

The effect of Problem Solving Technique on Iraqi EFL learner's in Developing Speaking Skill

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ABSTRAC

This study aims at investigating the effect of using problem solving technique on Iraqi EFL Learner's in developing speaking skill of the second year in Diyala University To achieve the aim of the study, the researcher adopted the experimental design. The sample consisted of (65) students divided into (33) students for experimental group and (32) students for the control one. The sample is randomly chosen from the second stage.

The researcher designed activities related to speaking topics. These activities are based on problem solving activities which are used in teaching the control one in the first term of the academic years (2020–2021). A speaking test is designed and validated to be used as a pre and post test for the two groups of the students. The data are analyzed statistically by using t-tests formula to measure the difference between the performance of the experimental group in the pre and post test.

Key words: problem solving technique, Iraqi EFL Learner's, speaking skill , second year students , Diyala University

اثر تقنية حل المشكلة على الطلبة العراقيين دارسين اللغة الأجنبية في تطوير مهارة التحدث

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الخلاصة

تهدف هذه الدراسة في التحقيق في اثر استخدام تقنية حل المشكلات على المتعلمين العراقيين في تطوير مهارة التحدث لطلبة المرحلة الثانية في جامعة ديالى. لتحقيق الهدف من

هذه الدراسة، الباحث تبني التصميم التجريبي . العينة تكونت من (٦٥) طالبا، مقسمة الى (٣٣) طالب لصالح المجموعة التجريبية و(٣٢) طالبا لمصلحة المجموعة الضابطة. العينة تم اختيارها بشكل عشوائي من المرحلة الثانية.

الباحث صمم فعاليات لمواضيع التحدث. هذه الفعاليات مبنية على حل المشكلة والذي استخدمت في تعليم المجموعة التجريبية بينما المجموعة الضابطة تم تدريبها باستخدام الطريقة التقليدية في الفصل الأول من السنة الدراسية (٢٠٢٠-٢٠٢١) اختبار للتحدث تم اعداده والتأكد من صحته وتم استخدام اختبار قبلي وبعدي للمجموعات الضابطة والتجريبية. البيانات تم تحليلها باستخدام الصفة (T) لقياس الفروقات بين أداء المجموعة التجريبية في الاختيارين القبلي والبعدي. الكلمات المفتاحية: اثر استخدام تقنية حل المشكلات، المتعلمين العراقيين دارسين اللغة الأجنبية، مهارة التحدث، طلبة المرحلة الثانية، جامعة ديالى

1. The statement of the problem

Problem-solving is an interactive process that involves utilizing existing knowledge to uncover new information. It entails overcoming challenges by formulating hypotheses, testing predictions, and ultimately arriving at satisfactory solutions (Gagne, 1985:87). It is a systematic approach to working through the intricacies of a problem in order to find a resolution. Problem-solving often incorporates mathematical or systematic operations and can serve as an indicator of an individual's critical thinking abilities (IBID).

According to Norman and Schmidt (2000:151), problem solving is described as a cognitive process that entails the identification, analysis, and resolution of problems. The primary objective of problem solving is to overcome obstacles and find the most effective solution to address the issue at hand. The term "problem solving" is utilized in various fields, often with different viewpoints and terminology. For example, in psychology, it refers to a mental process, while in computer science, it pertains to a computational process. Problems can also be categorized into two distinct types, namely ill-defined and well-defined, each requiring suitable solutions to be devised.

Ill-defined problems refer to those that lack clear objectives and solutions, while well-defined problems have specific goals, clearly defined paths to solutions, and expected outcomes. Well-defined problems also allow for more initial planning compared to ill-defined problems. Problem-solving often involves addressing pragmatics (logic) and semantics (interpretation of the problem). The ability to comprehend the problem's objective and identify applicable rules is essential for solving it. In certain cases, problem-solving necessitates abstract thinking and the generation of innovative solutions (IBID).

1.2. Aim of the study

- 1- Examining the impact of problem-solving on the speaking skills of English as a Foreign Language (EFL) learners.
- 2- Enhancing students' comprehension of speaking skills.
- 1-3- Hypothesis of the study

The objective of this study will be accomplished by testing the following hypothesis:

There is a notable difference between the average scores of students who are taught speaking skills through problem-solving approaches and those who are taught using traditional methods.

1.4 The Value

The significance of this study lies in recognizing the importance of mastering speaking skills in the process of teaching English as a Foreign Language (EFL). Proficiency in speaking is crucial for EFL learners, and this research can be valuable for English teachers, supervisors, educators, and trainers .

1.5 Limits

The scope of the study is limited to second-year morning class students in the English Department at the University of Diyala during the academic year (2020-2021)

1.6 The Procedures

In order to achieve the objectives of this study, the following procedures will be implemented

- 1– A sample of EFL students from the second year of college will be selected
- 2– The selected sample of students will be randomly divided into two groups, namely the experimental group and the control group.
- 3– A speaking skills test will be designed, ensuring its validity and reliability
- 4– The entire selected sample of the study will undergo a pre–test to assess their initial level of speaking skill performance
- 5– The experimental group will be taught using problem–solving techniques, while the control group will be taught using traditional methods
6. Both groups will be post–tested in speaking at the end of the experiment to evaluate the impact of problem–solving techniques.

1.7 Definition of Basic Terms

1.7.1 Effects

According to Good (1973:1,5), the term "effect" refers to the influence of experimental factors on controlled variables within specific conditions

1.7.2 Problem– Solving

Mayer (2006:287) defines problem–solving as the cognitive process aimed at achieving a goal when the problem solver does not have an obvious solution method.

1.7.3 Speaking Skill

. Hedge (2000:261) states that speaking is a fundamental skill that language learners should proficiently develop alongside other language skills. It involves the intricate process of sending and receiving

messages using verbal symbols, including gestures and facial expressions.

Section Two: Theoretical Background

2–Problem Solving Process

Over the past two decades, cognitive research has led to a revised understanding of problem–solving, recognizing it as a multifaceted process encompassing cognitive, behavioral, and attitudinal components. In 1983, Mayer proposed a model of problem–solving as a sequential process involving the identification of connections between past experiences and the current problem, followed by taking action to find a

:solution. Mayer outlined three key characteristics of problem–solving

1. Problem–solving is inferred from behavior, even though it is fundamentally cognitive in nature

2 . Problem–solving results in behavior that leads to a solution

3. Problem–solving is a process that involves manipulating or operating on previously acquired knowledge (Funkhouser and Dennis, 1992:73)

2.1 types of problem solving

Effective instruction in problem–solving should address two distinct types of knowledge: declarative and procedural (Cagne, 1985:89). Declarative knowledge is closely connected to the contextual understanding mentioned earlier. It includes factual knowledge, concepts, and principles specific to a particular subject or skill domain. It is important to avoid solely teaching declarative knowledge and assuming that learners who have mastered it can automatically solve problems in that domain. On the flip side, teaching problem–solving in isolation, without providing the necessary supporting declarative (contextual) knowledge, also prove ineffective. .

2.1.1 Declarative Knowledge

It refers to the "know what" aspect, encompassing facts, concepts, and principles. It involves the content-specific factual knowledge within a particular discipline or skill domain.

2.1.2 Mental Model

Problem solvers construct mental models or schemata based on the situation they are dealing with. According to John Anderson (1995:57), a mental model is the integration of declarative knowledge into a structure optimized for solving a specific category of problems. Successfully solving problems often requires problem solvers to dynamically restructure and adapt their mental models.

Their mental models of the system are developed to predict the impact of proposed actions on the system or to explain observed behaviors within the system. Therefore, having a well-structured mental model that aligns with a specific problem-solving context is crucial for achieving successful problem-solving outcomes .

2.1.3 Procedural knowledge

The level of structure provided by the problems we encounter can vary. Problems are often classified on a continuum ranging from well-structured to moderately structured to ill-structured (Newman and Simon, 1972:88). The position of a problem on this continuum determines how it is taught and learned. The table on the following page compares three points on the continuum of problem types.

3.Steps of problem solving:

In their book "Problem-Based Learning," Albanses and Mitchell (1993:66–73) outline several steps in the problem-solving process:

1– Understand the problem: It is important for students to grasp the nature of the problem and its associated goals. Encouraging students to restate the problem in their own words can be helpful.

2– Identify barriers: Students should be aware of any obstacles or constraints that may hinder them from achieving their goal. It is essential to encourage students to articulate these impediments.

3–.Generate potential solutions: Once the nature and parameters of the problem are understood, students must identify one or more suitable strategies to resolve the problem. Students should realize that they have various strategies at their disposal and that no single approach works for every problem. Here are some potential problem–solving options.

Visualize: Many problem solvers find it beneficial to create mental images of a problem and its potential solution before tackling it. Mental visualization allows problem solvers to explore different aspects of the problem and gain a clear understanding of it.

Make an educated guess: Provide students with opportunities to experiment and try different approaches in solving problems

Approach to problem–solving: It should be noted that this is not a singular problem–solving approach, but rather a method to gather initial data .

Construct a table: A table is a structured arrangement of data. Allowing students to comprehend that they can group and organize data related to a problem is essential.

Develop a systematic list: Making a list of information is a frequently used process to outline a plan for defining and solving problems. Encourage students to record their ideas in lists to identify regularities, patterns, or similarities among elements of the problem.

4. Find out a solution: When implementing a strategy or combination of strategies, it is crucial for students to carefully monitor and accurately document the steps they take to solve a problem

5– Evaluate the outcomes: It is highly important for students to have multiple opportunities to assess their problem–solving skills.

3– Teacher's and learner's Role

4–1– Role of the Teacher

In problem–based learning, instructors need to move away from traditional teaching methods such as lectures and memorization. Instead, they take on the role of facilitators, focusing on questioning students' reasoning, providing hints to correct misconceptions, offering resources for research, and keeping students on track. Some teachers may find it challenging to break away from their old habits and adapt to this new role.

4.2 Role of Students

One issue that arises in problem–based learning is the traditional assumption that teachers are the primary source of knowledge. Students have been accustomed to relying on their instructors for subject expertise and memorizing facts. Due to this orientation, many students have lost the ability to simply wonder about something. This is especially evident in first–year students who often struggle with self–directed learning

4– Speaking skills

According to Arnold (1983:112), speaking English is a difficult skill for students. Upon observation, it was found that many students struggle with speaking English due to various reasons such as limited vocabulary, grammatical errors, mispronunciation, hesitations, pauses, and shyness.

Speaking skills are crucial as they contribute to forming first impressions. It is an important skill that deserves attention in both first and second languages as it reflects people's thoughts and personalities (Hedge, 2000:261.(

Chanely (1998:15) notes that speaking is a productive skill in oral communication. It is more complex than it appears, involving more than just pronouncing words. Speaking is used to express opinions, feelings,

ideas, etc., through verbal communication. It encompasses psychological, articulatory, and acoustic aspects.

Speaking skills are often considered the most important aspect of language learning. In the information age, where international communication is essential, language learners often attend classes to improve their speaking abilities. According to Richards and Renandya (2002:201), for most individuals, being able to speak a language is synonymous with knowing that language since speech is the fundamental means of human communication. However, speaking in a second or foreign language is often seen as the most challenging of the four language skills. Effective oral communication in a foreign language requires the ability to use the language appropriately in social interactions, which involve verbal and non-verbal communication.

5.1 Testing Speaking

According to Richards et al. (2005:48), oral speaking tests are conducted as pre-tests and post-tests to assess students' oral proficiency in five areas: comprehension, pronunciation, fluency, grammar, and vocabulary.

The purpose of the speaking test was to assess the participant's speaking skill before and after the implementation of the experiment. Brown (1997:4) lists five components which are generally recognized as:

5.1.1 Comprehension

In oral communication, individuals need to both respond to speech and initiate it. Comprehension skills are essential for understanding and interpreting spoken language .

5.1.2 Grammar

This sub skill involves students' ability to construct grammatically correct sentences in conversations and distinguish between appropriate and inappropriate grammar usage

5.1.3 Vocabulary

– Effective communication, both oral and written, relies on having an adequate vocabulary. Vocabulary refers to the appropriate selection of words for communication.

5.1.4 Fluency

–Fluency is a skill that encompasses the ability to process language quickly and effortlessly. It develops as learners internalize knowledge (Shen, 2013:816.

5.1.5 Pronunciation

– Ilce Murcia (2002:117) highlights that pronunciation is not solely about producing words and sentences accurately but is a dynamic aspect of conversational fluency. It is considered within the context of fluency rather than strict accuracy.

Section Three: The Procedure

3 .Experiment

The experiment was designed by randomly selecting two groups. Both groups underwent a pre-test and a post-test. The experimental group received instruction in speaking using a problem-solving technique, while the control group was taught speaking using traditional methods. The scores of both groups were compared to determine if there were any significant differences between them.

3.1 Population and Sample selection

The population of this study consisted of second-year learners at Diyala University during the academic year 2020–2021. A random sample was selected from this population, resulting in two sections, A and B. One section was randomly assigned as the experimental group, and the other as the control group. Section A had 33 students in the experimental group, and section B had 36 students in the control group. The total sample size was 65 students (see Table 1)

Table (1) Number of subjects

Group	No.	Section
EG	33	A
CG	32	B
Total		65

3.2 Equivalent of the sample

The researcher took measures to control variables that could potentially affect the experiment. These variables included students' age, parents' education, and students' scores in the pre-test. The differences between the groups were tested using the t-test formula for two independent samples and the chi-square formula. The analysis showed that the experimental and control groups were comparable in terms of the mentioned variables, as there were no statistically significant differences between the two groups.

3.2.1 The Level Of Fathers Education

The chi-square formula was used to determine if there were any significant differences between the two groups in terms of the level of fathers' education. The educational qualifications were classified into categories.

3.3 The Student's Score on the Pre-test

To ensure that the sample subjects were equivalent in their previous English language proficiency, a speaking test was administered before the experiment began. The results were recorded and statistically analyzed using the t-test. Table 2 displays the mean and standard deviation of each group in terms of English language proficiency. The analysis showed that there were no statistically significant differences between the experimental and control groups at the 0.05 level.

Table (2) The Mean, SD, and T value of the subjects achievement on the pre-test

Test	Mean	SD	DF
EG	24.6875	8.66747	62
CG	24.5938	9.25223	

3.4 Validity of the test

When selecting a test, one of the crucial considerations is its validity. Validity refers to the extent to which the test measures what it intends to measure and meets the expectations of those who use it, such as administrators, teachers, candidates, and score users (Lado, 1964:50; McNamara, 2000:33).

3.5 The Pilot Administration of the Test

On September 10, 2020, a pilot administration of the test was conducted. The test was administered experimentally to a random sample of 65 students from the second-year English department of education. The purpose of this pilot administration was to:

- Assess the time taken by students to answer the test.
- Determine the discriminatory power of the test items.
- Identify the appropriate time required for the test.
- Evaluate how students responded to the test.
- Ensure the clarity of the test items.
- Assess the reliability of the test

3.6 Reliability of The Test

According to Harmer (2001:322), a good test should yield consistent results. In practice, reliability is improved by providing clear test instructions, limiting variability in answers, and maintaining consistent test conditions.

3.7 Instructional Material and lesson plan

The instructional material used in this study consisted of passages that focused on problem-solving and encouraged students to ask questions

and think about solutions. The textbook "Developing Skills" by L.G. Alexander was used.

3.8 Behavioral Objects

The Behavioral objects of this study are:

- – To help students understand the importance of problem-solving when speaking about a specific passage.
- – To encourage equal participation from all students, including those who are shy or fearful.
- – To enable students to monitor their own learning.

Section Four: The Results, Conclusion, Recommendation and suggestions:

The results of the standard performance on the post-test reveal that the average score of the (EG) is (28.75) with standard deviation (SD) of (6.93751) which is higher than that of the (CG) is (24.6875) with an (SD) of (8.66747) the difference between the two averages is statistically significant because the tabulated t-value is (2.707) at the $p > 0.05$ for the experimental group and this means that there is a clear difference between the speaking test of the (EG) and that of (CG).

Table (3) the Students Results of the Post Test

Test	Group	No.	Mean		SD	DF
Production	EG	33	29.68	75	8.66747	62
	CG	32	28.75	5	6.93751	

4.1 Conclusions

The following points have been made on the basis of the findings:

- 1– Problem solving technique can have positive effects on the retention of new words.
- 2– Students can be engaged in learning.
- 3– Problem solving helps students to use and apply information, then share their solutions and the outcomes with each other.

4– Depending on the results it helps shy and weak students to develop their thinking.

5– It proved to be excellent learning strategies for developing student's ability in speaking skills.

4.2 Recommendation

In the light of the results, the researcher recommends the following:

1– Teachers are advised to encourage students problem solving techniques because it enhance more ideas.

2– Problem solving is a highly interactive process.

3– Make instructors select problem solving text according to student's knowledge.

4– Using problem solving enables learners to overcome the challenges and difficulties.

4.3 Suggestions for further studies

For additional studies these suggestions are made:

1– Conducting other studios based on speaking skill.

2– Such study in needed for another stages such as primary and preparatory stages.

3– Conducting other similar study but in other skills of language such as (reading, listening, writing).

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