушылардың зерттеу дағдылары мен сыни ойлау қабілеттерін дамытудағы TED Talks негізінде жобаға бағытталған оқытудың (Project-Based Learning, PBL) және цифрлық құралдардың рөлі қарастырылады. Зерттеу өзектілігі заманауи цифрлық білім беру ортасында білім алушылардың аналитикалық, зерттеушілік және коммуникативтік құзыреттіліктерін қалыптастыру қажеттілігінен туындап отыр. Мақаланың мақсаты - жобаға бағытталған оқытудың TED Talks-ты негіз ретінде қолданатын шынайы мультимедиялық ресурстармен қатар оқушылардың зерттеу біліктері мен сыни ойлау дағдыларын дамытуға қалай ықпал ететінін зерттеу.

Аталмыш зерттеу коммуникативтік оқыту принциптеріне, жобалық оқыту әдістемесіне және бірлескен цифрлық қызметте TED Talks платформасын пайдалануға негізделген. Оқу моделі бағытталған талдауды, құрылымдалған сұрақтарды, рефлексивті хат жазуды, жобалық презентацияларды және дәлелді талқылауларды қамтиды. Мәліметтерді жинау бақылау жүргізу, оқушылардың жазбаша жұмыстарын талдау, жобалық тапсырмалар мен рефлексивті жауаптар арқылы жүзеге асырылды.

Зерттеу нәтижелері оқушылардың TED Talks платформасының цифрлық құралдарын пайдалана отырып, жобаға бағытталған оқытуды қолдану арқылы олардың дербестігін, зерттеушілік құзыреттілігін, аналитикалық ойлауын дамытуға және оқу процесіне белсенді қатысуына ықпал ететінін көрсетеді. Зерттеу кезінде оқушылар ақпаратты сыни тұрғыдан бағалау, әртүрлі дереккөздерден алынған мәліметтерді жинақтау және дәлелді қорытындылар жасау қабілеттерінің жақсарғанын көрсетті. Мақалада цифрлық технологияларды жобаға бағытталған оқытуға интеграциялау заманауи білім беруге қажетті тілдік дағдылар мен жоғары деңгейдегі когнитивтік біліктілікті дамытуға мүмкіндік береді деген қорытынды жасалады.

Түйін сөздер: жобаға бағытталған оқыту, сыни ойлау, зерттеу дағдылары, цифрлық құралдар, TED talk, ағылшын тілін шет тілі ретінде оқыту.

РАЗВИТИЕ ИССЛЕДОВАТЕЛЬСКИХ НАВЫКОВ И КРИТИЧЕСКОГО МЫШЛЕНИЯ ПОСРЕДСТВОМ ПРОЕКТНОГО ОБУЧЕНИЯ И ЦИФРОВЫХ ЗАДАНИЙ НА ОСНОВЕ TED TALKS

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Аннотация

Данная статья рассматривает роль проектного обучения и цифровых видов деятельности на основе TED Talks в развитии исследовательских навыков и критического мышления в обучении английскому языку как иностранному. Актуальность исследования обусловлена растущей необходимостью развития исследовательских навыков и критического мышления обучающихся в условиях современной цифровой образовательной среды. Цель статьи состоит в том, чтобы изучить, как проектное обучение, интегрированное с цифровыми видами деятельности на основе TED Talks, способствует развитию исследовательских навыков и критического мышления студентов.

Исследование основано на принципах коммуникативного подхода к обучению языку, методологии проектного обучения и использовании аутентичных TED Talks в рамках совместной цифровой деятельности. Учебная модель включает направленный анализ, структурированные вопросы, рефлексивное письмо, проектные презентации и аргументированные обсуждения. Сбор данных осуществлялся посредством наблюдения, анализа письменных работ учащихся, проектных заданий и рефлексивных ответов.

Результаты исследования показывают, что проектное обучение, поддерживаемое цифровыми видами деятельности на основе TED Talks, способствует развитию автономности обучающихся, исследовательской компетентности, аналитического мышления и активного вовлечения в учебный процесс. Учащиеся продемонстрировали улучшение способности критически оценивать информацию, синтезировать данные из различных источников и формулировать аргументированные выводы. Исследование показывает, что интеграция цифровых технологий в проектно-ориентированное обучение значительно усиливает как процесс овладения языком, так и развитие когнитивных навыков, которые необходимы для современного образования.

Ключевые слова: проектное обучение, критическое мышление, исследовательские навыки, цифровые инструменты, TED talk, обучение английскому как иностранному языку.

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