

## **Inquiry-Based Learning Implementation: Students' Perception and Preference**

Venera Ulker<sup>1</sup> & Hewa Fouad Ali<sup>2</sup>

<sup>1&2</sup> English Language Teaching Department, Faculty of Education, Tishk International University, Erbil, Iraq

Correspondence: Venera Ulker, Tishk International University, Erbil, Iraq

Email: venera.ulker@tiu.edu.iq

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**Abstract:** With a bundle of changes in the new age that has brought considerable challenges to the doorstep of teachers and educators, novel approaches to teaching are now emerging to take on the challenges. Inquiry-based learning (IBL), thanks to its well-rooted fundamentals, can be considered a potential approach to addressing challenges in many effective ways. IBL is a learning and teaching process that focuses on using questions as an initial point in learning; learners are immersed in the process of generating and posing questions to find the truth, information, or knowledge through hands-on activities performed by learners themselves with teachers' guidance on the side. The primary aim of the present study was to find out learners' perceptions of IBL implementation. The study exposed 26 Iraqi EFL learners to the approach and investigated the participant's opinions and perceptions of the approach implementation. To collect data, participants were asked to fill out a questionnaire with particular reference to the effects of IBL on students' class engagement, prior knowledge activation, student-centered environment promotion, and cultivation of 21st-century skills. Results highlight students' positive preferences toward IBL implementation.

**Keywords:** Inquiry-based Learning, Students Perceptions, Questions, EFL

### **1. Introduction**

#### **1.1 Inquiry-based Learning History at a Glance**

The IBL approach is often connected with John Dewey (1859 – 1952), the American philosopher and educationalist, who first suggested that IBL be applied in science subjects from K-12 in 1910 (Barrow, 2006). He explained that the role of the teacher is to guide and facilitate tasks for students. On the other hand, learners have to be highly engaged in the process of learning. The model that Dewey recommended “was the basis for the Commission on Secondary School Curriculum” in 1937 (Barrow, 2006, p. 266). When IBL emerged by Dewey, it was defined in many ways and has become popular in the education field. Renzulli (2015) stated that teaching science has to represent the science practiced in the era. Thus, he supported the idea that those learners should go through hands-on experience in a lab, but not after they study a coursebook. He thought it enables learners to “ask questions and begin the process of collecting evidence and constructing explanations” (p.295).

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There are a number of benefits written on utilizing a model of constructivism theory, such as: “emphasis on the concrete, meaningful experiences; an emphasis on depth of learning, less on rote verbal learning; and use of performance assessment rather than paper-and-pencil tests” (Scruggs and Mastropieri, 2007, p.59). It is contradictory to content-driven models that consist of “substantial vocabulary learning, ... learning and recall of large amounts of factual content, lecture and worksheet activities, and independent study from the text. Content-driven models typically emphasize breadth over depth of learning, and the acquisition of factual material” (Scruggs & Mastropieri, 2007, p.59).

Kirschner, Sweller, and Clark (2006), have a different view; they support content-driven or direct instruction model that the latter has been explained as “providing information that fully explains the concepts and procedures that students are required to learn as well as learning strategy support that is compatible with the human cognitive architecture. Learning, in turn, is defined as a change in long-term memory” (p. 75). Moreover, they stated that implementing a model from constructivism theory would change the “emphasis away from teaching a discipline as a body of knowledge toward an exclusive emphasis on learning a discipline by experiencing the processes and procedures” (Kirschner, Sweller and Clark, p. 78). Mayer (2004) aligned himself with the idea. He started to work on analyzing the literature starting from 1950 to the end of the 1980s. He examined models in direct instruction with some “unguided-instruction” models IBL was considered as one of them. He concluded that the “debate about discovery had been replayed many times in education, but each time, the evidence has favored a guided approach to learning” (Mayer, 2004, p.18). He thought new findings of models of teaching had to be directed.

Educationalists had to consider that the “contribution of psychology is to help move educational reform efforts from the fuzzy and unproductive world of educational ideology which sometimes hides under the banner of various versions of constructivism - to the sharp and productive world of theory-based research on how people learn” (Mayer, 2004, p.18). Therefore, when IBL is implemented, it is highly recommended to be as guided as possible.

Turkmen (2009) studied the way learners learn through research with the help of a Technology-Based Inquiry Approach (TBIA). He applied the study to 5<sup>th</sup>-grade learners. He believes inquiry is “learning through a constructivist model of learning” (p. 3). Initially, it was not easy to derive what type of constructivist model he would consider. Turkmen (2009) began by stating that “knowledge is constructed by learners who do many activities on their own to build new knowledge” (p. 3). He put it into a theory that there should be a caring atmosphere built by the teacher that “students [could] work collaboratively in small and large groups and learn to respect each other’s ideas” (p. 3). He described TBIA as *active learning*, and also *collaboration is important* while utilizing technology. Although, he sealed by stating that “inquiry is the umbrella concept partnered with teaching and learning. It includes many teaching and learning methods and techniques to increase student’s motivation” (p. 13).

Wilhelm (2007) explained that there is “one problem with the term inquiry is that it can carry associations of unwieldy, time-consuming, student-centered projects that collapse despite good intentions” (p. 12). Gilbert (2009) agreed with this comment; therefore, he depicted that “student-centered projects aren’t inquiry. Nor is inquiry synonymous with a student-generated curriculum, wherein students are completely in the driver’s seat” (p. 13). Conversely, there are scholars such as Chu, Tse, Loh, Chow, Fung, and Rex

(2008) and Berghoff, Egawa, Harste, and Hoonan (2000) who defined Inquiry-based Learning as a student-centered model. Nowadays, IBL is viewed as an approach that has the potential not only to enable learners to acquire the desired knowledge but also to develop the skills named 21<sup>st</sup>-century skills vital for every individual (Dobber, Zwart, Tanis, & Oers, 2017)

## **1.2 The Role of IBL in Language Classes**

Inquiries have always had intensely deep roots in learning that strive for learners to think profoundly. IBL is considered to be a cognition-based educational theory in which learning happens through carefully crafted, pertinent, contextualized questions; it is also recognized as a teaching technique that stimulates thought, exploration, and, ultimately, the learning process (Collins & Stevens, 1983; Collins, 1987). Unlike other theories, it was first developed by instructors cooperating to create an argumentative discourse using inductive techniques while dealing with scripts and text analysis. To teach a topic in many professions, teachers have employed various question-and-answer formats. According to the research, these types of question-and-answer exchanges are already connected to exploratory and inquisitive methodologies or the Socratic method. The inquiry-based approach, as its name suggests, mainly revolves around using questions as the primary bridge of transferring knowledge and content to demonstrate the lesson. The posed questions throughout the teaching process define how the lesson content is conveyed.

Promoting higher-order thinking abilities and skills, which are key components of exploratory and cognitive learning, is one of the objectives of the approach. This approach is different from other typical question-and-answer learning procedures. To put it another way, not everything taught is explicitly or directly taught by the teacher. Instead, the students are expected and encouraged to investigate the material or the topic independently. They must also determine the intended rules in light of the provided examples. They should apply the knowledge, skills, and information in situations and deal with everyday occurrences in real life. By assisting the learner in developing and understanding concepts, the teacher facilitates learning. Evidence from the literature suggests that this practice alienates students compared to teacher-directed methods, which concurrently pique their interest in a class. When instruction is centered on problem-solving, as in the IBL model, learners improve their knowledge, which enables them to develop additional cognitive capacities. This is especially true when they are extremely active and involved throughout the learning process.

Open and guided inquiry-based learning are the two different types of IBL. In the former, the students independently come up with questions, creating an investigation mode. While in the latter, students focus on problems and questions to find solutions using the materials and resources at hand (Sadeh and Zion, 2011). The IBL model is applied through a cycle plan mode, as explained by Pedaste et al. (2015). He emphasizes that the four stages of orientation, conceptualization, investigation, and conclusion are necessary to complete IBL. The subject is offered during stage one, or orientation, where students' interest is piqued to get them interested in the lesson. Following the learners' discussion of the issue (drawn from the posed question), they begin to ask questions and begin to explore for answers. During the conceptualization phase, this happens. Then, using resources from the internet, library, and experts in the field, research is done to compile data and information pertinent to the questions being addressed. From this point on, students use the information gathered to draw a conclusion. In other words, students determine the answer(s) to the questions based on the facts. The solution could inspire more questions and

research, which is essential for students to become self-directed learners. Along with the stages mentioned above, it is crucial for students to communicate, reflect, and discuss as they work through the IBL stages. In conclusion, IBL differs from other models and approaches because it provides students with a wide range of learning possibilities.

### **1.3 Research Evidence on the Benefits of Applying the IBL Model**

The enhancement and betterment of teaching practices have always been one of the significant concerns that educators have been focusing on. To a certain extent, educators are about to eschew traditional models in favor of cutting-edge trends and methods that go beyond the expectations of the classroom and learners. Although IBL was initially employed as a model of instruction in the teaching of math and science, its idea and question-answer processes are also appropriate to use in language teaching. The IBL's procedures and practices are used to boost vocabulary, emphasize grammar structures and norms, engage students in productive debates, and comprehend the cultural richness of the language being taught. Students find the lessons to be very attentive and engaged when these are explicitly focused since it keeps the language learning process dynamic and vibrant. Additionally, once inquiry-based learning is used, all aspects of language learning significantly improve. It is also seen as a method to maintain engaging and long-lasting language training, particularly in serving the idea of mass participation and gaining significant attention from language learners. When it comes to evaluation, teachers can determine the students' degree of understanding and growth by observing the question-answer patterns where they make mistakes throughout their experiences (Lee, 2014). An empirical investigation of the impact of IBL on reading and writing abilities was undertaken by Ali and Ulker (2020). They discovered that IBL is an effective approach for improving reading and writing abilities as students showed a great amount of improvement over a course of study under IBL model (Ali and Ulker, 2020).

Lee (2014) further highlighted that, in addition to improving communication skills, the IBL approach has a significant impact on linguistic competence. Designing various question types through authentic and meaningful situations is one of the best approaches to enhancing the approach. The art of inquiry is one of the most important abilities a language educator should master. To put it another way, the better questions a teacher poses, the more interesting and demanding the learning experience becomes, and the more reflective and creative the learners become, which enhances their metacognitive and cognitive capacities. When these are addressed, it will help to create self-directed learners and experiences for lifelong learning. So, in addition to teaching linguistics, a teacher's responsibility includes guiding and understanding students' learning so that their cognitive capacities are effectively used. This is where IBL comes into play. The significance of incorporating IBL in instructional practice is summed up in Figure 1.1 below.

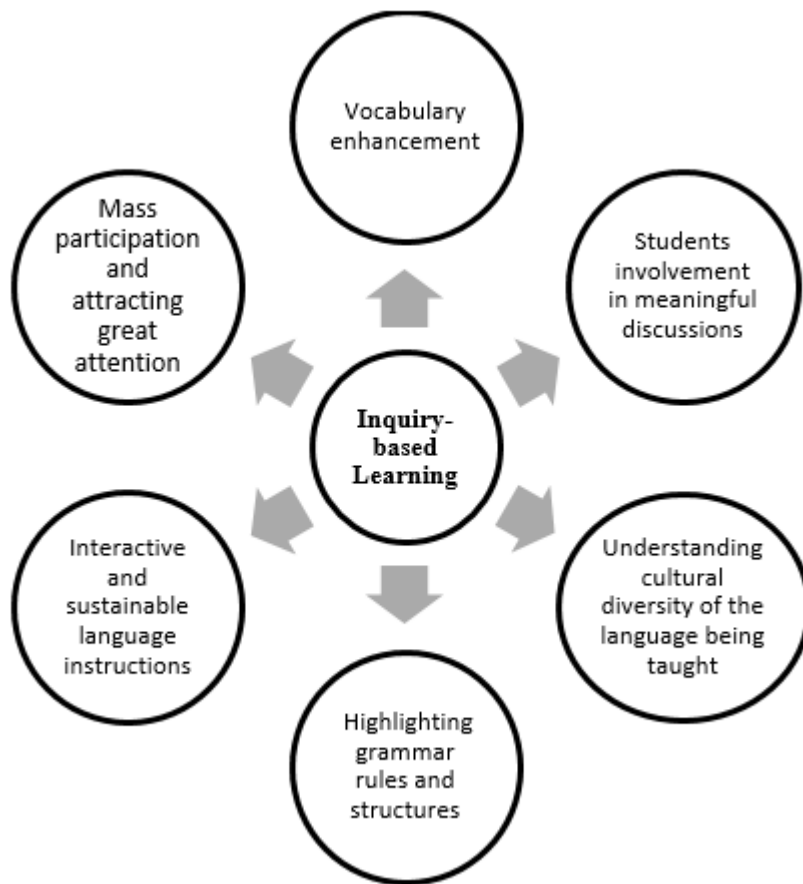


Figure 1: Benefits of the Inquiry-based instruction

#### 1.4 Limitations of Inquiry-based Learning

Even though there are numerous advantages to IBL, as described previously, it is obvious that it cannot come without any drawbacks to this model. When educators use IBL, many of them are worried about the time that it consumes to prepare and implement. Baker et al. (2008) addressed that they met teachers who dedicated much time to preparation but still they mentioned that “although initial preparation is time-consuming, their time commitments decrease each year significantly once they have developed lessons” (p. 106). Herman and Knobloch (2004) point out that another drawback that may happen is when students do not have experience with constructivist activities, which may lead to confusion for both teachers and learners. This occurs due to the transformation in their roles. The impact of this drawback can be decreased by creating a less extreme transformation in roles. Baker et al. (2008) explored some teachers’ negative attitudes toward the model. It is vital that a teacher should believe in the method chosen in his/her teaching and then start to use it. Otherwise, this kind of attitude will ultimately influence learners, which may lead to a lack of interest and connection with the teaching process.

Despite the fact that IBL brings success in developing critical thinking skills, retention of knowledge, learner encouragement, and fulfillment. Burris & Garton, 2007 report that there is a chance that IBL may not impact a lot on knowledge acquisition. They discovered that there is a tendency for learners who are

taught by constructivist models to get lower marks than those who are taught by traditional approaches. “While students [taught with constructivist instruction] may have a deeper understanding of the material, that understanding is not represented at the content knowledge level” (Burriss & Garton, 2007, p.113). To contradict this, Herman and Knobloch (2004) highlighted those learners who were taught with traditional approaches comprehended less than those who experienced learning through constructivist models.

Another drawback is that teachers find it hard to be a guide on the side because they are used to following direct instruction methods where the teacher is the sage on the stage. Therefore, they have a feeling of lack of control over the class. An IBL class can be effective when “teachers must first evolve into confident, highly skilled [professionals] who are capable of relinquishing some control in instruction so that students are free to explore their knowledge” (Ward, 2001, p. 96).

To sum up, there is no method that does not have any drawbacks as IBL, but as it is mentioned, teachers can overcome these limitations in different ways as addressed.

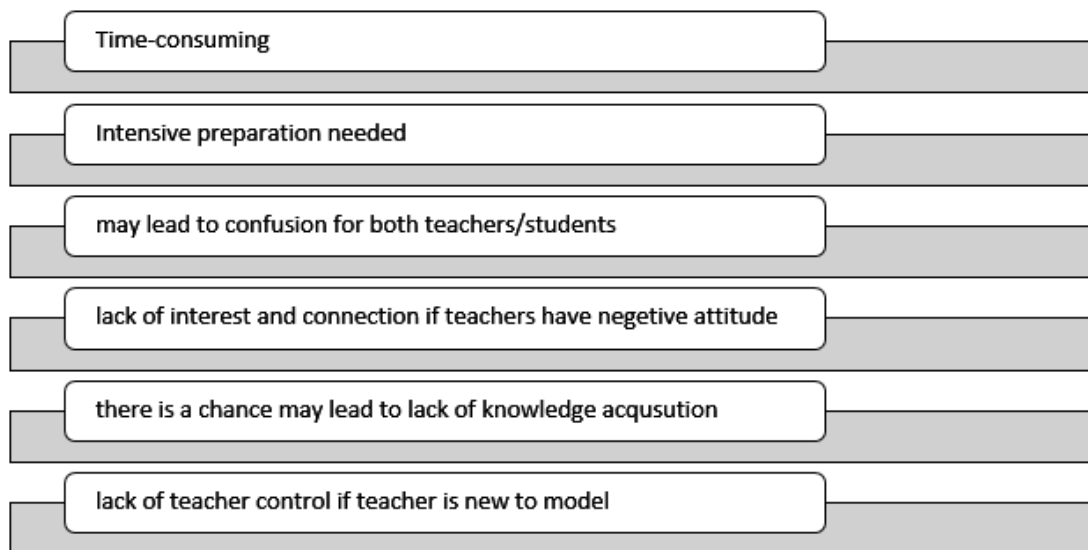


Figure 2: Limitations of Inquiry-based Learning

## 2. Methodology

### 2.1 Study Design and Objectives

A survey questionnaire was carried out in the study after exposing the students to the model so that the students’ perceptions would be tackled. The key objective of the research was to find out to what extent IBL develops students’ class engagement, prior knowledge activation, student-centered environment and 21st century skills. More importantly, to reveal students’ perceptions of the model.

## **2.2 Participants and Research Setting**

The study was conducted at a private university in Iraq, KRG, Erbil. The participants were chosen from the foundation year students of the education faculty, biology department. The Foundation year is the first academic year when students take English language courses to improve their English language proficiency before they take major courses. Moreover, the students are grouped based on a placement test. The results of the placement test are used to put the same-level students together. A group was chosen as participants of the study.

## **2.3 Samples of IBL Tasks and Activities Implemented in the Study**

Throughout the study, a variety of activities and tasks were implemented, considering that they would fit well with IBL procedures. This section presents a few of them. One of the tasks used to improve reading skills was that students were guided to generate questions after getting to know the theme of the unit. This was mostly done in group work, which helped them to gather more ideas from their peers. Then, the questions/problems were assigned to each student to work on. Each question/problem, of course, consisted of a concept. Students were asked to search for resources wherever possible and collect information about the concept. One of the overused sources was content from the internet, specifically blogs and articles. The reason that these two were mainly focused is that the language of blogs and articles was considered to be easier to understand by the students since their proficiency level was initially elementary than academic pieces. Students were asked to choose one of the articles that they think is good and included enough references to support their works and send it to the teacher to approve. Once the article/blog was chosen and approved after scanning it by both teachers and students. It was time to ask students to read/evaluate intensively to prepare a report about their investigation. Students were also requested to take notes while reading and submit the notes to the teacher. One other task that was completed related to this process was that students were assigned to give a summary of what they had read and found as a solution for the assigned questions and problems. Learners were also guided on how to write conclusions/reports/summaries. As for the concept of each assignment, students were asked to define the concept by themselves after reading and collecting information about it. To exemplify these tasks, the first unit of the book was about food, intitled all about food. In the beginning, students were put into groups and asked to formulate questions. This was not done without showing a model. Students were shown examples followed by blogs and articles so that they would work efficiently and have a clear vision of the tasks. They were also given resources and teacher support during the group work and the whole process. Some question examples were how much do you know about food safety, what do you know about vegetarians, how do you choose a place to eat, and so on forth. By the end of the investigation, students would present/discuss/submit their reports/summaries/conclusions through various forms of presentations.

As for tasks and activities that were followed to improve writing skills, students were given different forms of tasks and projects to complete. One of the projects that students completed was designed on the first unit of the book, as presented above. after students finalized formulating questions/problems. They were asked to create a survey to collect data from selected participants. At the beginning of the project, students were informed what the survey was and how it was conducted. They were given models and samples of surveys to get more about it. The students were asked to prepare a survey using Google Forms. They were guided and demonstrated through the necessary steps of creating a Google Form. After that, when the main

questions were formulated through group work discussions, students were given a chance to prepare the survey questions carried out by groups. They were also shown survey samples to facilitate the task for them. After the survey questions were ready, students were requested to share the form with the teacher to proofread. Then, the surveys were proofread, and students were informed to share the survey with their friends on social media accounts to gather data from respondents. After collecting enough data, that was determined not to be less than 50 participants in each survey. Students started to analyze the collected data. The data would give them an answer to the questions. They had to state their opinions on the concept/phenomena they were investigating and support their opinion with the data gathered. Finally, students would report the findings through essays. Before they started to write the essays, they were given tips and information about the format of the essays. This assisted them to improve academic writing skills along with analysis skills that are very important to survive college study. One of the forms of presentations was sharing the conclusions with their peers. This brought a lot of excitement and joy to the class, wherein students engaged in the discussions.

Another project that was carried out during the study was the interview project. Here in this, learners were given the opportunity to work on problems they had encountered during learning a new language. They were asked to put the problems in form of questions that they would investigate to find answers for them via interviews. Students listed all possible challenges and problems they had while learning a language. Then, students voluntarily would choose a problem/challenge/question to work on. Afterward, they would read and gather information about it on the internet. To make sure that they would read and gather information, they were asked to send a link(s) to the website/article/book/blog to the teacher that they had read. Then, in group work, students would prepare at least ten questions for the interviews. This step was followed by finding another student from upper grades who experienced learning a language. During the interviews, learners were asked to record the entire interview and submit it to the teacher. They were also requested to take notes of the answers that the interviewee would give. This project helped them to gain and improve a variety of skills including problem-solving/high order thinking/note taking skills.

#### **2.4 Procedure Followed by the Participants**

A variety of materials and texts were used for the participants, but with implementing IBL activities in forms of projects, investigations, and experiments. To achieve a fully inquiry-based learning process. The lesson plans followed the five Es inquiry-based instructional plan as shown in (Table 1) that are (Engage, Explore, Explain, Elaborate, and Evaluate) adapted from (Bybee et al., 2006) The first step is Engage where learners get engaged with the topic area through warm up activities and more importantly it creates an English mode environment in class as (Hird, 2013, para. 3) states that “It helps to focus minds and get the students in ‘English mode.’ A good warm-up activity can help get the students engaged with English without them realizing they are dealing with English. After learners are exposed to the inquiry questions, that are more open-ended questions rather than short or yes/no questions, learners begin with exploring to find answer(s) to the posed question(s). then, it comes to Explain wherein students work in groups to discuss and explain the topic in terms of investigations and the teacher mostly observes in this phase. Henceforth, the students Elaborate in what they have achieved after the investigations and research. They are also expected to connect the findings with their experiences. The last step is to Evaluate which is two-sided. One is that teacher gives feedback to the projects. Two is that students’ self-evaluation. Studies



have shown that giving meaningful feedback with facts is regarded as influential on learning process (Johnsen et al., 2015). These steps are considered as the backbone of IBL. It is also recommended to engage students with critical questions that go beyond what they already know and experienced (Stephenson, 2015).

Table 1: Lesson Procedure Followed by Participants

Stage	Duration	Procedure/Activities
Engage	20 mins	<ul style="list-style-type: none"> <li>- Warm up activity: The teacher opens with connecting students with chapter's topic by posing some questions related to the topic (title, pictures... etc.) or the main topic.</li> <li>- Objectives: The objectives and goals of the lesson are clearly stated.</li> <li>- Background Information: The teacher enables students' prior knowledge by asking questions. The teacher also expects students to answer questions related to the theme of the unit.</li> <li>- The teacher presents the topic and the reading skills (scanning)</li> <li>- Students are asked to scan the text to get the main ideas of each paragraph.</li> <li>- The teacher asks students to read the text of the chapter along with follow up questions posed by the teacher.</li> <li>- Target vocabularies are tackled upon.</li> <li>- The teacher gives a model question related to the unit theme.</li> <li>- Students are given with writing tips related to the text.</li> </ul>
Explore	30 mins	<ul style="list-style-type: none"> <li>- Students are put into small groups of five and they generate 10 questions based on the chapter's main idea.</li> <li>- After checking the questions, Students narrow down the questions to 5 best questions</li> <li>- The teacher assists where necessary.</li> <li>- Students start to investigate the questions with the available resources.</li> <li>- Students are asked to work on the generated questions that were developed. They are expected to read a blog(article) and take notes while reading the blog, then submit the notes to the teacher.</li> </ul>

Explain	25 mins	<ul style="list-style-type: none"><li>- The lesson is being summarized with highlighting the key parts of the chapter</li><li>- Members of the groups work on the questions together to discuss the questions with each other.</li><li>- Clarification is given anywhere necessary</li></ul>
Elaborate	25 mins	<ul style="list-style-type: none"><li>- A leader is chosen to summarize what the group was discussing.</li><li>- The students are required to report what they have found through</li></ul>
Evaluate		<ul style="list-style-type: none"><li>- Teacher gives feedback on the submitted works.</li><li>- Students can peer evaluate each other's work.</li></ul>

### 2.5 Data collection and Analysis

The study carried out a 15-items Likert-scale survey (see appendix A) to collect data from the participants that was aimed at EFL/ESL learners' perception on the IBL implementation in language classes. To analyse the gathered data from the survey, Microsoft Excel was used to analyse as were numeric data. The survey included a main section targeting students' perception on the following domains as the properties found in IBL model: students' prior knowledge activation, students' class engagement, student-centred environment creation, cultivation of the 21st century skills.

### 3. Findings and Discussion

As the participants were exposed to IBL procedures. The survey was carried out with the aim of disclosing students' perceptions on implementing IBL in classroom in regards of the following assumptions:

1. Students' prior knowledge activation
2. Students' class engagement
3. Student-centered environment creation
4. Cultivation of the 21<sup>st</sup> century skills

The following section deals with the results of the study:

On Students' prior knowledge activation (Questions 1 to 3)

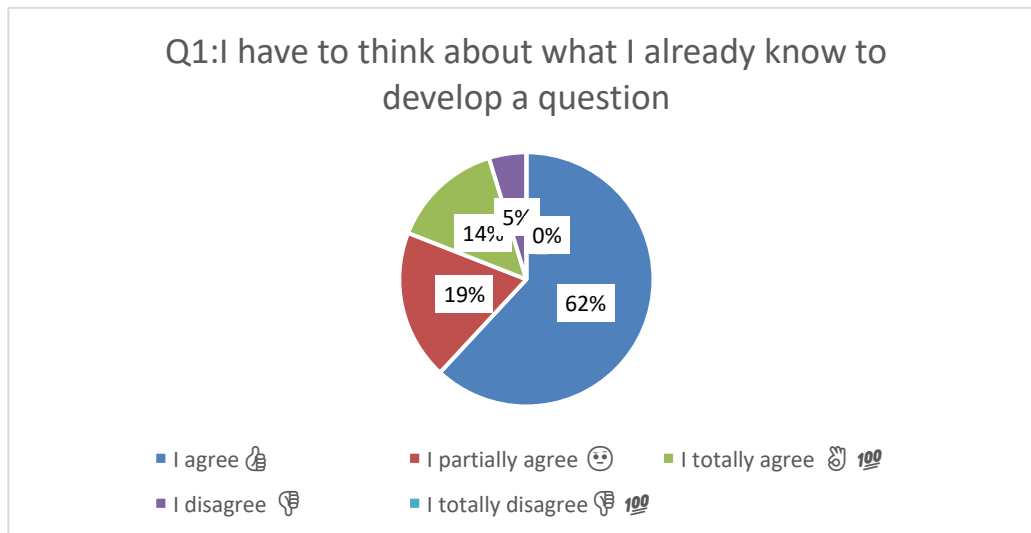


Figure 3: Participants' response to Q1

As it is shown in figure 3 that the majority of the participants (76%) agreed that to develop a question, they think that the link between what they already know, and the new material is vital. Since they were involved in activities where their prior knowledge was stimulated. While on the other side, (5%) disagreed to the statement. To the point of the importance of prior knowledge activation, it vividly evident that IBL has activated most of students' prior knowledge via the instructional cycle plan. To be more specific, when students were given a chance to answer the questions posed at the beginning of the lessons, they were relying on what they already knew to make the answers.

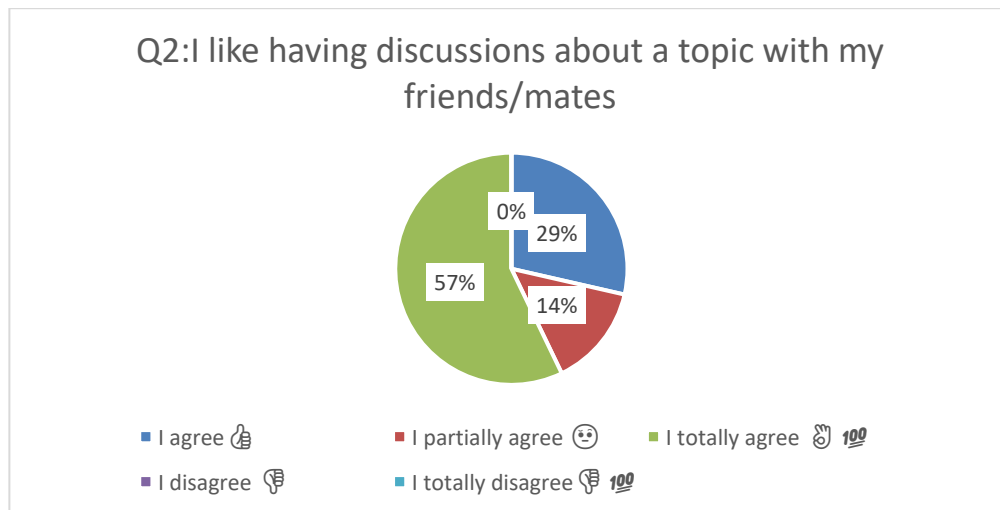


Figure 4: Participants' responses to Q2

The IBL activities implemented in class were mostly done by group discussions. To this point, as it is shown in (Figure 4) the overwhelming majority (86%) stated that they liked having discussions with their friends. In addition to this, there were students who felt uncomfortable to speak up and share ideas, the

group discussions helped tremendously to relieve the tension and start to open up and share what they would know with his/her friends and later with the whole class.

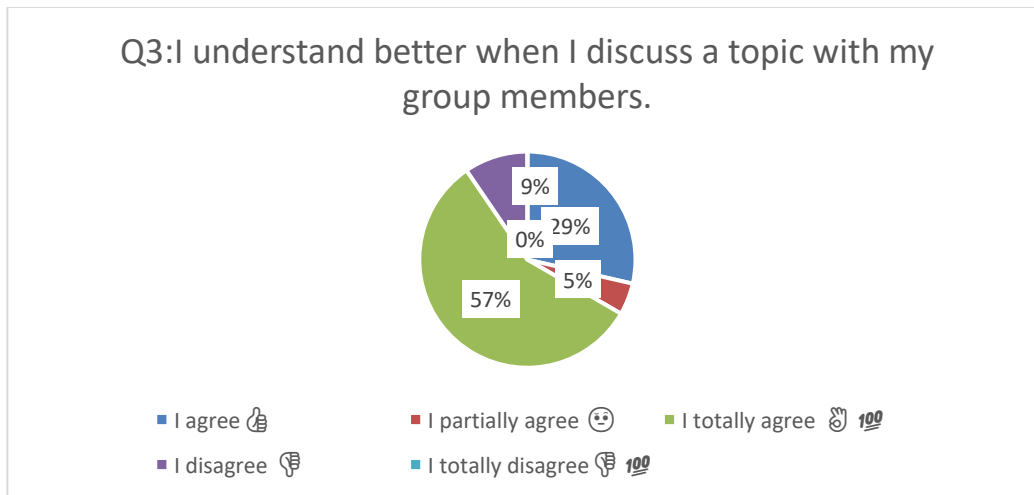


Figure 5: Participants' responses to Q3

In regards of group discussion that suited well with utilizing IBL activities conducted in the study, as indicated in (Figure 5), most of the students stated (86%) that they understand better when they discuss a topic with members of the group while very few of them (9%) disagreed with the statement. To this matter, content delivery is one of the challenges that may face teachers who tryout IBL model. It requires intensive preparation and time as discussed previously, but with the help of group discussions, the challenge is easier to overcome as group work maximizes the number of sources of information available as particularly students can learn from their peers.

On Students' class engagement (Questions 4 to 6)

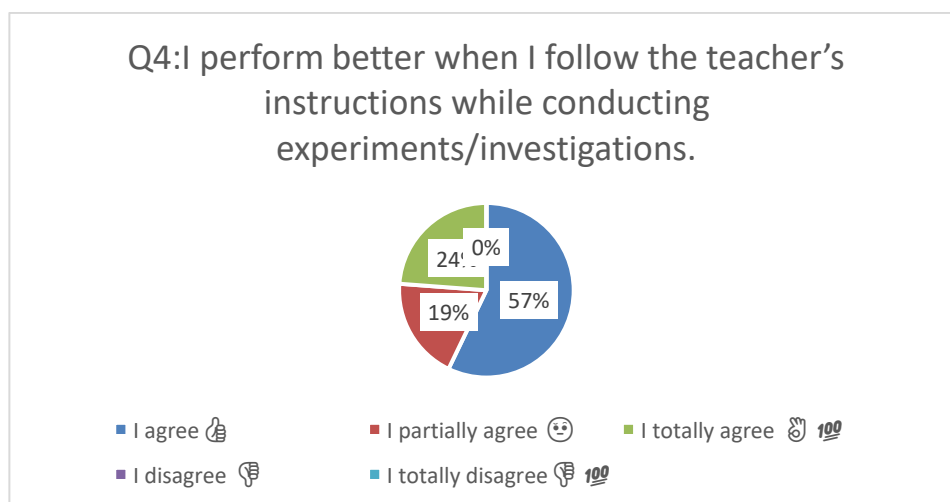


Figure 6: Participants' responses to Q4

When IBL model is carried out, the teacher mostly gives instructions along with the activities in class. Through this, students feel closer and more comfortable. Therefore, as shown in (Figure 6) they (81%) agreed that they perform better during the investigations. In other words, they are engaged with the instructions and class because they are up to complete a task on their own with the help of what is given as resources and instructions.

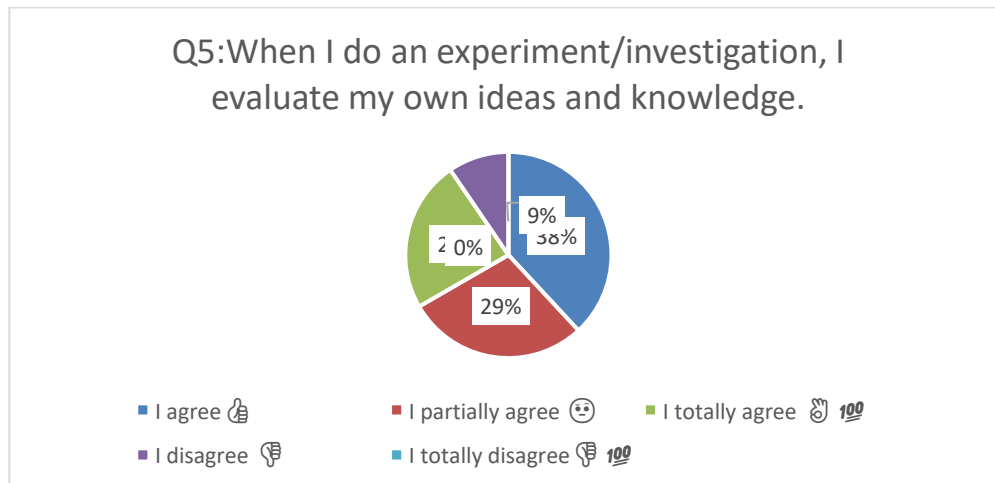


Figure 7: Participants' responses to Q5

In IBL process, students are mostly given tasks to complete. This makes them to get more involved in their learning process. From this view, they take responsibility for their answers and solutions by the end of the investigations. More importantly, this draws their attention to class in which ultimately help their works to be completed properly. Added to this, most of them (62%) agreed as demonstrated in (Figure 7) that it is their work and knowledge that are being evaluated. On the other hand, only (9%) of the participants disagreed with the statement. It is evident that when students realize that by the end of day, it is their work that represents them, so they get more motivated and take the work more seriously. This leads to a better conclusion.

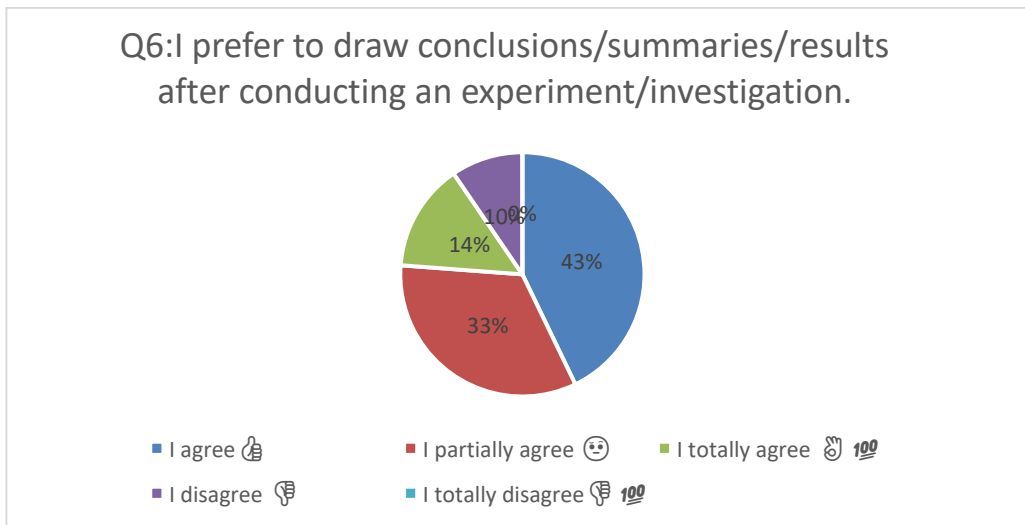


Figure 8: Participants’ responses to Q6

During the classes when a project was finished students were eager to share and draw conclusions through different forms. Hence, to that statement of drawing conclusions, nearly half of them (57%) as showed in (Figure 8) that it is their preference to draw conclusions. While only (10%) disagreed to the statement. It is proven that interesting and exciting activities bring academic success to students. Related to this, drawing conclusions and presenting them by the students brought much excitement to the class where solutions and conclusions were presented.

On Student-centered environment creation (Questions 7 to 10)

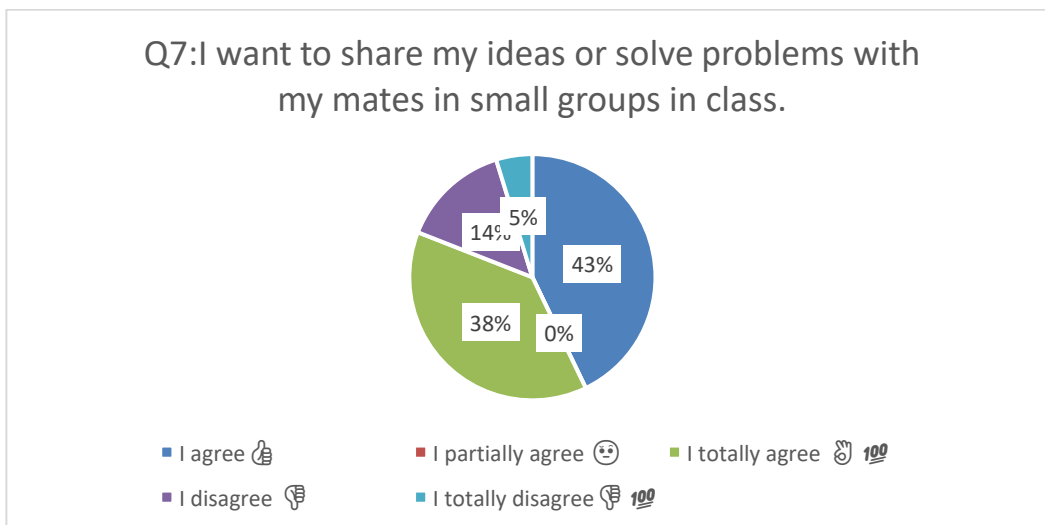


Figure 9: Participants’ responses to Q7

Student-centered instruction is an approach in which learners take an active role in the process of learning (Keiler, 2018). Based on this concept, students were given the chance to work and discuss topics/solve

problems together in the study and they found it very fascinating based on their own responses. As shown in (Figure 9) Most of them (81%) agreed that they like to share their ideas and find solutions to the problems with their mates. This created a dynamic learning environment in which student-centered is all about. On the other hand, only (10%) disagreed to want to share ideas and solve problems with their mate.

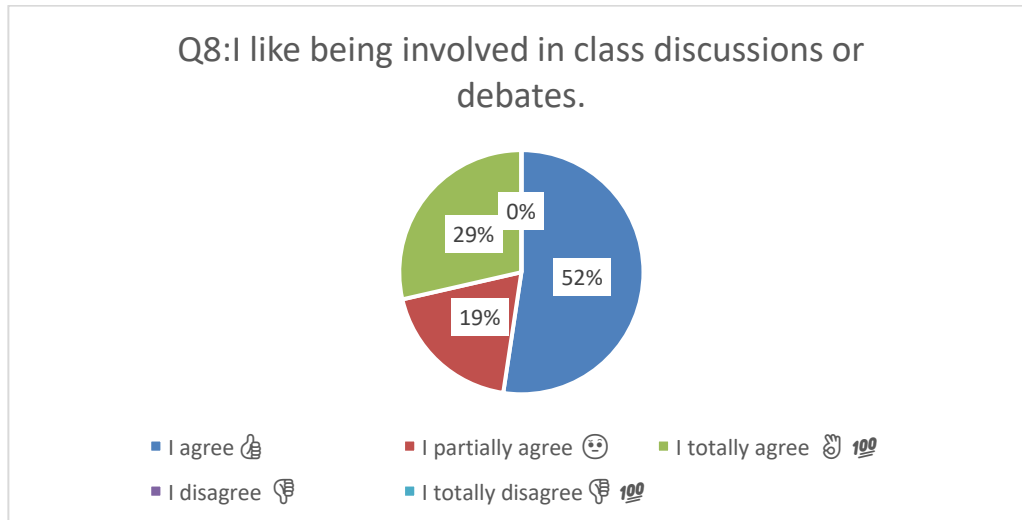


Figure 10: Participants' responses to Q8

In addition to having a dynamic learning that is a key element of student-centered class, as presented in (Figure 10) the majority of the students (81%) liked to be involved in class discussions and debates. This more helped in creating a kind of learning environment that students are more the center of the class rather than the teacher who mostly roles as facilitator.

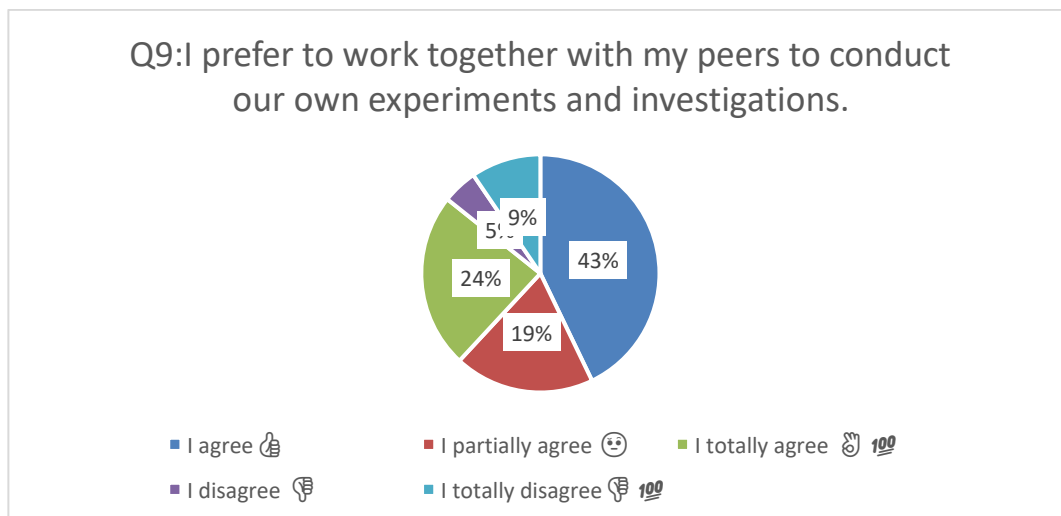


Figure 11: Participants' responses to Q9

Also, students were asked to find out whether they are interested to work in harmony with their mates, as illustrated in (Figure 11) they mostly (81%) preferred to work together with their peers to carry out investigations rather than doing it alone. This adds to the point of having a dynamic atmosphere.

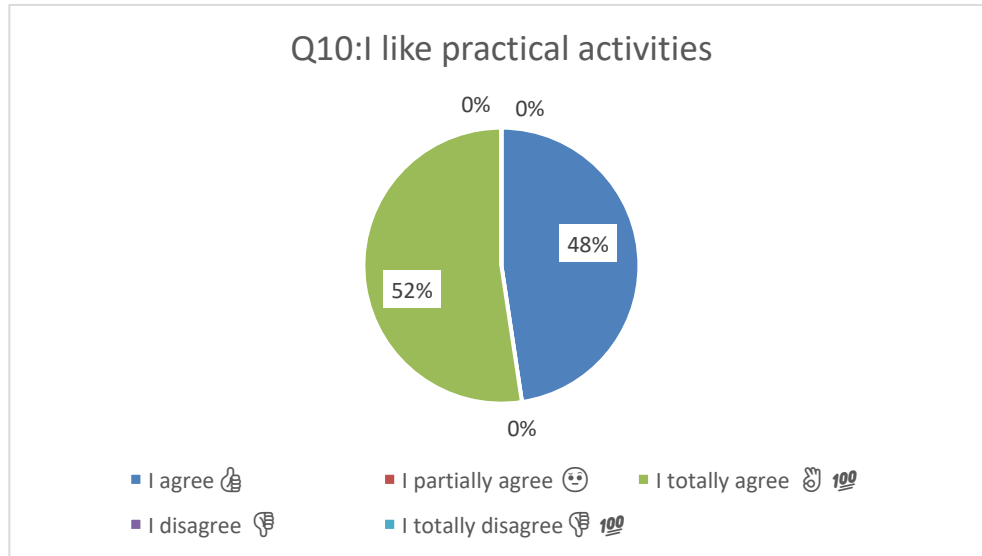


Figure 12: Participants' responses to Q10

In IBL activities, students get to work on hands-on activities that help them to experience real-life situations. To this point, (Figure 12) shows that all of the students (100%) liked practical activities that are one of core activities in IBL.

On Cultivation of the 21st century skills (Questions 11 to 15)

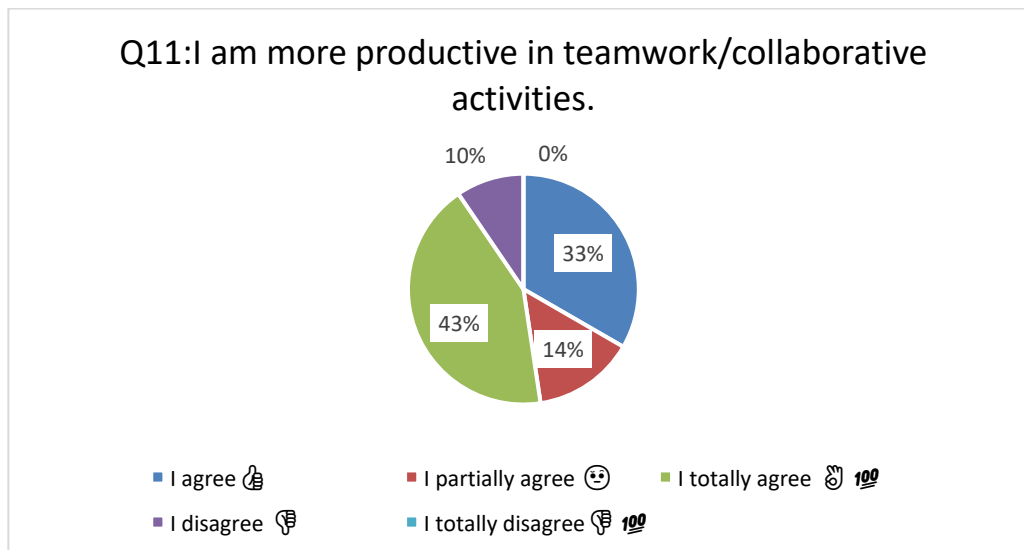


Figure 13: Participants' responses to Q11



One of the important skills among 21st century skills is being able to work collaboratively in a team. To this regard, (Figure 13) shows that most of the participants (76%) stated they are more productive when they work in team collaboratively. At the beginning of the study, there was students who asked to work alone, but as he gradually immersed into the process. He gained the skill of being a collaborative learner and he started to lead the groups as well.

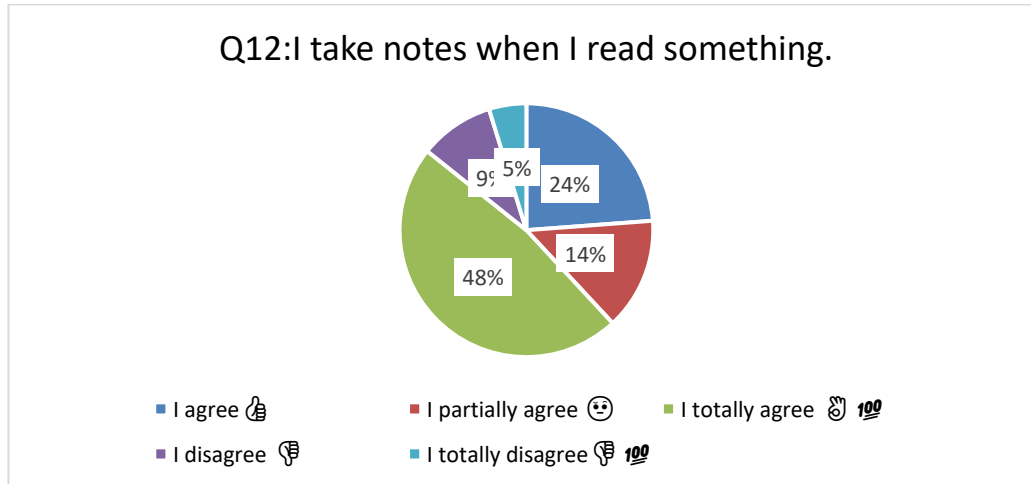


Figure 14: Participants' responses to Q12

Throughout the study, students were asked to read blogs, articles, books, and websites to gather information. They were also asked to take notes while reading. To this point, their opinions were asked. As (Figure 14) presents that most of them would follow and take notes. It is one of the key skills to possess in the 21st century.

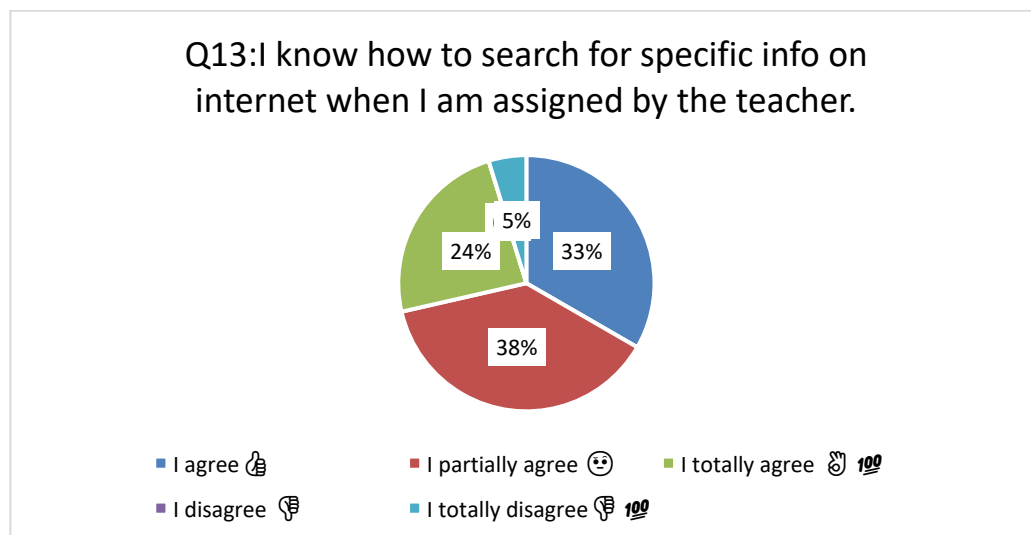


Figure 15: Participants' responses to Q13

Moreover, on skills, to investigate a problem or question, students had to search to find related information pertinent to the concept. They were asked whether they are capable to search after study. As shown in (Figure 15), more than half of them (57%) stated that they can find information on the internet. On this matter, being able to find the right information to what the students are up to was one of the challenges usually hit back. To overcome this challenge, students were given models and samples along with being approachable, mostly, online to give them instructions and ways on how to look for the right information.

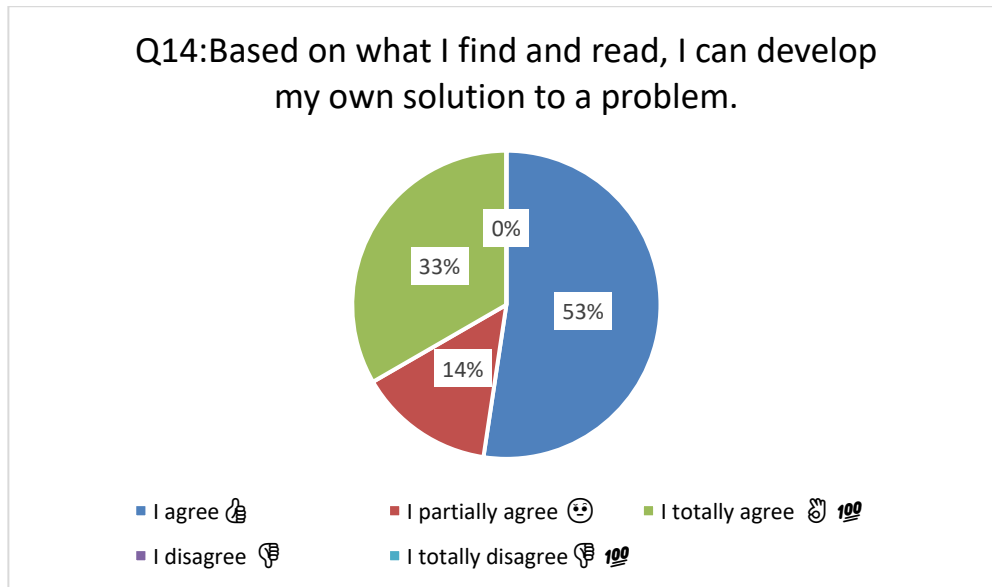


Figure 16. Participants' responses to Q14

Regarding problem-solving skills, students could make use of what they found and read to help them face the problem. As presented in (Figure 16) that the overwhelming majority (88%) said that they can develop their own solution to the assigned problems. This is a kind of skills in which facilitates the way students face real-life problems and how they are approached.

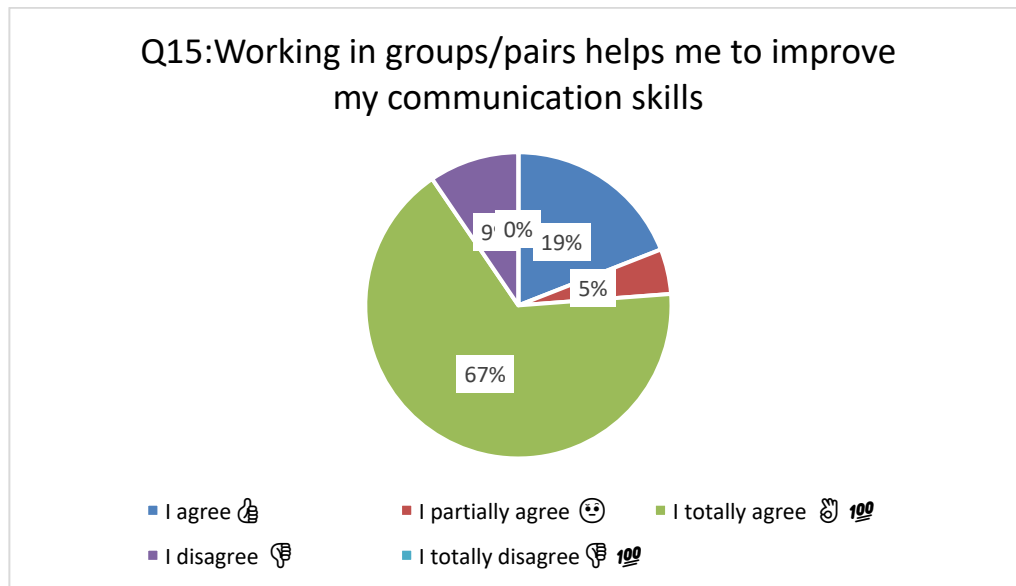


Figure 17: Participants' responses to Q15

Another vital skill is the ability to communicate well. Added to this, as illustrated in (Figure 17) the students (86%) said that after working in groups and pairs in the IBL activities, they could improve their communication skills. Especially, it was more helpful to those students who felt shy speaking up to whole class. It was a good beginning for them to start to communicate since their level was not that high.

To sum up, IBL implementation can be useful in many ways. As it is presented in this section that IBL can be helpful to link the new material to students' prior knowledge through formulating questions. It can also be useful to engage students to class activities. IBL application can affect creating student-centered environment where students are the focus. Last but not least, IBL can help in improving 21st century skills as some of them are covered in the study.

#### 4. Conclusion and Recommendation, Suggestions and Limitations

##### 4.1 Conclusion and Recommendation

The study aimed at pointing out the perceptions' of EFL students of implementing IBL in language classes. and to find out how IBL activates students' prior knowledge along with increasing students' class engagement. Furthermore, finding out to what degree IBL promotes 21st century skills. These were targeted as the study questions to find answers for through the study.

To find the answers for the questions of the study, a research study was conducted in a private university in Kurdistan, Iraq. The participants of the study were from Education Faculty, from first graders where they take English language courses in their foundation year study. The participants were exposed to IBL implementation. At the end of the study, the participants were given a survey to see their perceptions on IBL implementation. Once the data collected through the survey. The analysis of the data commenced to reveal the results as presented below:

- The study reveals that learners' perception and preference is highly positive towards IBL implementation.
- Activating prior knowledge when starting a new lesson is important for students to get engaged and motivated to the new material. Thus, it is very essential that teachers link new material with what the students already know as it is one of the core principles of IBL.
- lack of attention span among students has been one of the challenges teachers have to deal with and improve. Once the students are engaged with the process of learning in class. It ultimately maximizes learning that is achieved through involvement and active participation. IBL can increase the chance of class engagement.
- Student-centered class is very productive and active wherein learners take an active role in learning process. Therefore, proving a student-centered class is highly recommended. IBL found to be effective in this regard.
- Today's world requires today's skills; therefore, teachers need to make sure that 21<sup>st</sup> century skills are introduced.
- According to the survey conducted on the study participants, the findings show that most of the students find IBL activities interesting and productive. The results show that IBL implementation enables prior knowledge when students were asked to share and discuss a particular topic before going through the resources and materials.
- Moreover, IBL implementation helps learners to get engaged in class activities because learners were responsible for their learning process as they were assigned to complete investigations.
- Furthermore, the participants experienced an atmosphere where their role was active through discussion groups and investigations. On the other hand, the role of the teacher was mostly a facilitator to guide them through their learning process.
- Additionally, participants gained some 21<sup>st</sup> century skills such as note-taking skills, the ability to search, communication skills, problem-solving skills, and teamwork skills. These were enabled through different IBL activities.
- The IBL model for prior knowledge activation, class engagement, student-centered environment, and 21<sup>st</sup> century skills cultivation was tested. The results of the study were highly satisfactory as expected. The participants were taught by IBL model procedures that included question-answer activities, group discussions, projects, experiments and investigations on various topics. The findings matched with results of previous studies (mentioned below) conducted on IBL implementation.
- The survey conducted on the participants to see students' perceptions on IBL and to find if IBL implementation affects prior knowledge, class engagement, student-centered environment, and 21<sup>st</sup> century skills. The results showed students' perception toward IBL is positive with all benefits it brings to learners. The results also showed that IBL is one of the proper and ideal models that positively links new material to what the students already know. It also engages students into class activities. IBL provides a more student-centered atmosphere that led to greater success. It also helps to cultivate some of the 21<sup>st</sup> century skills.

According to what is concluded above, the researcher wishes to advise English language teacher to consider IBL model to activate students' prior knowledge, engage students in class, create student-centered

class, and build 21st century skills. The researcher would also like to recommend stakeholders of higher education organizations to help and reinforce IBL implementation in learning and teaching processes.

The study findings match with similar findings of other studies conducted on inquiry-based learning like (Smith, 2016) has presented that the link between IBL implementation is positive with academic achievement and literary skills. Another study by (Lee, 2014) in which discovered that IBL activities give opportunities to students to interact together and participate actively in class. This shows that IBL is proper to gain students attention and get them engaged in class activities. He also pointed out that student can improve academic achievement as they are motivated through IBL activities. Furthermore, (S. K. W. Chu et al., 2017) reveal that through inquiry-based learning procedures, students can develop 21st century skills. There are many studies prove that IBL is one of the ideal models that lead to betterment and enhancement in different perspectives.

#### **4.2 Suggestions**

This section introduces some future study suggestions pertinent with the field so that new findings will be made to get to know more about the possible benefits of IBL model.

1. The participants of the study were freshmen who had taken English language courses in education faculty. There can be a similar study with multiple groups from different generations.
2. The number of the participants twenty-six students. There can be another study with larger population so that the results can be generalized.
3. The level of the students in the study was elementary level. There can be another study with higher level students to see that if similar results will occur.
4. For the data collection in the study, survey was used to collect data. There can be a similar study but using different instruments and tools. So that we could see if the same findings will come out.

#### **4.3 Study Limitations**

The study was conducted in a private university with freshmen and their language proficiency level was elementary which was somehow low to implement activities that needed individuals with higher level. Moreover, the participants were almost all Kurdish who somehow had the same experiences in regards of English language learning. There was only one participant from other nationality. Furthermore, the duration of the study was only three months that is not completely enough. Also, the study was carried out with one department and one generation of one university in Iraq, Erbil with 26 students. For these reasons mentioned, it is hard to generalize the findings for wider populations, however taking into consideration the fact that the participants came from different parts of the country it is enough to conclude that the suggested approach has positive effect on language learning. Lastly, the study methodology is purely quantitative. Other tools of qualitative was followed because only one teacher was involved in the process of conducting the study. Therefore, carrying out interviews with teachers, for example, was not feasible for the researcher.

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**Appendix A: Survey carried out on Participants**

No.	Questions	I totally agree	I agree	I partially agree	I disagree	I totally disagree
1	I have to think about what I already know to develop a question	14%	62%	19%	5%	0%
2	I like having discussions about a topic with my friends/mates	57%	29%	14%	0%	0%
3	I understand better when I discuss a topic with my group members.	57%	29%	5%	10%	0%
4	I perform better when I follow the teacher's instructions while conducting experiments/investigations.	24%	57%	19%	0%	0%
5	When I do an experiment/investigation, I evaluate my own ideas and knowledge.	24%	38%	29%	10%	0%
6	I prefer to draw conclusions/summaries/results after conducting an experiment/investigation.	14%	43%	33%	10%	0%
7	I want to share my ideas or solve problems with my mates in small groups in class.	38%	43%	0%	14%	5%
8	I like being involved in class discussions or debates.	29%	52%	19%	0%	0%
9	I prefer to work together with my peers to conduct our own experiments and investigations.	24%	43%	19%	5%	10%
10	I like practical activities	52%	48%	0%	0%	0%
11	I am more productive in teamwork/collaborative activities	43%	33%	14%	10%	0%
12	I take notes when I read something.	48%	24%	14%	10%	5%
13	I know how to search for specific info on internet when I am assigned by the teacher	24%	33%	38%	0%	5%
14	Based on what I find and read, I can develop my own solution to a problem	33%	52%	14%	0%	0%
15	Working in groups/pairs helps me to improve my communication skills	67%	19%	5%	10%	0%