

The Effect of Inquiry-Based Learning on Developing EFL University Students' Critical Thinking and Language Proficiency

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أثر التعلم القائم على الاستقصاء في تنمية التفكير الناقد والكفاءة اللغوية لدى طلبة الجامعات دراسي

اللغة الإنجليزية لغة أجنبية

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المستخلص

تبحث هذه الدراسة في تأثير التعلم القائم على الاستقصاء على تنمية مهارات التفكير النقدي وإتقان اللغة الإنجليزية لدى الطلاب متعلمي اللغة الإنجليزية كلغة أجنبية في الجامعة. تم تطبيق تصميم بحث شبه تجريبي يشمل مجموعتين: مجموعة تجريبية تم تدريسها من خلال التعلم القائم على الاستقصاء ومجموعة ضابطة تم تدريسها باستخدام طريقة التدريس التقليدية. تألفت العينة من ٦٤ طالباً في السنة الثانية من طلاب اللغة الإنجليزية كلغة أجنبية من كلية اللغات والعلوم الإنسانية بجامعة كرميان وكلية العلوم الإنسانية بجامعة تكريت. تم جمع البيانات باستخدام أداتين: اختبار التفكير النقدي واختبار إتقان اللغة الإنجليزية، والذان تم تطبيقهما كاختبارات قبلية وبعدية على كلتا المجموعتين لم تكشف النتائج عن أي فروق ذات دلالة إحصائية بين المجموعتين في الاختبار القبلي، مما يشير إلى أن المشاركين كانوا يتمتعون بمستويات مماثلة من التفكير النقدي والكفاءة اللغوية في بداية الدراسة. ومع ذلك، أظهرت نتائج الاختبار البعدي فروقاً ذات دلالة إحصائية لصالح المجموعة التجريبية. تشير هذه النتائج إلى أن التعلم القائم على الاستقصاء كان له تأثير إيجابي وهام على تحسين قدرات الطلاب على التفكير النقدي بالإضافة إلى كفاءتهم في اللغة الإنجليزية الكلمات المفتاحية: التعلم القائم على الاستقصاء، التفكير الناقد، الكفاءة اللغوية في اللغة الإنجليزية طلبة اللغة الإنجليزية كلغة أجنبية، التعليم العالي، التصميم شبه التجريبي.

Abstract

This study investigates the effect of Inquiry-Based Learning (IBL) on developing critical thinking skills and English language proficiency among EFL university students. A quasi-experimental research design was applied involving two groups: an experimental group taught through Inquiry-Based Learning and a control group taught using conventional instructional method. The sample consisted of 64 second year EFL students from the College of Languages and Human Sciences at Garmian University and college of humanities at Tikrit university. Data were collected using two instruments a Critical Thinking Test and an English Language Proficiency Test, which were administered as pre-tests and post-tests to both groups. The results revealed no statistically significant differences between the two groups in the pre-test, indicating that the participants had similar levels of critical

thinking and language proficiency at the beginning of the study. However, the post-test results showed statistically significant differences in favor of the experimental group. These findings suggest that Inquiry-Based Learning had a positive and significant effect on improving students' critical thinking abilities as well as their English language proficiency.

١. Introduction

1.1 Background of the Study

In recent decades, educational systems worldwide have undergone significant transformations in response to rapid technological, social, and economic changes. These transformations have led to the emergence of innovative pedagogical approaches that emphasize student-centered learning, critical thinking, and active engagement. In the field of English as a Foreign Language (EFL), traditional teacher-centered instruction has often focused on grammar memorization and rote learning, which may limit students' communicative competence and higher-order thinking skills. Inquiry-Based Learning (IBL) has emerged as a prominent instructional approach aligned with constructivist learning theory. It shifts the focus from passive reception of information to active exploration, questioning, and knowledge construction. In an EFL context, IBL encourages students to investigate authentic language problems, engage in meaningful communication, analyze linguistic patterns, and collaboratively construct knowledge. Such engagement is essential for developing both language proficiency and critical thinking skills. The growing demand for quality education and sustainable development further highlights the need for integrating modern teaching trends into EFL classrooms. Inquiry-Based Learning not only enhances cognitive development but also fosters learner autonomy, motivation, and deeper understanding. Therefore, examining the effectiveness of IBL in improving EFL students' academic and cognitive outcomes is both timely and necessary.

1.2 Statement of the Problem

Despite global advancements in language pedagogy, many EFL classrooms continue to rely on traditional lecture-based instruction. This approach often emphasizes teacher explanation and textbook exercises, leaving limited space for student inquiry, discussion, and exploration. As a result, students may demonstrate adequate knowledge of grammar rules but struggle with critical thinking, problem-solving, and authentic language use. There is a need to investigate alternative instructional strategies that can enhance both critical thinking and language proficiency. This study attempts to address this gap by examining the effect of Inquiry-Based Learning on developing EFL university students' critical thinking skills and English language proficiency.

1.3 Objectives of the Study

1. To examine the effect of Inquiry-Based Learning on developing EFL students' critical thinking skills.
2. To investigate the impact of Inquiry-Based Learning on students' English language proficiency.

1.4 Research Questions

1. Does Inquiry-Based Learning significantly improve EFL students' critical thinking skills?
2. Does Inquiry-Based Learning significantly enhance EFL students' English language proficiency?
3. Are there statistically significant differences between the experimental and control groups in post-test results?

1.5 Research Hypotheses

1. There are no statistically significant differences between the experimental and control groups in the post-test of critical thinking skills.
2. There are no statistically significant differences between the experimental and control groups in the post-test of English language proficiency.

1.6 Significance of the Study

This study is significant pedagogically, theoretically, and practically. It contributes to improving instructional practices in EFL classrooms by introducing Inquiry-Based Learning as an effective strategy. It supports constructivist and communicative theories of language learning and provides teacher training programs with evidence-based strategies aligned with modern teaching trends and sustainable educational development.

1.7 Scope and Delimitations of the Study

The study is limited to second-year EFL university students (Garmian and Tikrit), conducted over one academic semester 2025-2026, focusing on two dependent variables: critical thinking skills and English language proficiency, using a quasi-experimental design.

1.8 Operational Definitions

Inquiry-Based

Learning

(IBL):

An instructional approach in which students actively construct knowledge through questioning, investigation,

discussion, and reflection rather than receiving information passively (Bell, Smetana, & Binns, 2005; Prince & Felder, 2006).

Critical Thinking Skills:
Students' ability to analyze, evaluate, interpret, and synthesize information, measured through a standardized critical thinking test (Facione, 1990; Ennis, 2011).

English Language Proficiency:
Students' level of competence in reading, writing, vocabulary, and grammar as measured through an achievement or proficiency test (Bachman & Palmer, 1996; Richards & Schmidt, 2010).

2. Literature Review

2.1 Inquiry-Based Learning

Inquiry-Based Learning (IBL) is a student-centered instructional approach in which learners actively construct knowledge through questioning, investigating, discussing, and reflecting rather than passively receiving information. Students are encouraged to explore topics independently and collaboratively to develop their understanding (Prince & Felder, 2006).

Bell, Smetana, and Binns (2005) argue that IBL encourages students to ask questions, gather evidence, and communicate findings, while teachers act as facilitators rather than knowledge transmitters. IBL has gained importance in modern education because it promotes independent learning, problem-solving, and collaboration (Hmelo-Silver, Duncan, & Chinn, 2007).

2.2 Types of Inquiry-Based Learning

Different forms of inquiry vary according to the level of teacher guidance:

- **Structured Inquiry:** Students follow a teacher-provided research question and procedure to investigate a topic and reach conclusions (Bell et al., 2005).
- **Guided Inquiry:** Students design their own investigation methods while the teacher provides the research question and general guidance (Prince & Felder, 2006).
- **Open Inquiry:** Students formulate research questions, design procedures, and present results independently, offering the highest level of autonomy (Hmelo-Silver et al., 2007).

These approaches help students develop higher-order thinking skills through active participation and problem-solving.

2.3 Critical Thinking

Critical thinking is a crucial skill in higher education, involving the ability to analyze, evaluate, interpret, and synthesize information. Facione (1990) defines critical thinking as a set of cognitive skills including interpretation, analysis, evaluation, inference, explanation, and self-regulation.

Ennis (2011) describes critical thinking as reasonable and reflective thinking focused on deciding what to believe or do, involving questioning assumptions and assessing evidence. In language learning, critical thinking helps students engage deeply with texts and express ideas clearly in speaking and writing (Paul & Elder, 2008).

2.4 Inquiry-Based Learning and Critical Thinking

IBL fosters critical thinking by requiring students to actively investigate problems, analyze data, and form reasoned conclusions. Research indicates that IBL promotes higher-order thinking and enhances students' abilities to interpret and evaluate information (Hmelo-Silver et al., 2007). Group discussions, problem-solving, and reflection during inquiry activities provide students with practical opportunities to develop reasoning skills (Prince & Felder, 2006).

2.5 English Language Proficiency

English language proficiency involves the ability to use English effectively in reading, writing, listening, and speaking. Bachman and Palmer (1996) define proficiency as a combination of linguistic knowledge and communicative competence. Richards and Schmidt (2010) describe it as the ability to perform language tasks successfully in real-life situations.

Improving language proficiency is a central goal of EFL education, requiring exposure to authentic communication and opportunities to use the language meaningfully.

2.6 Inquiry-Based Learning and Language Development

IBL supports language development by providing meaningful opportunities to read, discuss, and present information in English. These activities foster vocabulary growth, writing and speaking skills, and confidence in using English (Prince & Felder, 2006). Integrating IBL with language instruction allows learners to develop both cognitive and linguistic skills simultaneously (Hmelo-Silver et al., 2007).

2.7 Previous Studies
Many studies report the effectiveness of IBL on academic performance and cognitive development. Prince and Felder (2006) found that inquiry-based methods significantly improved students' conceptual understanding and problem-solving skills. Hmelo-Silver et al. (2007) observed that inquiry-based environments promote deep learning and enhance critical thinking.

In language education, IBL has been shown to improve EFL learners' language proficiency and motivation (Richards & Schmidt, 2010). These findings suggest that IBL can simultaneously enhance critical thinking and language skills.

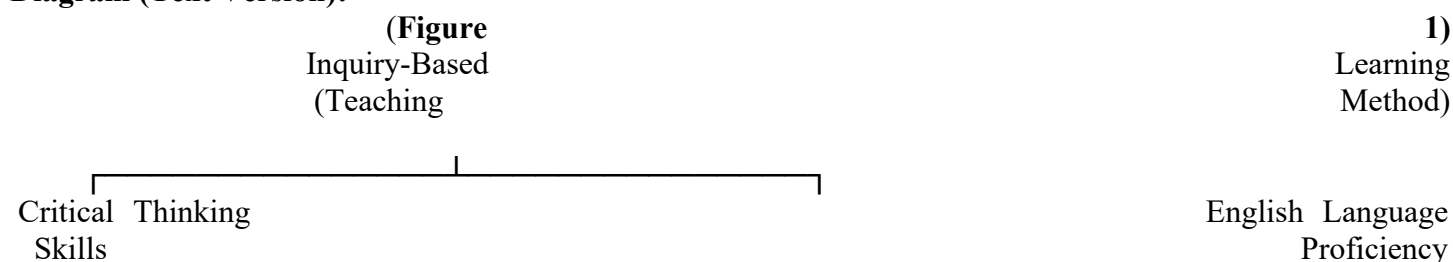
2.8 Theoretical Framework
The study is grounded in **constructivist learning theory**, which emphasizes that learners actively construct knowledge through experiences and social interactions (Piaget, 1972; Vygotsky, 1978). IBL aligns with constructivist principles by encouraging students to ask questions, investigate, collaborate, and reflect. Critical thinking development is supported by cognitive learning theory, highlighting the importance of reasoning, problem-solving, and metacognition in learning (Bloom, 1956). Thus, integrating IBL in EFL instruction provides opportunities for simultaneous cognitive and linguistic development.

2.9 Conceptual Framework
The conceptual framework illustrates the relationship between IBL, critical thinking, and English language proficiency:

Independent Variable: Inquiry-Based Learning (IBL)

Dependent Variables: Critical Thinking Skills, English Language Proficiency

Diagram (Text Version):



2.10 Gaps in the Literature

Although prior research demonstrates the benefits of IBL, several gaps remain:

1. Few studies focus on EFL contexts, as most research is in science or general education (Bell et al., 2005; Prince & Felder, 2006).

2. Limited research examines the simultaneous effect of IBL on both critical thinking and language proficiency.

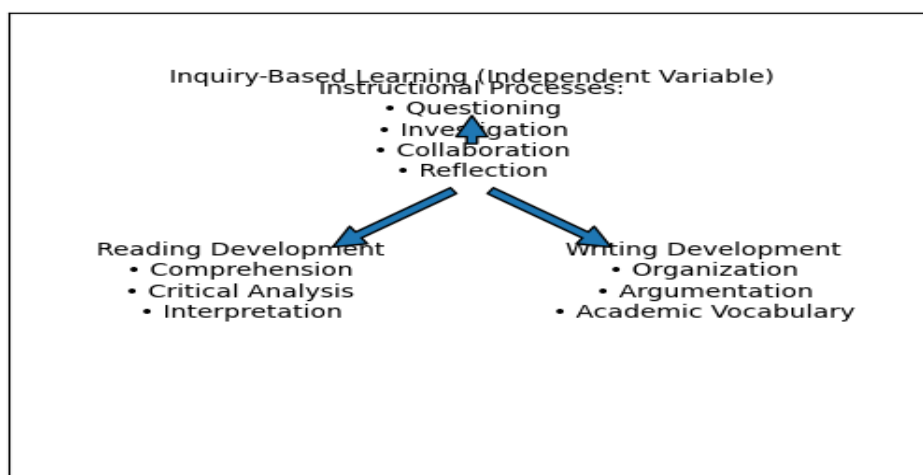
3. Many studies are qualitative or descriptive; quasi-experimental designs with pre- and post-tests are scarce.

This study addresses these gaps by using a quasi-experimental design to examine the effects of IBL on both critical thinking and English language proficiency among EFL university students.

2.11 Inquiry-Based Learning in EFL Reading and Writing

Reading in EFL involves more than decoding vocabulary; it requires interpretation, analysis, and evaluation. IBL enhances reading comprehension by encouraging students to ask questions before, during, and after reading. Research indicates that inquiry-oriented reading instruction improves comprehension and critical engagement with texts (Guthrie et al., 2007). Through guided inquiry, students identify main ideas, analyze arguments, evaluate evidence, and synthesize information. This process promotes deeper processing and retention of textual information. As far as writing is a complex cognitive activity that requires idea generation, organization, drafting, and revision. IBL supports writing development by engaging students in research-based tasks, collaborative discussions, and reflective thinking. According to Graham and Perin (2007), instructional approaches that integrate inquiry and strategy-based writing significantly improve writing quality. In inquiry-based classrooms, students explore topics, gather information, formulate arguments, and present written findings. Such activities foster coherence, critical reasoning, and academic vocabulary development. Inquiry-Based Learning (independent variable) influences students' reading comprehension and writing performance (dependent variables) through active engagement, questioning strategies, collaborative interaction, and reflective thinking processes as shown in figure 2

Figure 2 Conceptual Framework of the Study



3. Research Methodology

3.1 Introduction

This section describes the methodology used to investigate the effect of Inquiry-Based Learning on developing EFL university students' critical thinking skills and English language proficiency. It explains the research design, participants, instruments, procedures of the study, and the statistical methods used to analyze the collected data.

3.2 Research Design

The present study employed a **quasi-experimental research design** using two groups: an experimental group and a control group. Both groups were given a pre-test and a post-test to measure their levels of critical thinking and English language proficiency.

The experimental group was taught using Inquiry-Based Learning strategies, while the control group received instruction through traditional teaching methods. After the instructional period, a post-test was administered to both groups to examine the effect of the teaching method on students' performance.

This design helped determine whether Inquiry-Based Learning had a significant impact on students' critical thinking skills and language proficiency.

3.3 Participants of the Study

The participants of the study consisted of **60 EFL university students** from Garmian university whereas the pilot study is represented by the students of Tikrit university who enrolled in an English language course. The students were divided into two groups:

- **Experimental group:** 30 students who were taught using Inquiry-Based Learning.
- **Control group:** 30 students who were taught using traditional teaching methods.

The participants were selected from the same academic level to ensure that they had similar educational backgrounds and language proficiency levels.

3.4 Instruments of the Study

Two main instruments were used to collect data for the study.

3.4.1 Critical Thinking Test

A critical thinking test was designed to measure students' abilities in skills such as analysis, evaluation, inference, and reasoning. The test consisted of multiple-choice and short-answer questions related to reading passages and problem-solving tasks.

The test was administered as both a pre-test and a post-test to measure improvement in students' critical thinking skills.

3.4.2 English Language Proficiency Test

An English language proficiency test was used to evaluate students' abilities in several language skills, including reading comprehension, vocabulary, grammar, and writing.

This test was also administered before and after the instructional period to determine whether the teaching method affected students' language development.

3.5 Validity and Reliability of the Instruments

3.5.1 Validity

To ensure the validity of the instruments, the tests were reviewed by a group of experts in English language teaching and educational measurement. Their feedback was used to revise and improve the test items to ensure that they accurately measured critical thinking skills and language proficiency.

3.5.2 Reliability

The reliability of the instruments was established using a pilot study conducted with a small group of students similar to the participants of the main study. Reliability was calculated using Cronbach's Alpha coefficient. The results indicated that the instruments had acceptable reliability levels where Cronbach's Alpha calculation is 0.80, which made them suitable for use in this research.

3.6 Procedures of the Study

The study was conducted according to the following steps:

1. Selection of Participants

Sixty EFL students were selected and divided into experimental and control groups.

2. Pre-Test Administration

Both groups completed the critical thinking and language proficiency pre-tests to determine their initial levels.

3. Implementation of the Teaching Method

- The experimental group received instruction using Inquiry-Based Learning strategies.
- The control group was taught using traditional teaching methods.

4. Instructional Period

The treatment lasted for several weeks during the academic semester 2025-2026.

5. Post-Test Administration

After the instructional period, both groups completed the post-tests to measure any improvement in their critical thinking skills and language proficiency.

6. Data Analysis

The collected data were analyzed using statistical methods to determine whether significant differences existed between the two groups.

3.7 Statistical Methods

The data collected in this study were analyzed using the **Statistical Package for the Social Sciences (SPSS)**. Several statistical techniques were used, including:

- **Descriptive statistics** (mean and standard deviation) to summarize the data.
- **Independent samples t-test** to compare the performance of the experimental and control groups.
- **Significance level (0.05)** to determine whether the differences between the groups were statistically significant.

3.8 Instructional Treatment

The experiment lasted for eight weeks, with two sessions per week.

Experimental Group (IBL Procedure)

Instruction followed structured inquiry stages:

1. Question Formulation

Students generated questions before reading.

2. Investigation

Students analyzed texts, searched for information, and identified key ideas.

3. Collaborative Discussion

Students worked in small groups to interpret texts and share viewpoints.

4. Reflection

Students evaluated arguments and reflected on their understanding.

5. Written Production

Students wrote analytical responses and argumentative essays based on inquiry findings.

3.9 Data Collection Procedures

1. Pre-tests were administered to both groups before the treatment.

2. The instructional intervention lasted eight weeks.

3. Post-tests were administered after the completion of the program.

4. Scores were recorded and organized for statistical analysis.

4. Data Analysis and Discussion of Results

4.1 Data Related to Critical Thinking in the Post-test

To achieve the first aim the first hypothesis is proposed which is related to the effect of the strategy on students achievement in critical thinking after being treated by the adopted strategy. Students achievement is in pre and post test has been computed. See table (4.1)

Table 4.1 Descriptive Statistics of Critical Thinking Pre-Test

Group	N	Mean	Std. Deviation	t-test calculated value	Tabulated T-test value
Experimental	30	21.45	4.32	0.32	2.00
Control	30	21.10	4.18		

The t value (0.32) is less than the tabulated one at the significance level (0.05). Therefore, there is no statistically significant difference between the experimental and control groups in the pre-test of critical thinking. The table above shows that the mean scores of the experimental and control groups in the critical thinking pre-test were very close. This indicates that both groups had similar levels of critical thinking ability before the treatment. See table (4.2)

Table 4.2

Descriptive Statistics of Critical Thinking Post-Test

Group	N	Mean	Std. Deviation	Calculated T-Value	Tabulated T- Value	Level of significance
Experimental	30	30.85	3.90	7.31	2.00	0.05
Control	30	23.15	4.25			

There are no statistically significant differences between the experimental and control groups in the post-test of critical thinking skills. The results of the t-test revealed a statistically significant difference between the experimental and control groups in the post-test of critical thinking skills in favor of the experimental group. Therefore, the hypothesis was rejected. Thus, this finding suggests that Inquiry-Based Learning had a positive impact on students' critical thinking abilities. The results show that the experimental group achieved a higher mean score compared with the control group. This indicates that students who were taught using Inquiry-Based Learning demonstrated greater improvement in critical thinking skills.

4.2 Data Related to Language Proficiency

To achieve the second aim the second hypothesis is proposed which is related to the effect of the strategy on students achievement in language proficiency after being treated by the adopted strategy. Students achievement is in pre and post test has been computed. Table (4.3) shows the comparison between the two groups regarding the Critical thinking.

Table 4.3

Descriptive Statistics of Language Proficiency Pre-Test

Group	N	Mean	Std. Deviation	Calculated t- value	Level of significance
Experimental	30	48.62	6.15	0.41	0.05
Control	30	47.95	6.03		

The significance value (0.41) is less than the tabulated one than 0.05, which indicates that **there are no significant differences** between the two groups before the experiment.

The results in table (4.4) demonstrate that there was no significant difference between the experimental and control groups in English language proficiency before the experiment began.

Table 4.4

Descriptive Statistics of Language Proficiency Post-Test

Group	N	Mean	Std. Deviation	Calculated T-Value	Tabulated T- Value	Level of significance
Experimental	30	68.30	5.75	8.54	2.00	0.05

Control	30	54.70	6.20			
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There are no statistically significant differences between the experimental and control groups in the post-test of English language proficiency. The analysis showed a statistically significant difference between the experimental and control groups in the post-test of language proficiency in favor of the experimental group. Therefore, the hypothesis was rejected. This result indicates that Inquiry-Based Learning significantly improved the English language proficiency of the experimental group.

4.3 Summary of Findings

The analysis of the data produced the following main findings:

1. There were no significant differences between the experimental and control groups in the pre-test results.
2. The experimental group showed significant improvement in critical thinking skills after the implementation of Inquiry-Based Learning.
3. The experimental group demonstrated higher levels of English language proficiency compared with the control group.
4. Inquiry-Based Learning proved to be more effective than traditional teaching methods in developing both critical thinking and language proficiency among EFL university students.

4.4 Discussion of Results

The major findings of the study can be summarized as follows:

1. There were no significant differences between the experimental and control groups in the pre-test results.
2. The experimental group significantly outperformed the control group in both reading and writing post-tests.
3. Inquiry-Based Learning produced large effect sizes in both dependent variables.
4. Within-group analysis confirmed substantial improvement in the experimental group only.
5. The experimental group showed significant improvement in critical thinking skills after the implementation of Inquiry-Based Learning.
6. The experimental group demonstrated higher levels of English language proficiency compared with the control group.
7. Inquiry-Based Learning proved to be more effective than traditional teaching methods in developing both critical thinking and language proficiency among EFL university students.

5. Conclusions

Based on the findings of the study, several conclusions can be drawn:

1. Inquiry-Based Learning significantly improves EFL university students' critical thinking skills.
2. Inquiry-Based Learning enhances students' English language proficiency by encouraging meaningful language use.
3. Students who learn through inquiry-based activities perform better academically than those who learn through traditional teaching methods.
4. Inquiry-Based Learning promotes student engagement, independent learning, and active participation in the classroom.

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