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Unravelling the Tapestry of Kazakhstan: Enhancing Research Skills with Project-Based Learning and Intelligence.

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Abstract

The dynamic nature of education is causing traditional teaching methods to change in favor of inclusive, interactive approaches that meet the varied needs of today's students. One prominent example of such an approach is Project- Based Learning (PBL) and Multiple Intelligence (MI), which provides an experiential, collaborative, and interdisciplinary approach to education. The use of PBL in teaching Kazakhstani history at Nazarbayev Intellectual Schools is examined in this article, emphasizing how it helps high school students acquire research skills. PBL fosters students' creativity, critical thinking, intelligence, and problem-solving skills by engaging complex, real-world issues. Within the context of PBL, students learn subject content and develop essential skills. They formulate research questions, conduct small-scale studies using sociological research methods, design innovative solutions to problems, and collaborate with their school community. At Nazarbayev Intellectual Schools, 12th-grade students undertake coursework in the History of Kazakhstan, aligned with AS-level and A-level international exam standards. They apply the knowledge, skills, and abilities acquired through the research process to their coursework. The research employs quantitative and qualitative methods to analyse the analytical reports of 12th-grade students from Nazarbayev Intellectual Schools based on external summative assessments conducted between 2019 and 2022. The findings indicate that practical experiences with PBL and MI equip students with design and research competencies while fostering creativity, critical

thinking, and effective communication. However, creating long-term research projects has revealed a need to enhance students' information and media literacy and critical and creative thinking skills. The authors suggest systematically and regularly integrating the PBL method into history classes in Kazakhstan, ranging from 7th to 12th grade, to address these issues and improve the caliber of coursework. In addition to enhancing students' educational experiences, this proactive approach gives them the information and abilities needed to prosper in a complex, globalized society. This study aims to close Kazakhstan's current knowledge and practice gap. This study aims to investigate the perspectives of educators and learners regarding the advantages and disadvantages of project-based learning (PBL)and MI. This article focuses on integrating PBL into the history curriculum at Nazarbayev Intellectual Schools, employing a qualitative case study methodology. It focuses on how PBL fosters the growth of research skills in high school students. Semi-structured interviews were conducted with educators and students. Following data collection, thematic analysis and coding were applied. The results show that teachers see PBL as a helpful teaching tool that encourages student participation and a deeper comprehension of the subject matter through experiential and self-directed learning. Participants discussed skill development, practical application, and better relationships between students and teachers. However, the study also highlights the challenges teachers face, like time constraints, knowledge gaps, and issues with group projects.
Keywords: Project-based learning, benefits, challenges, teachers, students.

1 Introduction

On July 31, 2013, the independent educational organization "Nazarbayev Intellectual Schools" (hereinafter referred to as the "NIS" Educational Institution) developed the curriculum of the subject "History of Kazakhstan (Kazakhstan in the Modern World)" based on the integrated educational program with the methodological support of the Faculty of International Education of Cambridge [1, 2]. This subject is considered the author's work of NIS. The main goal of the paper is to deepen knowledge about the place of Kazakhstan in the world, its model of independent development and reforms and strategies aimed at the development of the country, to define priority directions in the internal and external policy followed by Kazakhstan in relation to the countries of the world, international organizations and various public associations, and to explain national and regional security issues [3,4].

The main task of the paper is to form "patriotism in action" in the student by showing that the country strives for global democratic, social and public values. According to the Cambridge International Examinations 2015 identification report, the NIS-Programme curriculum of "History of Kazakhstan (Kazakhstan in the Modern World)" is equivalent to AS Level. Based on the UK NARIC December 2017 alignment report, the NIS-Programme curriculum for the subject "History of Kazakhstan (Kazakhstan in the Modern World)" is aligned with GCE AS Level programs [5]. In 2021, Dina Ashimova, Dilbar Begalina, Dulat Turarbekov have published "Kazakhstan in the modern world that include educational and methodical complex for the 11th grade" according to the curriculum of the Higher School on the subject "History of Kazakhstan (Kazakhstan in the Modern World)", and in 2023, Dina Ashimova, Gabit Mukhtaruly , Dulat Turarbekov, Aygiz Turganbayeva, Ayimgul Ungarbayeva developed and published a Teaching-Methodical Complex (TMC) for the 12th grade of Nazarbayev Intellectual Schools. Today, 11th-12th grade students of Nazarbayev Intellectual Schools are studying with these textbooks. Project-based Learning (PBL)

and MI are teaching methodologies for students dealing with complex, real-world, regional problems or projects. Unlike traditional learning methods that rely mostly on memorization, PBL encourages students to actively explore, analyze, and construct [6]. In addition, it is a person-centred approach that encourages students to think critically, solve problems, and think creatively.

In the PBL approach, students are presented with a research question or problem that serves as the project's focal point. There is required to conduct research, design solutions, and collaborate with classmates or work individually to implement their ideas. The lesson on Project-Based Learning in the History of Kazakhstan is organized as shown in Table 1. Short-term projects were carried out during the lesson by answering the research question of the lesson. For example, what is the role of national branding in shaping Kazakhstan's international image? How is the "Kazakh model" of civil society formed? Short-term projects held during the lesson are carried out through the tasks "Research", "Build", and "Propose" in the textbooks. Long-term projects for the department are given as a research conclusion. Students will study this statement during the lesson and prove their civic position [7]. For example, "How important is the influence of political changes on the development of the country?" conduct research on the topic.

Table 1. Types of implementations of PBL in the history lesson of Kazakhstan.

Short-term research	Long-term research	Course work
small research work performed during the lesson	small research projects made during the course of 4-6 lessons	Two years of project-research work outside the classroom under the guidance of the teacher

In the framework of project-based learning, students of the subject "History of Kazakhstan" perform coursework of at least 2,500 and 3,000 words, which are checked by teachers at intellectual schools and undergo internal and external moderation. In the coursework, students develop their skills in applying, synthesizing, and researching the knowledge they have acquired in several subjects such as "Economics", "History", "Geography", "Global Perspectives and Projects" according to the curriculum. The students should effectively use their transfer skills. New ideas related to the topic and suggestions on effectively solving modern problems. According to the requirements, the coursework consists of an introduction, main part, conclusion, literature used, and appendices. In the introduction of the course work based on research skills, it is necessary to prove the relevance, novelty and practical necessity of the topic, the assessment of the considered scientific/analytical/research problem in the modern situation, as well as the purpose, tasks and object of the work, and the hypothesis. The main section considers the data showing sociological research and methodology's meaning, content, and results. Quantitative and qualitative: content analysis, interviews, online surveys, etc. Research methods are appropriately used, and as part of the research, students conduct a literature review of theoretical works on their research topic [8, 9].

Moreover, PBL and MI foster a sense of ownership among students regarding their learning journey. By enabling them to delve into subjects of personal interest and make decisions about project direction, PBL encourages autonomy and self-directed learning [9]. This ownership cultivates a lasting curiosity and a readiness to pursue new knowledge independently. Additionally, PBL and MI equips students with the aptitudes necessary to navigate today's intricate

world. In an era marked by rapid technological progress, globalization, and societal shifts, the capacity for critical thinking, adaptability to change, and collaboration across diverse perspectives is crucial [10]. PBL allows students to hone these skills within a supportive and stimulating setting. Project-Based Learning not only readies students for academic triumph but also nurtures the qualities of lifelong learners – inquisitive, flexible, and resilient individuals in the face of obstacles [11,12]. By fostering these traits, PBL empowers students to excel in a constantly evolving environment and contribute meaningfully to society [13]. Ultimately, Project-Based Learning elevates academic performance and fosters lifelong learners equipped to navigate the complexities of the modern world with assurance and proficiency [14].

A project-based lesson planning that integrates Howard Gardner's Multiple Intelligence (MI) theory provides an effective way to develop critical thinking skills in the classroom, especially in diversified learning environment settings such as Kazakhstan. According to MI theory, each learner has a unique cognitive structure that affects many areas, such as language, comprehension, mathematics, and spatial and interpersonal intelligence. Project-based assessment tasks, including MI, are the most important aspects of MI. For example, students with high levels of interpersonal skills can conduct multicultural group research to learn about the socio-cultural aspects of Kazakhstan, while students with spatial intelligence can use geographical and mapping tools to present them with history and geography. MI supports the PBL in creating a classroom with an effective student-centric environment.

1.1 Problem Statement

With the speed at which modern society is developing, educators today must adjust to changing educational environments and take on new challenges. In the twenty-first century, educators are increasingly expected to use cutting-edge teaching and learning strategies that enable students to express their opinions freely. Kazakhstan has realized that it needs to move away from static teaching methods and toward more interactive, student-centred ones. However, bringing about this kind of change calls for a new strategy centred on student-centred learning. Educators in Kazakhstan are paying close attention to Project-Based Learning (PBL), which has become a prominent approach to address these changing demands. As highlighted by the authors, one primary concern in Kazakhstani education is the pervasive disengagement of students from their studies. Results show high absenteeism rates and a lack of punctuality, which indicates a declining interest in learning among Kazakhstani students. Additionally, studies show that student engagement predicts academic success, highlighting the significance of motivating students in the classroom. According to studies, students prefer learning approaches like group projects, technology-enhanced classes, and presentations; on the other hand, demotivating elements include tedious and unnecessary materials and little teacher interaction. Project-based learning, or PBL, allows students to use technology to create tangible outcomes and present their work to authentic audiences. PBL ignites students' curiosity about the material and pushes them to solve real-world issues, which helps them understand the material better through hands-on experience. Though it presents challenges for students, PBL has been progressively incorporated into Kazakhstani educational practices in recent years. It is regarded as a successful student-centred approach. Although PBL's benefits have been demonstrated by experiences abroad, a lack of research places its application in Kazakhstan in context. As such, little is known about the advantages and difficulties Kazakhstani educators identify with applying PBL. By investigating the use of project-

based learning in the Kazakhstani context, this study seeks to close this gap in the literature.

1.2 Objectives

This study aims to investigate the views of secondary school teachers in a Kazakh-Turkish Lyceum in northern Kazakhstan regarding PBL. This study aims to identify the advantages and difficulties associated with PBL implementation. As a starting point, the following research questions will direct this investigation:

- How does PBL benefit you?
- What challenges are involved in putting PBL into practice?
- What obstacles accompany the implementation of PBL?
- How can we enhance students' research skills within daily history lessons?
- What practical framework supports Research Skills and Project Based Learning?

1.3 Research designs

A qualitative research design has been selected to investigate teachers' ideas, opinions, and perceptions regarding PBL—including its advantages and disadvantages. This will offer crucial insights into how PBL operates within Kazakhstan's framework. Focusing on their experiences became imperative because KTL teachers actively integrate PBL into their instructional strategies and undergo specialized training. This study is noteworthy in a variety of ways. The findings may be helpful to both teachers and students, promoting reflection on their use of PBL. By interpreting teachers' perspectives, experiences, and attitudes regarding PBL, this study may help clarify the difficulties teachers and students face. It also has the ability to provide school administrators with information that they can use to create strategies that will help them overcome the challenges involved in implementing PBL. The following is the format of the sections that follow in this document: The literature review is covered in Section II, the research methodology is explained in Section III, the findings and results are presented in Section IV, the study is concluded in Section V, and an analysis and conclusion are provided in Section VI.

2 Literature Review

This study examines how teachers view PBL and its advantages and disadvantages. This essay thoroughly analyses pertinent literature covering a range of subject-related topics. The chapter reviews relevant literature on the following topics: the conceptual framework, the definition of project-based learning, the historical development of PBL, the views of educators and learners on its use, the advantages and difficulties of PBL, and the implementation of PBL in the context of Kazakhstan. One particularly effective teaching method for teaching history, encouraging academic integrity, and developing a variety of skills necessary for students to succeed in the real world is PBL. The literature review examines important studies and conclusions about the value and effectiveness of PBL in teaching history, especially in helping students develop their media literacy, information and technology literacy, and design and research skills. Additionally, it explores how critical thinking and design thinking can improve students' capacity for design and research [15]. Different authors have defined PBL differently, so academics do not have a single definition or agreement [16]. PBL is defined as "a model that organizes learning around projects" (p. 1), as cited by authors [17]. These assignments usually consist of questions, tasks, and issues to get students thinking critically and conducting research. Researchers claim that PBL mainly stresses experiential learning. Sources suggest that "project- based learning is an instructional

method centred on the learner". In addition to stating that PBL is an instructional approach that is centred on the learner whom a teacher assists throughout every stage of the project, it provides students with the chance to work on a problem and investigate the topic deeply through learning more about it [18].
Researchers [19] claim that PBL is a technique that helps students create a flexible and enjoyable learning environment while improving their skills and developing critical thinking abilities. PBL is also a strategy that integrates knowledge from different existing subjects to encourage students to explore new concepts. PBL is further described as an instructional strategy that encourages and empowers students to look for solutions independently. PBL is defined as follows for the purposes of this study: PBL is a teacher-facilitated, student-centered approach that organizes learning around projects. Finally, PBL lacks a single, comprehensive definition. However, PBL's core idea is that it is a project-based learning approach that empowers students to take charge of their education, encourages collaboration, and gives them the tools they need to succeed in the twenty-first century by having them solve real- world issues. PBL has developed into a unique teaching approach over the last 25 years because of essential advances in learning theory. However, the idea is not new; for many years, it has been incorporated into the educational process by assigning different projects, planning field trips, running lab experiments, playing games, and other activities.

Authors [20] claim that social interaction and taking on tasks that push them outside of their comfort zones help students learn at their best. PBL's guiding principles were developed because of this experiential learning methodology. Though it has been developed for a long time, PBL is still being refined and could be improved in many ways. However, it is critical to understand that experiential learning and group collaboration are at the heart of PBL. Teachers interpret PBL differently because of differences in their backgrounds, subjects taught, and other factors. The authors stress, "No two teachers implement PBL in the exact same way". According to empirical research on teachers' perceptions of PBL, educators generally have favorable pedagogical beliefs about PBL. Still, the research outlines specific ways in which educators understand PBL. Educators view PBL as a student-centred strategy encouraging independent study [21].
PBL involves self-regulation, giving students the freedom to select subjects, locate resources, and work independently at their own pace in accordance with their needs and interests. Teachers view themselves as supervisors or facilitators, providing support and direction through practice materials, peer counselling, guiding questions, and teacher-student interactions. To begin with, PBL teachers use planning strategies to lay out studies, give goals, set deadlines and checkpoints, and define assessment criteria [22]. They also use orchestration and management techniques to organize groups and guide and assist students during the PBL process. PBL teachers claim classroom management differs greatly from conventional teaching strategies like seatwork, lectures, and discussions. During PBL sessions, teachers abstain from leading activities or using teacher-centered strategies. Instead, students usually work independently in small groups, and some teachers feel more like colleagues than instructors. Teachers view PBL as an authentic learning process that requires students to produce realistic final products, presentations, or models [23]. According to the authors, the main driving force behind PBL is the final artefact's design, which requires students to gain knowledge and understanding of the subject matter to create the artefact. After finishing, students can show their work to real audiences like pros. Additionally,

educators see PBL as a way to give students a platform to contribute significantly to society. Working together becomes a critical feature that sets PBL apart from other teaching approaches. Educators view PBL as a cooperative method that improves student involvement and encourages teamwork by allowing students to collaborate to accomplish goals, set deadlines and checkpoints, and comprehend project evaluation standards. In addition, they use orchestration and management techniques to organize students into groups and provide them with guidance and support during the PBL implementation process [24].

PBL teachers claim classroom management differs greatly from traditional teaching strategies like group discussions, lectures, or individual seatwork. During PBL sessions, they choose not to use teacher-centred methods and do not provide any material or lead activities. Instead, students work in small groups independently, and some teachers even compare their role to that of peers rather than traditional classroom managers. Teachers also view project-based learning (PBL) as an authentic learning process in which students create final, realistic products (artifacts), presentations, or models. According to the authors [25], creating the final artefact is the main motivation for PBL students, encouraging them to grow as learners and gain a deeper understanding of the material to complete the artefact. After finishing, students show their work to authentic audiences, just as professionals do. Teachers also think that PBL allows students to produce significant work that has practical application. The collaborative nature of PBL sets it apart from other teaching approaches in another important way. Teachers view PBL as a collaborative approach that raises student engagement by allowing students to work in groups, exchange ideas, support one another, and grow from the mistakes of their peers.
Authors [26] state that brainstorming sessions and peer reviews are collaboration components. Teachers also view PBL as a chance to work together and share ideas for project development with their peers. In terms of assessment, PBL differs from other teaching approaches. PBL requires continuous assessment, which means continuing evaluation from the project's start to finish to guarantee high-quality results [26]. When using a monitoring strategy in PBL, teachers monitor their student's progress during the whole project and provide prompt feedback. Moreover, educators employ criteria-based evaluation, which is ideal for PBL since it gives students precise project goals and expectations. Another essential element of PBL is peer and self-assessment. To sum up, the extensive corpus of global research on problem-based learning highlights educators' diverse viewpoints. However, the consensus seems to indicate that PBL is generally viewed by teachers as student-centred learning, with teachers acting more as facilitators than lecturers [27]. Additionally, it is a useful tool for getting students to work in groups, solve problems from the real world, share ideas, and support one another. Finally, PBL is regarded as a successful method of evaluating students at every stage of the implementation process.

Researchers found that teachers emphasized PBL's advantages over drawbacks, noting 206 advantages against 132 difficulties. Students accounted for most of these benefits (95%), while teachers faced most challenges (57%). Similar benefits were noted for teachers, including better student-teacher relationships and increased cooperation with colleagues to address PBL-related issues. Students reported additional benefits such as increased engagement, skill development, improved academic performance, and other advantages. The main advantage of PBL is that it increases student motivation and engagement. PBL, according to some, improves students'

participation in various studies, allowing them to address real-world problems and gain experiences outside the university. The investigations in question cover "design, decision-making, problem-finding, problem-solving, discovery, or model-building processes", per sources [28]. Ninth-grade PBL students expressed higher satisfaction with scientific tasks. They enjoyed the class more than non-PBL students, according to authors examining the effect of PBL on classroom learning in two Arab schools in Israel. PBL provides students with an experiential learning environment, encouraging them to learn [29]. Three public schools and one private school in the United States were represented in the intentional sample, which included six teachers (four females and two males) with more than a year of PBL experience. According to the findings, PBL improved students' satisfaction and motivation to learn. As students were given chances to show off what they had learned and take responsibility for their work, teachers noticed that their level of engagement increased. More studies on educators' perspectives support the idea that PBL environments boost student motivation. The PBL approach, however, may have reduced high school students' motivation, according to the authors' study [30]. Because PBL strongly emphasises group work, they contended that students' engagement decreased because they were not used to working together regularly.

PBL is an effective method for increasing student engagement by offering them opportunities to learn through practical application. Engaging in real-world problem-solving can heighten their motivation and encourage exploration beyond the confines of the curriculum. However, there is a contention that PBL might decrease student involvement [31]. As per the literature, students participating in PBL activities have the opportunity to cultivate a diverse array of skills, including collaboration, communication, problem-solving, and critical thinking, which are frequently highlighted. Researchers assert that PBL facilitates the acquisition of 21st-century skills in students. According to findings from interviews with ten female teachers about their experiences integrating PBL [32], PBL fosters the development of critical thinking, cooperation, and teamwork among students. These teachers noted that one of the primary advantages of employing PBL is enhancing 21st-century skills. In their study titled "Project-Based Learning for the 21st Century: Skills for the Future," the authors emphasize the necessity of PBL for success in the contemporary world, as it equips students with the tools and knowledge essential for thriving in the twenty-first century. Moreover, they found that effective implementation of PBL by educators who have undergone substantial PBL professional development can significantly support students in acquiring 21st-century skills, thereby impacting teaching and learning in the current era [33]. In addition to 21st-century skills, the authors emphasize "success skills," including interdisciplinary, soft, teamwork, and time-management abilities, as crucial for future careers. Through a case study conducted at a small suburban school in Honolulu, USA, the authors investigated how PBL influenced ninth-grade students' attitudes toward science. The study revealed that students engaged in PBL scientific investigations demonstrated improved problem-solving, critical thinking, higher-order thinking, and scientific reasoning. Additionally, since PBL is centred on group projects, it allows students to refine their collaboration and communication skills. PBL also helps students develop their laboratory, information retrieval, social, research, communication, and time management skills [34, 44]. The literature generally emphasizes various abilities fostered by PBL, focusing on 21st-century abilities like creativity, critical thinking, and teamwork. In addition, research, time management, and interpersonal abilities are also highlighted as important for

students in their future pursuits [35]. Academics also offer proof of the beneficial effects of PBL on student achievement. The authors [36] observed improvements in academic achievement after PBL implementation and consistently positive student attitudes toward PBL after reviewing research studies conducted between 2000 and 2011 across preschool, elementary, and secondary school settings. They claim that because PBL provides practical learning experiences, students who participate in PBL demonstrate noticeably higher levels of knowledge acquisition. The authors also point out that when the PBL approach was used, academic achievement among Israeli high school students increased significantly [37].

An investigation into the effects of PBL on students' attitudes toward English lessons and academic performance was carried out in 2011 at a high school in Nigde, Turkey. They found that PBL significantly improved the academic performance of ninth-grade English students and had a favorable impact on their attitudes about the subject. The PBL group outperformed the non-PBL group, according to the researchers' comparison of students who participated in PBL with those who did not [38]. Their research revealed that because the PBL group's students actively worked in groups, shared ideas, and made an effort to comprehend different points of view, they demonstrated better academic results. They also acquired the ability to accept responsibility for the other group members. Another investigation looked at how instructors implemented PBL in their classes [39]. The primary advantage of implementing PBL across all subjects, according to the experienced teachers who participated from primary schools in a school district in southern Florida, is academic success. They claimed that during PBL activities, students worked harder and had a better understanding of the material. Studies show that PBL students score higher than their traditional counterparts [40]. Peer learning, idea sharing, and collaboration are made possible by PBL, which improves students' social interaction and academic performance [41]. Practical learning opportunities and the chance to create their own knowledge are also beneficial to students. Improving student-to-student relationships is one more benefit of PBL. In the classroom, PBL fosters a positive collaborative environment by helping students to understand, support, and respect one another. Due to a common objective and the requirement for equal contribution to produce a successful final product, students working in groups also inspire and support one another. PBL teaches students important life skills like communication, organization, and group conflict resolution. Nonetheless, the study did not discover any appreciable variations in the relationships between PBL and non-PBL students. On the other hand, a number of academics agree that PBL strengthens the bonds between students and teachers [42,43].

2.2 Open Challenges

The literature has identified numerous additional challenges. Researchers note that teachers have difficulty creating assessments to rate students' project work. One of the top ten biggest obstacles teachers faced when implementing PBL was project assessment, according to the authors' research. According to reports, teacher candidates also expressed frustration with the assessment process of PBL implementation. Each teacher may have created their own criteria for evaluating various groups, which could contribute to the assessment issue. Additionally, student work involved in PBL implementation could not be evaluated using conventional assessment methods. The scarcity of materials and resources required to implement PBL is another challenge. Instructors believe that the biggest challenges in implementing PBL are a lack of funding, resources, technologies, and

suitable materials. Additionally, problems like packed classrooms and inadequate experience have been identified. Essentially, teachers recognize that there are many obstacles involved in implementing PBL. Educators and students have raised concerns about the significant amount of time and increased workload associated with organizing PBL projects. Instructors devote much time to student mentoring, project feedback, and progress evaluation. Students also set aside time for group project work, planning meetings, and brainstorming sessions. Collaboration within groups is also mentioned as a major challenge. In this situation, educators might not possess the necessary training and expertise to assist students with group projects. Because of this, there may be disputes among students in groups and issues with uneven contribution—some students take on more responsibility, while others start to take advantage of others. Furthermore, because they may be accustomed to traditional instruction, teachers and students may struggle to transition from a teacher-centered to a learner-centered approach. Assessing students participating in PBL presents an additional challenge because traditional evaluation techniques might not be appropriate. Based on their own criteria, teachers might evaluate groups in different ways. Other challenges mentioned by the scholars are the lack of materials and resources, the size of the classes, and technical problems. To enable Kazakhstani students to become more capable global citizens, the KATEV Foundation implemented PBL to foster global competencies while promoting academic excellence. Over 36 Kazakh-Turkish Lyceums are supervised by the KATEV Foundation, a publicly funded educational institution located all over Kazakhstan. PBL has been actively implemented in Kazakhstan's educational system for more than five years. Every year since 2014, all Kazakh-Turkish Lyceums throughout the country participate in the Young Inventors Project Competition (YIPC), which is organized by KATEV. As a part of Nazarbayev's 2014 initiative, "Kazakhstani Way – 2050: Shared goals, interests, and future," the YIPC was introduced. The fundamental tenets of project-based learning underpin this competition, and teachers act as the main facilitators of this approach. They actively participate in every stage of the process and have the necessary knowledge and abilities to mentor students as they work on their projects. Though PBL is a relatively new approach in Kazakhstan, little research has been done on its advantages and disadvantages in that nation's context.

3. Research Methodology

This work describes the methodology used in the investigation, including the instrumentation, sampling strategy, research design, data collection methods, data analysis approaches, and ethical considerations.

Reliability assessment and justification. The research methodology used in this study was carefully designed to evaluate the impact of project-based learning (PBL) on the development of students' design and research skills in the history of Kazakhstan. This section examines the methods' reliability and their effect on the results.

Selection of participants. To increase the reliability of the participants' selection process, students and teachers of Nazarbayev Intellectual Schools in different regions (Astana, Almaty, Ural, Semey, Shymkent cities) were involved in the research. Both experienced teachers and less experienced teachers using PBL in teaching history participated. This diverse selection aims to gain a comprehensive view of the impact of PBL on media literacy, information literacy, and technology literacy skill development in the history classroom.

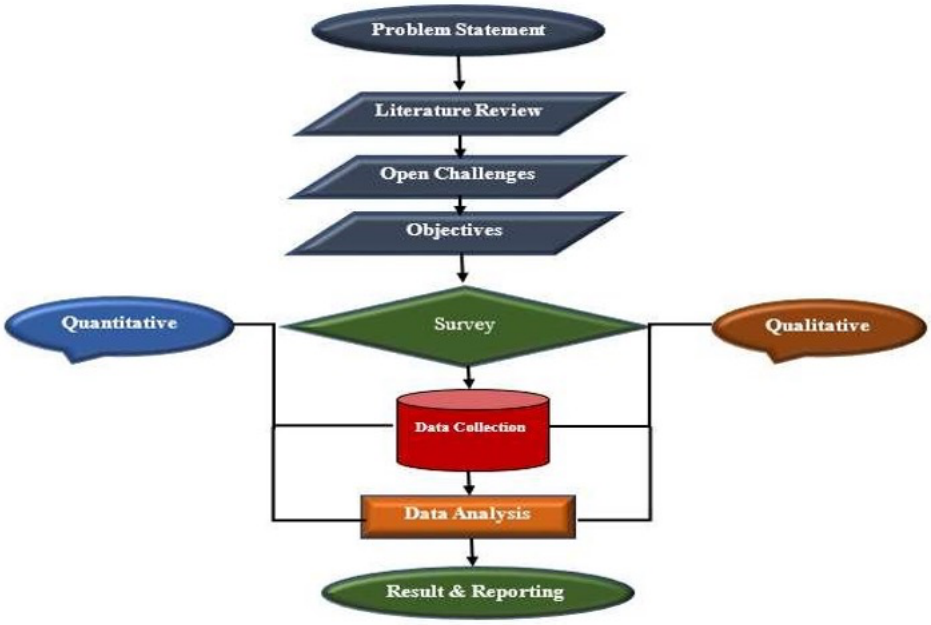

Figure 1. Research Methodology

Above figure (see Figure 1) shows the steps of research method utilised as data collection, data analysis, comparison, ethical consideration, expected results and reporting are discussed in detail as follows;

Data collection.

- **Quantitative data (survey).**

Quantitative data collected through student surveys were reliable due to the structured nature of the questions. Reliability was further enhanced by calculating mean scores and standard deviations for each question, providing a quantitative basis for evaluating PBL effectiveness.

- **Qualitative data (data analysis, student and teacher surveys):**

Qualitative data were collected using open-ended questions that were coded and categorized to identify recurring themes. Thematic analysis ensured the reliability of identifying patterns in the data. Qualitative data added depth to the quantitative findings and provided insight into skills development, challenges and recommendations. Combining quantitative and qualitative data, the research methodology aims to understand the research problem comprehensively.

Data analysis:

Quantitative analysis. Statistical methods, including mean scores and standard deviations, ensured the quantitative analysis's reliability. ANOVA analysis was performed to assess differences in responses between groups. Statistical analysis provided a reliable and objective means of evaluating the impact of the PBL method on the development of students' research skills and other variables, increasing the reliability of the study.

Qualitative analysis. Analytical reports of educational programs and Pedagogical measurement centers, reports on monitoring results were analyzed. In addition, the answers to the open questions of the questionnaires for students and teachers were analyzed.

Thematic analysis of qualitative responses included coding and categorization. This process was conducted systematically and rigorously to ensure reliability in identifying recurring themes. Qualitative analysis enabled an in- depth exploration of participants' perspectives, providing a rich context for understanding PBL's impact on students' development of design and inquiry skills and

challenges.

Comparison. Cross-comparison of qualitative responses from students and teachers increased confidence by identifying areas of agreement and divergence regarding the impact of the PBL method. By comparing the perspectives of the two groups, we aimed to triangulate the findings, increasing the overall reliability and validity of the study.

Ethical considerations. Maintaining participant confidentiality and following ethical guidelines throughout the research process was critical to ensuring the reliability and ethical integrity of the study. Ethical considerations, including informed consent and confidentiality, were integral to the reliability of the study. They protected the integrity of the data and the well-being of the participants.

Expected Results and Reporting.

The study results were presented openly after the summary, methodology, results, discussion and conclusion sections. This structure ensured the reliability and clarity of the research report. A clear and organized reporting structure increased the study's credibility by allowing readers to monitor the research process, methods, and results continuously.

4 FINDINGS AND RESULTS

The purpose of the survey is to determine the impact of PBL on the development of design and research skills of students in the History of Kazakhstan (Kazakhstan in the Modern World). We collected responses from students and teachers who had experience with PBL in teaching history. Quantitative Analysis: Effectiveness of PBL in increasing understanding: Students were asked to rate the effectiveness of PBL in increasing their understanding of political and socio-economic issues in society on a scale from 1 to 5. We calculated the average score to evaluate the overall efficiency. Average score: 4.3 (shows a positive impact on understanding various societal issues through analysis). Impact of PBL on Media and Technology Literacy: Students were asked whether PBL involved analyzing different sources. 82% of students answered "Yes". Students were asked whether PBL is related to using digital tools and technologies. 75% of students answered "Yes". Among those who answered "Yes" to the question, we assessed their confidence in critically evaluating various sources. 63% of these students feel "very confident". 25% consider it "reliable". 12% consider it "neutral". Among those who answered “Yes” to the question, we assessed whether digital tools improved their ability to find, evaluate, and use historical information. 79% of these students answered "Yes". 21% answered "unsure". Qualitative Analysis: The Impact of PBL (Open Answers): Common themes in students' open-ended responses included critical thinking, teamwork, and the ability to analyze various sources. Teachers' responses echoed these themes, highlighting how PBL enhanced students' analytical skills and collaborative abilities. Difficulties in implementing PBL (open answers): Both students and teachers highlighted challenges such as time constraints and the need for better teaching of PBL techniques. Comparison: Qualitative analysis showed that student and teacher perceptions are consistent, especially regarding skill development. Based on the data, PBL develops critical and creative thinking skills to understand various societal problems according to the Curriculum. It is also considered effective in improving media literacy and technological literacy. Both students and teachers like the PBL method. Difficulties include time constraints and the need for additional training. Data analysis and interpretation. Effectiveness of PBL in improving understanding of political and socio-economic issues in society: A mean rating of -4.2 indicates that students

perceive PBL to be significantly effective in deepening their understanding of social studies. Media Literacy Skills: 80% of students said that PBL activities in history class involve analyzing and interpreting different sources. This indicates a strong emphasis on media literacy within PBL. The average confidence level in assessing various sources was 3.8, indicating moderate to high student confidence. Information and technological literacy: 92% of students reported using digital tools during PBL projects, indicating the widespread integration of technology in history education. 79% of students believed digital tools improved their ability to find, evaluate and effectively use relevant information. Reflection on learning: Most students (140 out of 150) reported that working on PBL projects significantly improved their teamwork and communication skills. General experience: A high average rating of 4.5 indicates that students like learning general history using the PBL method. Recommendation for PBL in History Education: Most students (138 out of 150) recommend PBL to their colleagues as an effective method of teaching history. Based on the analysis of data from the survey, it is clear that students perceive PBL as an effective way to improve their understanding of political and socio-economic issues in society, develop media literacy skills, and integrate technology into history education. In addition, PBL is considered a very effective and recommended approach to learning the history of Kazakhstan. These findings suggest incorporating PBL into history teaching benefits students' learning experience.

Statistical and qualitative analysis.

In the course, the actual indicators of PBL-based research, solution presentation, group collaborative activity, and individual research skills will be determined in the external summative assessment of students. The results of the analysis of students' coursework were as follows. Coursework is moderated to maintain a uniform standard of scoring in accordance with the evaluation criteria specified in the test specification. Based on statistical data, the assessment of the coursework of 269 students of 50 teachers from 19 schools in 2023 on the subject "History of Kazakhstan" was moderated. According to the second component, term papers with a minimum of 1,000 and a maximum of 4,600 words were found. The structure of the coursework consisted of an introduction, main part, and conclusion, and it used literature and appendices according to the requirements. Compared to the 2021-2022 school year, it was seen that teachers had made progress in checking and evaluating coursework and checked coursework in accordance with the assessment requirements.

Table 2. The percentage of completion of tasks of the second component and the average score.

No of Sections/ Tasks	Description of Questions	Maximum Possible Score	Average-Overall Completion %	Percentage of task completion
Course work	The course work deals with issues and questions taught in 11th or 12th grade. Course work consists of 2500-3000 words. All assessment tasks (AO 1 - Knowledge and Understanding 25%, AO 2 - Analysis, Evaluation	40	33.3	83.3

	and Problem Solving 50%, AO 3 - Communication and Presentation 25%) are graded.			

Subjects of the course work, according to the curriculum of the 11th and 12th grades, selected more topics about the economy, social situation of Kazakhstan, the place of national culture in modern society, and the impact of globalization on social processes in Kazakhstan. The vast majority of students showed that they have mastered research skills well. There were enough works that comprehensively followed their thoughts and supported them with evidence. The ability to apply and synthesize the knowledge gained from several subjects such as economy, geography, global perspectives and project work according to the NIS-Programme of the subject "History of Kazakhstan (Kazakhstan in the Modern World)" is clearly visible. There are new ideas related to the topic, suggestions on ways to effectively solve modern problems. The number of studies on the economic, social, and cultural issues of local regions prevails. It can be considered that the ability to compare conceptual understanding between different subjects and subject groups is well developed. (Compare conceptual understanding across multiple subject groups and disciplines). However, the integration of knowledge, understanding and skills to produce solutions and products still needs improvement. (Combine knowledge, understanding and skills to create products or solutions). Students' use of critical thinking skills to interpret and analyze general information (use critical literacy skills to analyze and interpret media communications) is shown at a good level. However, the skills of creating references and references, notes and notes, and creating a specified bibliography in accordance with the contractual agreement (Create references and citations, use footnotes/endnotes and construct a bibliography according to recognized conventions) need to be developed.

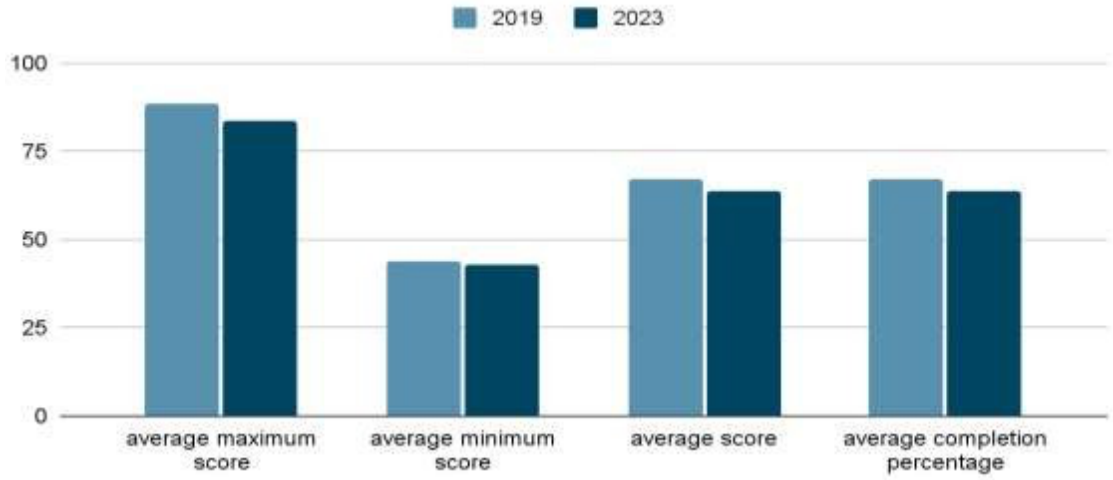

Figure 2. Overall results of 12th grade students network among all NIS schools on the subject "History of Kazakhstan"

Figure 2. shows the comparative indicators of the average score of students of the Intellectual School in 2019 and 2023 in the subject "History of Kazakhstan". A comparative analysis of the results of the summary assessment shows that the indicators have decreased somewhat in the current period. Thus, according to the results of 2023, the average score slightly decreased by 3.5

compared to 2019. The results of students whose language of instruction is Kazakh (L1) and language of instruction is Russian (L2) decreased by an average of 3% from the indicators of 2023. Pupils studying Kazakh have high results during the specified period. Such an indicator is connected with the fact that the exam on the subject "History of Kazakhstan" is held in the Kazakh language.

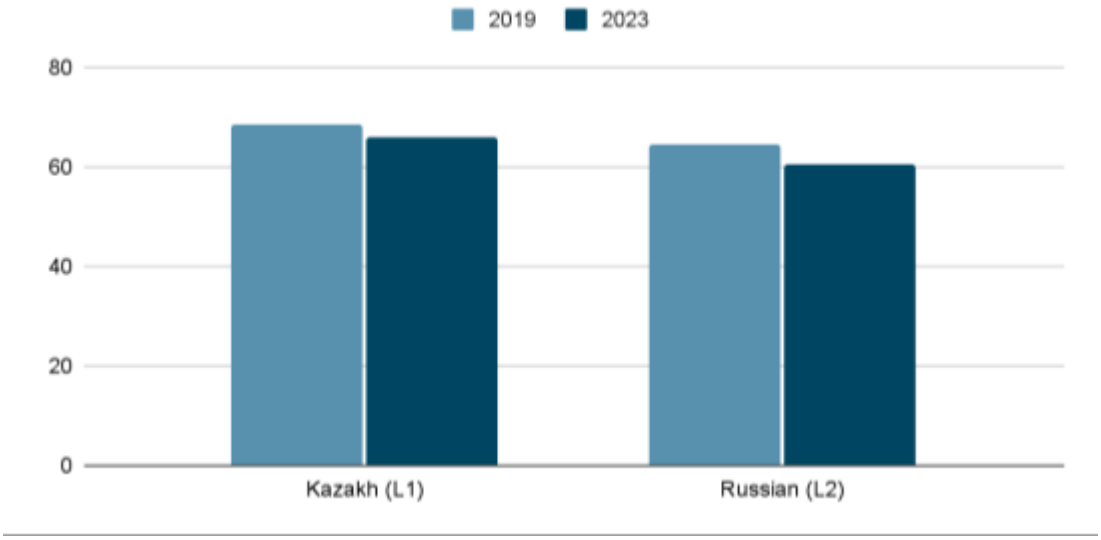

Figure 3. The average score of the 12th grade students on the subject "History of Kazakhstan" in the division of languages (for language training L1, L2).

Furthermore, the qualitative analysis of coursework content revealed notable outcomes regarding media literacy skills. For instance, proficiency in utilizing media, including digital social media and online networks, for the ethical collection, organization, analysis, and evaluation of information from diverse sources was observed at a commendable level. However, there remains a need for improvement in effectively communicating information and ideas to various audiences using a range of media formats. Additionally, discrepancies in the assessment of works of similar caliber among teachers within specific school groups were identified as a result of superficial internal moderation practices, leading to an imbalance in standardization. A comparative examination of external moderation results for coursework suggests a seemingly decreased average score in 2023 (Table 2.).

Table 3. The average score of 12th grade students on the components of the subject "History of Kazakhstan".

Component	Year	Max.score	Overall		Language of instruction	
			Average Score	%	Kazakh	Russian
2	2019	40	34,5	86,3	34,9	33,9
	2023	40	32,6	81,6	32,9	32,2

Table 4. Performance indicators of course work.

School No.	Plagiarism check results (% average, March 2023)	Results have been changed as a result of external moderation share of students	Children's mean change as a result of external moderation
1	1,5%	100,0%	3,1
2	5,6%	59,0%	2,0
3	0,0%	100%	2,5
4	7,5%	54,0%	1,3
5	2,7%	90,0%	2,6
6	0,0%	100,0%	2,6
7	5,0%	100,0%	2,6
8	2,6%	90,0%	2,1
9	1,5%	0,0%	0,0
10	0,0%	93,0%	1,8
11	5,3%	92,0	2,0
12	1,5%	98,0%	3,1
13	4,6%	0,0%	0,0
14	0,0%	0,0%	0,0
15	4,3%	44,0%	0,8
16	4,2%	100,0%	3,0
17	11,5%	100,0%	5,0
18	8,0%	90,0%	1,8
19	1,5%	71,0%	2,5
Overall	3,5%	72,6%	2,0

In general, due to the formative evaluation of the presence/absence of plagiarism conducted in February-March 2023, the percentage of uniqueness in the coursework performance by students of the Intellectual School did not exceed the allowed amount (40%). As shown in Table 2.5, as a result of external moderation, changes were made to the coursework of all students of a number of schools (5 schools). In the evaluation of the students' work, a small change was made (up to 5 points) due to differences in the scores of the majority of teachers (72.6% of students' scores were changed). The lowest score was 13, and the highest was 40. Compared to previous years, the scope of students' use of various Internet resources in other languages and data sources in the Kazakh language has expanded. Most of the students conducted in-depth research, used quantitative and qualitative methods, as well as SWOT, PEST, GAP, RRR, Foresight Analysis, interviews, online surveys, etc., and used research methods at a good level. However, communication between different sources of information, processing data, and reporting results skills require development. According to the principles of academic honesty, the uniqueness of coursework is more than 85 percent. Most of the students used reliable data sources. As evidence, in the research section of the majority of term papers, various diagrams, tables, and transcripts of answers are presented, which show the results of the survey and interview questions. However, during the analysis of the qualitative content of coursework, practice flexible thinking to provide opposing, contradictory

and complementary arguments (Practice flexible thinking - develop multiple opposing, contradictory and complementary arguments); consider ideas from a different perspective and point of view (Consider ideas from multiple perspectives); Critical thinking, creative thinking skills, and information literacy, such as processing data and reporting results, require improvement. During the review of the work (project), the coursework's supervisors must ensure that it fully meets the requirements of academic honesty (plagiarism). We call plagiarism a work in which the work of any volume is copied without reference and by paraphrasing the used text, even if some words are changed. In evaluating the student's coursework, the supervisor compares it with other completed coursework or online resources and gets real information about whether it has been copied/not copied. If up to 40% of the student's coursework is not used (copied), it will be sent for moderation. If the term paper is copied in excess of 37-39%, it is recommended to remove the score of the moderated work according to the following formula.

PM=M/100*(100-U) (1)
RM=M-PM (2)
where PM is the score for plagiarism, M is the score given during the initial teacher review, U is the uniqueness of the coursework, and RM is the teacher's score on the LRF form. For example: The teacher evaluated and assigned 38 points to the coursework. During the program check, 35% of the coursework text showed plagiarism, and 65% of the text was unique. Accordingly, there is plagiarism in the term paper. Points are calculated using the following method:
children for plagiarism = 38/100*(100-65) = 13 points; (3)
total = 38 – 13 = 25 points; (4)
In this case, 13 points will be deducted from the student for plagiarism. Finally, for the student's research work to be worthy of a high grade and for it to be evaluated honestly and fairly by the teacher, it is necessary to discuss the recommendations and the coursework writing guide, the test specification among the history teachers at the school, and conduct internal moderation effectively. It is recommended that the school administration revive the work of the teachers' association and create conditions for regular activities aimed at using the PBL method, mutual exchange of opinions, and enrichment of experience.

4 Conclusion

This study found the positive effect of using project-based learning (PBL) in history classes. The study's results, including quantitative and qualitative data, examined the positive effect of PBL on students' understanding of political and socio-economic issues in society and developing their research and critical and creative thinking skills. They can use the knowledge and skills they have acquired in the framework of design and research in any academic environment and everyday life. During the lesson, small studies based on PBL teach students to analyze the causes and consequences of actual societal problems and find ways to solve them. Therefore, to improve the quality of writing/implementation of coursework, we recommend systematic and regular use of PBL in the lessons of the History of Kazakhstan in grades 7-12. Skills Development: Qualitative data show the importance of PBL in developing critical thinking, problem-solving, research and collaboration skills. These skills are important in performing design-research work and are applicable to various aspects of students' academic and professional lives. Our research has led to the conclusion that the results of small research projects and coursework in the classroom

positively influence the development of students' information and media literacy, critical and creative thinking skills, and transfer skills. However, there is a need to emphasize the following ATL skills in future long-term projects and coursework.

Table 5. Skills and benefits

1. Information literacy skills	➢ Generate citations and references, employ footnotes/endnotes, and develop a bibliography in accordance with established standards and practices; ➢ Analyze data and present findings.
2. Media literacy skills	➢ Effectively convey information and ideas to diverse audiences through a range of media and formats. ➢ Ethically gather, organize, analyze, evaluate, and utilize media, digital social media, Internet systems, and information from diverse sources.
3. Critical thinking skills	➢ Make logical deductions and formulate reasonable conclusions and generalizations. ➢ Take into account viewpoints from various angles.
4. Creative thinking skills	➢ Examine the tested hypotheses and inquire, "What would happen if...?" Propose hypotheses, pose "what if" queries, and formulate hypotheses that can be tested. ➢ Engage in flexible thinking by cultivating diverse, contradictory, and complementary arguments.
5. Transferable skills	➢ Compare the conceptual comprehension among various subject groups and disciplines. ➢ Integrate knowledge, comprehension, and skills to develop products or solutions.

Training and support of teachers: it is necessary to improve the knowledge and skills of teachers according to internal moderation and standardization procedures. In addition, consider the necessary training and support mechanisms for teachers to effectively implement PBL. Interdisciplinary research projects: using PBL in conjunction with history, geography, economics, global perspectives and project work have the potential to improve students' research experience and potential. Academic Integrity: It is important that students adhere to the academic integrity policy while writing coursework. The teacher supervising the course work should check the content of the work for anti- plagiarism, compare it with Internet resources, and provide true information about whether it has been copied/not copied. In order to optimize the internal and external moderation procedure and maintain fairness, we recommend the following formula.

PM=M/100*(100-U) (5)

RM=M-PM (6)

In conclusion, this study suggests that positive changes in the development of historical knowledge and critical thinking skills mean that PBL has increased potential. Improving project-based research approaches has led us to conclude that we need to continue exploring innovative approaches to improve learning outcomes in history and related fields.

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