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MPHTH: 14.35.01.

<https://doi.org/10.51889/2959-5762.2023.80.4.004>

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## INQUIRY-BASED LEARNING IN FOREIGN LANGUAGE EDUCATION: EXPERIENCES AND MODERNITY

### Abstract

This article analyzes the experience of introducing Inquiry-based learning approach by Kazakhstani university English as a second foreign language teachers. Inquiry-based learning at different times had different content, ranging from the student-centered learning, aimed at solving specific problems and aimed at working in small groups, to more expanded content, including such concepts as the formation of students' critical, logical, divergent thinking. Inquiry-based learning today is such an approach to teaching, in which students show cognitive abilities in building strategies that solve problems of a pragmatic professional nature, relying on their life experience, knowledge about the problem, and on the available information.

The study employed qualitative research methods, namely: interviews and an open-ended survey, in which teachers of professional English took part, the purpose of which was to determine the frequency, effectiveness and problems of using this approach in professionally oriented foreign language classes.

**Keywords:** teachers' perceptions, IBL, ESFL, qualitative research design, thematic analysis.

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## ШЕТ ТІЛІНДЕ БІЛІМ БЕРУДЕГІ МӘСЕЛЕГЕ БАҒЫТТАЛҒАН ОҚЫТУ: ТӘЖІРИБЕ МЕН ҚАЗІРГІ ЗАМАН

*Аңдатпа*

Бұл мақалада қазақстандық ЖОО оқытушыларының ағылшын тілін екінші шетел тілі ретінде мәселеге бағытталған оқыту тәсілін енгізу тәжірибесі талданады. Мәселеге бағытталған оқыту әр уақытта әр түрлі мазмұнға ие болды. Ол белгілі бір проблемалық мәселелерді шешуге бағытталған және шағын топтарға арналған оқушыға бағытталған оқыту деген анықтамасынан бастап, кеңейтілген мазмұнға дейін, оның ішінде оқушылардың сыни, логикалық және дивергентті көзқарасын қалыптастыру сияқты ұғымдарды қамтиды. Қазіргі таңда проблемалық оқыту – бұл студенттер өздерінің өмірлік тәжірибесіне, мәселе туралы біліміне, қолда бар ақпаратқа сүйене отырып, прагматикалық кәсіби сипаттағы мәселелерді шешетін стратегияларды құруда танымдық қабілеттерін көрсететін оқыту тәсілі.

Зерттеу жұмыс сапалы зерттеу әдістерін қолдану негізінде құрылды, атап айтқанда: сұхбат және ашық сауалнама, оған кәсіби ағылшын тілі мұғалімдері қатысты, оның мақсаты тәсілді кәсіби-бағдарлы шет тілі сабақтарындағы қолдану жиілігін, тиімділігін және проблемаларын анықтау болды.

**Түйін сөздер:** оқытушылардың ой-пікірлері, мәселеге бағытталған оқыту, ағылшын екінші шетел тілі, сапалы зерттеу дизайны, тақырыптық талдау.

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## ПРОБЛЕМНО-ОРИЕНТИРОВАННОЕ ОБУЧЕНИЕ В ИНОЯЗЫЧНОМ ОБРАЗОВАНИИ: ОПЫТ И СОВРЕМЕННОСТЬ

*Аннотация*

В данной статье анализируется опыт внедрения проблемно-ориентированного обучения английского языка как второго иностранного казахстанскими преподавателями вузов. Проблемное обучение в разные времена имело различное содержание, начиная с определения как студенто-ориентированное обучение, направленное на решение конкретных проблемных задач и нацеленное на работу в малых группах, до более расширенного контента, включающего в себя такие концепты как формирование у учащихся критического, логического, дивергентного мышления. Проблемное обучение сегодня – это такой подход в обучении, при котором, учащиеся, опираясь на свой жизненный опыт, на знания о проблеме, на имеющуюся информацию, проявляют когнитивные способности в построении стратегий, при которых решаются задачи прагма-профессионального характера.

Исследование было построено на основе использования качественных методов исследования, а именно: интервью и опрос открытого типа, в которых принимали участие преподаватели профессионального английского языка, целью которого было определить частотность, эффективность и проблемы использования данного подхода на занятиях по профессионально-ориентированному иностранному языку.

**Ключевые слова:** восприятия преподавателей, проблемно-ориентированное обучение, исследование качественного характера, тематический анализ.

**Basic provisions.** A study conducted by Johnson and Golombek investigated the effects of inquiry-based learning on ESL students' language proficiency and engagement. The findings revealed that IBL significantly enhanced students' language skills, with improvements observed in vocabulary acquisition,

speaking fluency, and reading comprehension [2]. The researchers attributed these gains to the active involvement and meaningful language use inherent in inquiry-based tasks. Furthermore, studies by Smith and Li and Zhu investigated the impact of IBL on ESL students' motivation, autonomy and their critical thinking skills [3, 4]. The study revealed that the approach fostered a sense of ownership over the learning process, empowering students to take responsibility for their language development. Students demonstrated increased motivation, engagement and a positive attitude toward learning English having completed tasks that required independent research and problem-solving. The students also developed higher-order thinking abilities, such as analyzing, evaluating, and synthesizing information.

Research by Chang and Lo focused on the benefits of inquiry-based learning for ESL students' intercultural competence. The study revealed that inquiry-based tasks, which involved exploring diverse perspectives, analyzing cultural artifacts, and engaging in cross-cultural communication, enhanced students' understanding of different cultures and improved their ability to navigate intercultural interactions in English [5]. Thus, application of IBL in the ESL classroom aligns with the Communicative Language Teaching approach advocated by scholars such as Celce-Murcia and Larsen-Freeman which emphasized the integration of language skills within authentic contexts and the development of communicative competence [6, 7].

Margus Pedaste et al. state that majority of the researchers claim that inquiry is not linear and there might be different connections between the phases (cycles) depending on the context. Based on the rigorous systematic review the authors propose the inquiry cycle [8]. The inquiry cycle consists of 5 general phases: Orientation, Conceptualization, Investigation, Conclusion, and Discussion. And these in turn consist of the following subphases, i.e. 'the Conceptualization phase is divided into two (alternative) sub-phases, Questioning and Hypothesis Generation; the Investigation phase is divided into three sub-phases, Exploration or Experimentation leading to Data Interpretation; and the Discussion phase is divided into two sub-phases, Reflection and Communication' [8]. In more detail, during the Orientation phase the students are expected to observe a phenomenon to get acquainted with it and further review literature and existing theories to identify the questions related to the field of the phenomenon under consideration. Orientation phase is followed by Conceptualization phase which consists of the two subphases: Questioning, at which the students are supposed to ask specific scientific questions, and Hypothesis Generation, at which they identify the hypothesis for their investigation process. The following phase is Investigation which consists of the Exploration subphase at which the students discover new ideas with no hypothesis in their minds; and Experimentation subphase at which they are expected to collect evidence regarding their hypothesis. And both of the subphases require Planning. The following intermediary subphase at this stage is Data Collection followed by Data Interpretation subphase. Students are expected to revise Experimentation subphase here or require more Exploration. The next process is Data Analysis at which the students analyze the results they obtained. The following process is Discussion or Conclusion phase; here the authors discuss the fact that these two might overlap. However, there are also chances that these might be two separate subphases, as in the Conclusion the students are supposed to draw the concluding ideas on their findings and in the Discussion subphase they are expected to do some reflection. Discussion can be a 'future-oriented' subphase, or it may also be the subphase during which the students reflect on their inquiries.

When referring to the cycle of IBL, Banchi and Bell outline the 4 levels of inquiry: confirmation, structured, guided and open. During the confirmation level, the teacher suggests the students to find the solutions to the certain questions, solutions of which are already known [9]. The level aims at introducing the students with the procedures of data collection process. In the process of structured inquiry, the teacher provides step-by-step instructions for helping to enable the students to discover their own answers to the questions. In guided inquiry, the teacher chooses the questions and the students take more responsibility for establishing the direction and method of their research. The teacher here guides the process by providing feedback or posing follow-up questions to help students navigate in the right direction. In an open inquiry the students take the lead and establish their own question and the method and the teacher's role is the supportive one. This level involves higher order thinking skills that are essential in inquiry. The teachers as well might use a combination of the two levels and this is referred to as coupled inquiry. The level of inquiry can be customized according to the students' needs [9].

One of the approaches that is similar to IBL by its essence is scaffolding. Scaffolding is a process in which teacher's support to the students diminishes as they get more confident and proficient. Scaffolding frames IBL as a continuum in terms of teacher's guidance and student independence. Spronken-Smith and Walker [10]. propose that the three levels of inquiry can be scaffolded: open, guided and structured. The

graphical representation of the scaffolded inquiry-based learning can be found in the Figure 2 below developed by Aparicio-Ting.

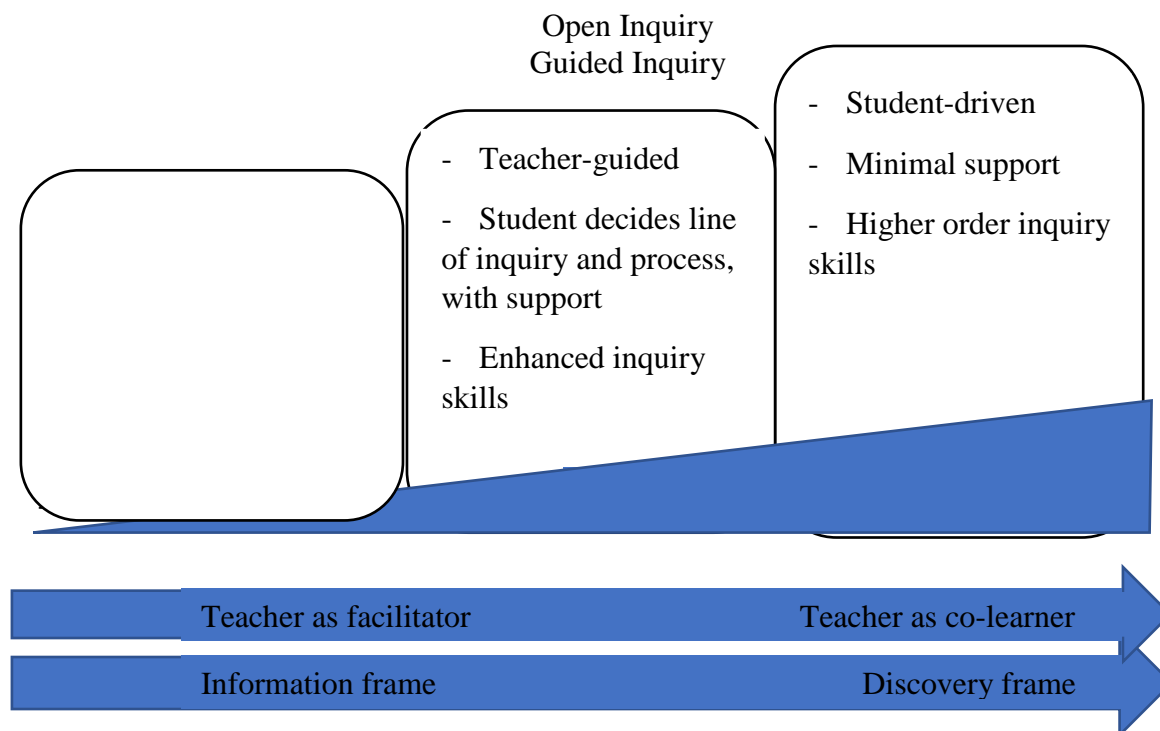


Figure 1 – Staged Approach to IBL using scaffolding by F. Aparicio-Ting et al. [10]

As it can be seen from the Figure 1, the staged approach when used in IBL using scaffolding ensures teacher’s leadership and limited decision making of the students in the structured inquiry; further, moderate guidance of a teacher and student-driven inquiry on the guided inquiry. Finally, in an open inquiry there is minimal support of a teacher, and at this stage the students are expected to become more independent and ready for self-directed learning.

To investigate the teachers’ perceptions of IBL in the ESL classroom, a qualitative data collection method was used. The data was collected via the interviews and an open-ended survey. The ESL teachers who had experience with implementing IBL in their classrooms were selected based on a purposive sampling strategy at one of Kazakhstani higher educational institutions. The selection criteria included factors such as teaching experience, familiarity with inquiry-based approaches, and willingness to participate in the study. To explore the teachers’ perceptions, experiences and observations related to IBL, semi-structured interviews were conducted. The questions were designed to cover various aspects, such as benefits, challenges, instructional strategies, student engagement, assessment practices, and overall impressions of using inquiry-based approach in the ESL context. The interviews with 5 teachers were conducted in a face-to-face and online format, based on the participants’ preferences and availability. Prior to the interviews, informed consent was obtained from all the participants, assuring their confidentiality and voluntary participation. The interviews were audio- and video-recorded with participants’ consent to ensure accurate capturing of their responses. The data were then subjected to thematic analysis to identify recurring themes, patterns, and insights related to teachers’ perceptions of inquiry-based learning.

In addition to interviews, an open-ended online survey was administered to a broader group of ESL teachers to gather their perceptions of IBL. The questions of the survey were designed to elicit the detailed responses regarding the teachers’ experiences, beliefs, attitudes and observations related to IBL. The open-ended format allowed 20 ESL teachers to provide nuanced and detailed responses, enabling a comprehensive understanding of their perceptions. The survey questions covered topics such as the benefits, challenges, implementation strategies, instructional support, and professional development

**Introduction.** One of the effective ways to involve the students into the learning process is to encourage them to ask the questions which will be interesting for them personally; and inquiry-based learning (IBL) is one of effective approaches to boost student engagement. IBL is student-centered approach that encourages

active student engagement, development of students' critical thinking skills and deeper comprehension of the information under consideration. The issue of IBL application and especially the opinions of the educators are of great importance as in the process of effective integration of innovative pedagogies and teaching methods in language settings teachers are at the forefront. The current paper is dedicated to an overview of the inquiry-based learning approach in language education and investigation of the current situation and its application in the EFL classes at one of the top Kazakhstani universities.

Inquiry-based learning has gained recognition as an effective pedagogical approach in various educational contexts. Compared to traditional language teaching methods, IBL equips students with the cognitive and communication skills. Extensive research has explored its implementation and impact, both in general education and subject-specific disciplines. While inquiry-based learning initially found its roots in science and mathematics education, recent studies have also examined its application in English as a Second Language (ESL) classrooms.

Inquiry-based learning (IBL) offers ESL students opportunities to explore real-world topics, investigate linguistic patterns and structures, and engage in meaningful language tasks. Through these experiences, students actively construct knowledge, develop critical thinking abilities, and apply language skills in contextually relevant situations. Such an approach aligns with the goals of ESL education, which aim to equip students with the necessary language skills and competencies for effective communication and intercultural understanding.

**Materials and Methods.** Prior to discussion of the cycle there is a need to consider the history of the approach. Inquiry has its roots in the philosophies of Socrates and Confucius and IBL approach is based on constructivist ideas and teachings of Jean Piaget, John Dewey, Lev Vygotsky and others [1]. The role of the teacher here is the one of a facilitator rather than the provider of the information. The teacher has to plan carefully the learning units and assist the learners in asking the right questions and, as a result, enable the students with the opportunity to become responsible of their own learning. As a pedagogical method IBL developed in the 1960's during the period of discovery learning, of which inquiry is an essential element. John Dewey's 'experiential' learning ideas propose that an experiment helps the discovery of the way the things are 'connected'; thus the students are engaged in the real life and, thus, in the learning process [1]. Lev Vygotsky claimed that 'human inquiry was embedded in culture, which meant that the learning process was a part of socialization. While Jean Piaget supported the idea that a child constructs the knowledge through individual experiences and integrates the new knowledge to what has been learnt previously.

**Results.** The collected data from the interviews and the open-ended survey provided valuable insights into teachers' perceptions of IBL and in the course of the thematic analysis several key themes emerging from the teachers' responses were identified.

#### *Theme 1: Positive Attitude Toward Learning*

Most of the teachers reported positive view of IBL, they recognized its potential in increasing student engagement, critical thinking and development of language skills. Teachers emphasized the value of IBL assignments in encouraging active learning and promoting a deeper understanding of the related concepts. The teachers also believed that IBL allowed the students to take responsibility for their own learning and fostered a more student-centered and interactive classroom environment.

#### *Theme 2: Benefits of IBL*

A notable advantage which majority of the teachers reported was the promotion of higher order thinking skills. They observed that inquiry-based assignments provided the students with the opportunities to participate in problem solving, analysis and synthesis and this contributed to their language development and application of the skills in practice. Teachers also highlighted that IBL promoted research skills, information literacy, and self-learning skills as students conducted research, collected information, and summarized their findings.

#### *Theme 3: IBL Implementation Challenges*

While the teachers generally expressed a positive attitude, they also mentioned the challenges associated with implementation of IBL. One of the issues frequently acknowledged was the need for additional planning and training. Teachers have stressed the importance of developing inquiry-based assignments to meet the language learning goals and the students' needs and this requires careful consideration and resource preparation. They also identified the need for ongoing professional development and support implement IBL effectively. One more issue which was challenging for the teachers was to find a balance between facilitating inquiries and ensuring results in language learning.

#### *Theme 4: Teacher Role and Support Importance*

The role of the teacher as facilitator was emphasized. The teachers believed that it is of utmost importance to direct and develop students' learning experiences and they should be provided with appropriate support and feedback. Teachers also have stated that collaborative planning and sharing the best practices among peers is necessary to improve their teaching skills in implementing IBL. They also stressed the importance of the support from the administrative bodies and access to appropriate resources and materials to realize effective IBL implementation.

The topics and results provide a comprehensive insight into the perception of IBL by teachers in the ESL classroom. They point out a generally positive attitude towards this pedagogical approach and highlight the benefits it offers in terms of student participation, critical thinking and language development. The issues identified highlight the need for ongoing professional development and support to meet the specific needs of teachers to implement IBL.

**Discussion.** Information obtained from the teacher perceptions provides valuable information for professional development programs, curriculum development and educational methods that contribute to the effective implementation of IBL in the ESL classroom. First, most teachers have a positive view of IBL. They saw it as an effective approach that promoted student engagement, critical thinking and the application of language skills in authentic contexts. Teachers reported that IBL allowed for a more student-centered and interactive classroom environment, allowing students to take responsibility for their own learning and develop the necessary skills beyond language proficiency.

Secondly, teachers identified different benefits of IBL. They stressed that it contributes the development of higher-order thinking skills such as problem-solving, analysis and synthesis, which are critical for the development of language skills and application of them in real life. Teachers also noted that inquiry-based assignments gave students the opportunity to develop research and information literacy skills as they conduct research and study different sources of information. In addition, teachers emphasized that IBL has a positive impact on student motivation, self-confidence and enjoyment of the learning process.

The most common challenges related to effective IBL implementation was the need for additional time to plan and prepare, the need for appropriate resources and materials, and the need for ongoing support and professional development. Finding a balance between facilitating research and ensuring that language learning goals are met was also mentioned.

**Conclusion.** Thematic analysis of teacher perceptions showed a positive attitude towards IBL in the ESL classroom. The findings suggest that teachers have recognized the potential of IBL in improving language acquisition, critical thinking and student engagement. The issues identified provide valuable insights for the administration and policy makers so that the necessary support and materials could be provided to implement IBL successfully.

The current study offers a comprehensive understanding of the benefits and challenges associated with IBL in the ESL classroom. The findings complement existing literature on the issue and provide valuable insights for the educators, curriculum developers, and policymakers seeking to promote effective language learning through IBL.

The results of the study show that IBL is an effective pedagogical approach in the ESL classroom. The integration of practical, interactive and student-centered inquiry tasks had a positive impact on language proficiency, engagement, and student perception. It is important, however, to recognize that the results of this study are based on the views and experiences of a specific group of teachers in a specific context. Generalizability for other settings might be limited. Further research may examine the teachers' perceptions in a different context taking into account familiarity with IBL, years of experience; and also student perception and the effect of IBL in ESL classroom can be investigated.

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**IRSTI 14.25.07.**

<https://doi.org/10.51889/2959-5762.2023.80.4.005>

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## **AUGMENTED AND VIRTUAL REALITY TECHNOLOGY IN EDUCATION: A NEW DIMENSION OF LEARNING**

### *Abstract*

Technologies of augmented and virtual reality are investigated on the example of their use in education in education. The subject of the research is the study of known and previously developed methods of teaching with the help of AR and VR, advantages and disadvantages in terms of their use for educational purposes. The purpose of the work is to conduct an analytical literature review and analyze the known methods of using augmented and virtual reality, to present the most promising solutions in various tasks of science. The research materials used were the search method of scientific and popular scientific works in licensed Kazakhstan and foreign databases. The methods of teaching with the use of augmented reality and virtual reality technologies are presented and virtual reality. Modern ways of teaching schoolchildren and students by means of augmented and virtual reality technologies are considered. Many of today's "innovative" manuals lack visual enhancements or interactive features that make learning for students a tedious, boring, and tedious endeavor. Interactive features, making it seem tedious, boring and tedious for students to learn. If the instructor is not able to make the material interesting, it becomes very difficult for students to concentrate on learning. To concentrate on learning: they do not absorb new information well or do not want to learn at all.

Virtual reality technology allows to make educational materials interesting and understandable for students, as well as to achieve full immersion of students. Students and full immersion in learning is achieved by reproducing three-dimensional virtual space virtual space. Also, much depends on the perception of the person: some people find it easier to perceive the text in the printed text, while others find it easier to perceive the media format. For them, VR-technology will make the learning process exciting and interesting.

**Keywords:** augmented reality, virtual reality, educational assessment, immersive learning, assessment methods, virtual tours, simulations, critical thinking.