Mohamed Khider University of Biskra
Faculty of Letters and Languages
Department of Foreign Languages

MASTER THESIS

Letters and Foreign Languages
English Language
Sciences of the language

Submitted and Defended by:
DJEROU Khadidja

On:

INVESTIGATING THE ROLE OF RESEARCH PROJECTS TO PROMOTE STUDENTS' INQUIRY-BASED LEARNING

The Case of Master English Language Students of Sciences of the Language at Biskra University

Board of Examiners:

Dr.	**Meddour Mostafa**	**MCB**	Biskra	President
Dr.	**RABEHI Salima**	**MCA**	Biskra	Supervisor
Mrs.	**Aichaoui Theldja**	**MAA**	Biskra	Examiner
Mr.	**Senouci Zakaria**	**MAA**	Biskra	Examiner

Academic Year : 2019/2020

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Dedication

I dedicate this work to my parents, and my family.

Acknowledgement

I would like to express my sincere gratitude to my supervisor **Dr. RABEHI Salima** for her inspiration, support, guidance**,** and efforts.

A special gratitude goes to the board of examiners for accepting to assess my work: **Dr. Meddour Mostafa**, **Mrs. Aichaoui Theldja,** and **Mr. Senouci Zakaria.**

I would like, also, to thank all EFL teachers and students at the University of Mohamed Khider Biskra for their collaboration and efforts.

Abstract

Undergraduate students are expected to conduct research and submit a dissertation by the end of their final academic year to obtain a Master degree. EFL students at the University of Mohamed Khider Biskra claimed that they face many issues during the research process. The lack of practice and exposure to research at their early learning stages, in addition to the lack of the 21st century skills and inquiry skills may be the main reasons of these issues. The modern world demands changes in the educational system and requires students' empowerment with creativity, critical thinking, collaboration, and inquiry skills to solve problems and create innovative solutions. The aim of this study is to investigate the role of research projects assignments to promote students' inquiry-based learning. We hypothesised that assigning research projects in EFL classes can promote students' inquiry-based learning and develop their ability to analyse, synthesise, and evaluate information. In order to test the validity of the hypotheses we opted for a mixed methods research approach, and a case study research design. We have selected questionnaire as data collection method to gather information for our research study. The questionnaire was administrated to seven (7) EFL teachers and forty-two (42) first year Master English language students of sciences of the language at the University of Mohamed Khider Biskra. The research findings proved that both EFL teachers and students affirmed the role of research projects assignments to promote students' inquiry-based learning and create opportunities for students to direct their learning and improve their research and inquiry skills. At the end, it is highly recommended for teachers to engage students in research and inquiry activities at early stages of their learning and to implement student-centred approaches in general and inquiry-based learning approach in particular in EFL classes.

Keywords: *research projects, inquiry skills, 21st century skills, inquiry-based learning, project-based learning*

List of Abbreviations and Acronyms

EFL: English as a Foreign Language

IBL: Inquiry-based Learning

PBL: Project-based Learning

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General Introduction

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Introduction

The current study describes the role of using research projects to promote inquiry-based learning. It highlights the importance of inquiry-based approach in language learning and the effectiveness of research projects in developing learners' deeper understanding of content. Inquiry-based learning creates self-directed and life-long learners that are the main goals of student-centered approaches.

1. Statement of the Problem

During the four academic years ((2015/2016)-((2018/2019)) of studying in the division of English at the University of Mohamed Khider Biskra, we observed that students relied on the theoretical lectures presented by teachers. The nature of most of the courses and some other different criteria, made it hard for teachers to create a learning environment that can encourage students to make critical conclusions about the content that they have been taught. Most teachers prepared handouts about different subjects to facilitate the learning process; however, students have become less interested in activities that require high-level of thinking and reasoning skills.

Students depend only on what teachers provide. They spend their time memorizing lectures presented in the form of handouts. They lack researching skills and scientific curiosity. However, some teachers in Master level assign research projects and create opportunities for students to actively participate in the lesson and approach problems with a sense of inquiry. Students should be encouraged to think critically and creatively about different topics, make discovery, reflections, and develop their own views.

Inquiry-based learning is an innovative approach in education that provides students with opportunities to develop meaningful questions, investigate different views in the same topic, reflect, and make critical conclusions. Research projects are one form of activities that may promote inquiry-based learning and students- centered approach. They

may also develop students' ability to analyse, synthesise, and evaluate information. Inquiry-based learning moves students beyond just passively receive knowledge to create critical solutions and become self-directed and self-motivated learners.

2. Significance of the Study

This study is significant to raise awareness among teachers and learners about a new area of research, which is inquiry-based learning approach. It focuses on the importance of inquiry-based learning in teaching English as a foreign language and the use of a variety of tasks including research projects to develop students' inquiry skills such as analysing, synthesising, reasoning and high order thinking. This study is crucial to explore teachers and students perceptions on the use of research projects to promote Inquiry-based learning. The interpretations of teachers and students perceptions can highlight the challenges of Inquiry-based learning and the importance of using research projects in language classrooms. Additionally, this study helps learners and future researchers to overcome related issues to conducting research and writing their dissertations.

3. Aims of the Study

This study is designed to provide information about Inquiry-based learning and research projects. Therefore, the researcher aims at:

1) Exploring how can Inquiry-based learning promote student-centered learning outcomes,

2) Identifying the different outcomes of using research projects in English as a foreign language (EFL) classrooms,

3) Collecting and analyzing teachers and students perceptions on the use of research projects to promote inquiry-based learning.

4. Research Questions

The current study seeks to answer the following questions:

RQ 1: How can Inquiry-based learning promote student-centered learning outcomes?

RQ 2: What are the outcomes of using research projects in language classrooms?

RQ 2.1: To what extent can research projects promote students inquiry-based learning?

RQ 3: How do teachers and students perceive the use of research projects to promote inquiry-based learning?

5. Research Hypotheses

We suggest that using research projects in language classrooms can promote students' inquiry-based learning and create life-long learners who are self-directed and self-motivated.

6. Research Methodology for This Study

Research methodology is the overall plan of the research project. The researcher follows a systematic process to succeed in conducting the research study.

6.1. Research approach

The researcher follows the mixed methods research approach, which is the suitable approach for the nature of the current study. It provides opportunities for the research to collect precise and credible data to explore the role of research projects to promote students' inquiry-based learning, in addition to teachers and students' thoughts and attitude toward the use of research projects and the implementation of inquiry-based learning approach in English as foreign language (EFL) classrooms.

6.2. Research design

Due to the nature of our research study, we opt for a case study research design (small-scale study). The case study research design simplifies the complexities of our research study and provides in-depth insights into the relationship between research projects and inquiry-based learning approach. It helps to explore and describe teachers and

students' perceptions and behaviours about the use of research projects to promote inquiry-based learning in real-life context (EFL classrooms).

6.3. Data collection tools

This study opts for:

- **A questionnaire for students**

We use a semi-structured questionnaire for students to explore their reactions and attitudes toward the use of research projects, and the outcomes of implementing inquiry based learning.

- **A questionnaire for teachers**

We also use a questionnaire for teachers to know their perceptions and points of view about the use of research projects and their impact on inquiry-based learning.

6.4. Data analysis and procedure

We analyse data through percentages and numbers by using statistics. Also, we use descriptive analysis to describe and interpret teachers and students perceptions on the use of research projects and the implementation of inquiry-based learning, in addition to the relationship between research projects and inquiry-based learning.

6.5. Population and sample

We suggest that first year Master English language students of sciences of the language at the University of Mohamed Khider Biskra can be a suitable population for this study (N= 131) because they are assigned research projects during the academic year in some major courses such as: Applied Linguistics, Academic Writing, Discourse Analysis. Secondly, they are expected to develop their research skills as well as critical thinking and reasoning skills. Finally, they are required to submit a dissertation in their second year to fulfill their Master degree.

As a sample, we choose fifty students randomly to collect their attitude and reactions towards the use of research projects and to explore their benefits on their learning outcomes. Additionally, we choose from five to seven teachers to identify their different insights on the use of research projects and their impact on inquiry-based learning.

7. Sampling Techniques

The current study belongs to social sciences. We opt for a simple random sampling technique. All the elements in this study have equal chances so this promotes the credibility of the obtained results and decreases the biases. Also, this sampling technique is the suitable sampling technique for the nature of our study and our research aims.

8. Structure of the Study

This study consists of two parts. The first part deals with the literature review of the the research variables. It consists of two main chapters. Moreover, the second part deals with the field work of the current study. It consists of one chapter that deals with the finding of the study and interpretation of the results. So, this study consists of three chapters. The first chapter deals with a general overview about inquiry-based learning approach, while, the second one deals with project-based learning and research projects. Finally, the third chapter deals with the field work and data analysis.

Chapter One

General Overview about

Inquiry-based Learning.

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Introduction

The globalization and the changes in human life have affected the educational area and called for new teaching and learning approaches that are knowledge-based and essentially collaborative. The modern challenges demand empowering learners with cultivation, creativity, critical thinking and inquiry mindset that contribute in problems solving and creating innovative solutions. This chapter attempts to provide a general overview about Inquiry-based learning as a widely advocated educational approach, its definitions, origins, characteristics, stages, significance and challenges, in addition to teachers' perceptions about the implementation of this approach.

1.1. General Overview about Inquiry-based Learning

Chu (2009) mentioned that Harada and Yoshina (2004), Hu, Kuh, and Li (2008), Donham, Bishop, Kuhlthau and Oberg (2001) insisted on the effectiveness of inquiry-based learning as an innovative educational approach and argued that this approach is a more effective mode of learning than the traditional teaching and learning process.

1.1.1. Definition of inquiry

In this research, we have chosen to use inquiry instead of enquiry based on the definition provided by the Oxford Dictionary. According to the Oxford Living Dictionary: enquire is to be used in general situations where one is 'asking', while inquire is reserved for uses that entail 'making a formal investigation'. These terms are adopted from Old French enquerre, and the Latin inquirere and quaerere, which mean to 'seek'. In American English, the word inquiry is used rather than enquiry; whereas, in the United Kingdom, enquiry is the commonly used term in educational settings (Kidman and Casinader, 2017, pp. 3-4).

Inquiry has multiple indications in different disciplines. In the notion of teaching and learning, Galileo educational network defined inquiry as a dynamic process of

wondering and exploring to discover and comprehend the world. (as cited in, Alberta ,2004). Inquiry is a set of actions to learn and gain knowledge through gathering information, answering questions and solving problems. Inquiry is the process of investigating and searching for knowing what is unknown, and constructs knowledge based on a scientific procedure of gathering, analyzing and evaluating data.

1.1.2. Definition of inquiry-based learning

Inquiry-based learning (IBL) is a new approach in the educational filed. It is an innovative teaching and learning methodology that is fundamentally concerned with questioning, hypothesizing and exploring the unknown. Alberta (2004) stated that:

> Inquiry-based learning is a process where students are
>
> involved in their learning, formulate questions,
>
> investigate widely and then build new understandings,
>
> meanings and knowledge. That knowledge is new to
>
> the students and may be used to answer a question, to
>
> develop a solution or to support a position or point of
>
> view. The knowledge is usually presented to others and
>
> may result in some sort of action (p. 1).

So, inquiry-based learning approach is a teaching and learning procedure where learners are engaged in the inquiry process of questioning, investigating, and building new knowledge.

Colburn (2000) viewed inquiry-based learning as "the creation of classroom where students are engaged in essentially open-ended, student-centred, and hands-on activities."(as cited in, Singman, 2017). Scardamalia (2002), Anderson (2002), Shih, Chwang and Hwang(2010) agreed on defining inquiry-based learning as a pedagogical approach that moves learners from passively receive knowledge to actively develop a set

of skills to seek information and become knowledge builders. Inquiry-based learning engages learners in the learning process through inquiring, investigating and exploring situations to answer questions and find solutions.

1.1.3. Origins of inquiry-based learning

Inquiry-based learning is a teaching and learning process that is strongly advocated by constructivist educators.

1.1.3.1. The history of inquiry instructions

Inquiry has a long history in the educational field. It is grounded in the concepts and principals of many educators. Inquiry instructions have been promoted in the area of teaching and learning for many years. Benson (2000) and Dariush (2012) believed that this approach has its roots in the philosophy of the ancient theorists: Socrates, Plato, and Aristotle (Lucas and Jarrett, 2015). Inquiry-based learning has been advocated in the works of many scholars such as: Dewey, Vygotsky, Piaget, and Bruner.

Dewey in his book: How We Think (1910) highlighted the importance of teachers' guidance to students when they construct knowledge based on inquiry and reflection. These elements have become the key principles of Inquiry-based learning. Dewey (1910) argued that the learning experiences must be collaborative and allow learners' knowledge construction. Dewey (1910) insisted on the Interrelationship between cognition and social interactions. He called for implementing inquiry-based learning and encouraging learners to think and reflect to obtain knowledge.

Vygotsky (1896-1934) like Dewey agreed on the role of social interactions and cognitive construction. He stated that humans are naturally curious and aim at seeking answers to their questions to change environments and test their thoughts against others' views and conclusions. He believed that teachers are required to scaffold students' inquiry-

based learning by providing assistance within the proximal zones of development and improve reflection upon actions (Herman and Pinard, 2015).

Herman and Pinard (2015) noted that:

> Jean Piaget (1896_1980) also thought personal engagement was necessary for cognitive change, through schematic development. Piaget assumed learning tasks require inherent practical value to capture student interest. Manipulating objects or concepts to discover principles, students share "truths" and offer scientific evidence or proof, realizing constructivist IBL principles (p. 46).

Finally, Bruner argued that education is an ongoing process of experiences and personal discovery. He stated that learners are required to seek information for their personal understanding and new knowledge building. Learners should make inquiries to solve problems, and distinguish between what they already know to discover new knowledge. The teachers' role is guiding learners through their active process of learning. Burner believed that learning is an active social process where learners construct knowledge based on their social experiences to build understanding of current knowledge (Clabaurgh, 2010).

To conclude, inquiry-based learning was advocated by many educators. The principles of this teaching approach were rooted in the work of ancient philosophers such as: Plato, and Socrates. Moreover, many social constructivist scholars called for allowing learners to make inquiries to construct their own knowledge. Teachers are supposed to scaffold learners' progress in the inquiry process. Nowadays, this educational approach

meets the requirements and the challenges of the modern world. It increases learners'
engagement and allows student-centred instructions.

1.1.3.2. Metacognition and inquiry-based learning

Metacognition is: "knowledge and understanding of your own
thinking."(Cambridge dictionary online, 2020). It is the process of knowing about thinking.
Metacognition is one of the important skills of higher-order thinking. The term was firstly
introduced by Flavell. He defined metacognition as your knowledge about your cognitive
processes (Flavell, 1979 as cited in, Lai, 2011).

Hennessey (1999) defined metacognition as:

> Awareness of one's own thinking, awareness of the
>
> content of one's conceptions, an active monitoring of
>
> one's cognitive processes, an attempt to regulate one's
>
> cognitive processes in relationship to further learning,
>
> and an application of a set of heuristics as an effective
>
> device for helping people organize their methods of
>
> attack on problems in general (as cited in, Lai, 2011).

To conclude, Metacognition is the students' ability to monitor their learning
processes and their awareness of their comprehension and knowledge building. It is related
to many other essential educational concepts such as critical thinking, motivation, self-
regulated learning and Inquiry-based learning. IBL has been associated with improving
students' self regulation (Schraw et al.,2006 as cited in, Seraphin et al.,2012); which is
connected to metacognition skills.

IBL is a pedagogical approach that promotes students' self-direction and self-
regulation, and fosters students' self-reflection. Alberta (2004) stated that: "Through
reflecting on the process during inquiry-based learning activities, students are given

opportunities to explore and understand both the cognitive and affective domains of "learning to learn" (Hacker, 1999; Kuhlthau, 1988)." Metacognition in IBL is related to learners' awareness of their own cognitive processes and thoughts, in addition to their affections and feelings. Inquiry-based learning can be an effective teaching and learning approach when learners are able to understand their thoughts and feelings.

Figure 1 was introduced by Alberta (2004) to illustrate the meaning of metacognition:
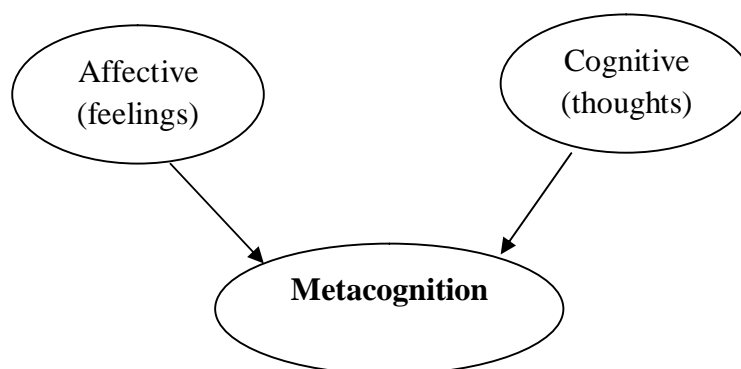
Figure 1 the Metacognition Process

(Alberta, 2004, pp 3)

Alberta (2004) highlighted that inquiry-based learning approach provides learners with opportunities to direct their learning and understand their cognitive processes including their thoughts, and their affective processes including their feelings. This is an example of metacognition which means learners knowledge and awareness about their thoughts and feelings when directing their learning and building their own knowledge.

1.1.3.3. Collaborative teaching and inquiry-based learning

Inquiry- based learning is a student-centred approach where learners are actively engaged in the learning process. The teacher's role is to provide scaffolding instructions. IBL is a multidisciplinary approach which requires learners to master a set of skills such as: reading, presenting and computer skills (Chu et al., 2012, as cited in, Chu et al., 2017).

So, it is hard for one teacher to cover all these knowledge and skills in the teaching procedure. A collaborative inquiry -based learning calls for a collaborative teaching to assist learners during their construction of knowledge and development of different skills.

Bray(2002), Hughes and Ooms (2004) pointed out that inquiry learning characterized by improving teaching practice in terms of classroom behaviour and self-improvement (Chu et al., 2012, as cited in, Chu et al., 2017). Teachers aim at improving teaching quality so they rely on different available literature resources in addition to their own or their colleagues' experiences to guide the inquiry learning process (Buler & Schuellert, 2012, as cited in, Chu et al., 2017).

Furthermore, Sandholtz (2002) stated that in the inquiry-based learning approach, teachers have the opportunity to work with their colleagues, reflect and improve their teaching methodology (Chu et al., 2012, as cited in, Chu et al., 2017). So, in the inquiry process teachers highlight common issues of teaching and learning and try to solve related problems collectively (Deni & Malakolunthu 2013, as cited in, Chu et al., 2017). Teachers' collaboration is essential in inquiry programs for the development of teaching quality and the different required skills for learners.

To conclude, inquiry-based learning approach insists on the importance of collaborative teaching. Learners are expected to build knowledge based on their personal inquiries, in addition to develop a set of 21st century skills and inquiry skills. This requires the collaboration of teachers to reflect on their teaching methodology and allow learners to construct different skills which will increase the quality of teaching and students' engagement in inquiry-based learning environment.

1.1.3.4. Collaborative learning and inquiry-based learning

Collaborative learning is a promising culture of today's teaching and learning procedures. Smith and MacGregor (1992) defined this term as follow:

"Collaborative learning" is an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together. In most collaborative learning situations students are working in groups of two or more, mutually searching for understanding, solutions, or meanings, or creating a product (as cited in, Washington Center for Improving the Quality of Undergraduate Education, p.1)

Group work is a fundamental element of collaborative learning. Learners are expected to construct knowledge based on communicating their thoughts and interpreting information. The teacher's role is to maintain control and guidance. Brindley, Walti, and Blaschke (2009); Garrison (2006); Harasim, Hiltz, Turoff, and Teles (1995) emphasised that collaborative learning is a strong component of inquiry-based learning approach since learners are actively participating in the learning process (as cited in, Sangra`, Gonza´lez-Sanmamed, & Guitert.,2015) .

Inquiry-based learning environment encourages collaborative learning and engages learners in activities that require collaboration to reach solutions and construct new knowledge. Inquiry-based learning approach increases learners' engagement and collaboration. Learners search for innovative solutions and new information to acquire new knowledge. Then, they share their results with their classmates and teacher to discuss and reflect on their research findings.

1.2. Characteristics of Classrooms Using Inquiry-based Learning Successfully

Inquiry-based learning is a student-driven approach where learners are encouraged to originate meaningful questions, create authentic investigations, determining the

resources and skills needed to answer these questions and solve the addressed problems. In the IBL environment, learners are responsible for their skills and knowledge development. They use higher-order thinking as identified in *Bloom's Taxonomy of learning objectives*. They use logic, reasoning and argumentation in addition to creativity and critical thinking skill (Blessinger and Carfora, 2015).

An inquiry-based learning environment requires specific instructions and a set of characteristics. Alberta (2004) stated that:

> Classrooms where teachers emphasize inquiry-based learning have the following   characteristics (Drayton & Falk, 2001):
>
> • Inquiry is in the form of authentic (real-life) problems within the context of the curriculum and/or community.
>
> • The inquiry capitalizes on student curiosity.
>
> • Data and information are actively used, interpreted, refined, digested and discussed.
>
> • Teachers, students and teacher-librarian collaborate.
>
> • Community and society are connected with the inquiry.
>
> • The teacher models the behaviours of inquirer.
>
> • The teacher uses the language of inquiry on an ongoing basis.
>
> • Students take ownership of their learning.
>
> • The teacher facilitates the process of gathering and presenting information.

• The teacher and students use technology to advance

inquiry.

• The teacher embraces inquiry as both content and

pedagogy.

• The teacher and students interact more frequently and

more actively than during traditional teaching.

• There is an identifiable time for inquiry-based

learning.

In short, creating an inquiry-based learning environment is fundamentally concerned with directing the teaching process toward a student-centred procedure where the inquiry process is driven from learners' questions, investigations, data collection and interpretation of conclusions. The teacher's role is guide the inquiry process, provide support and facilitation.

1.3. Stages of Inquiry-based Learning

Inquiry-based learning is a process of obtaining knowledge, resolving doubts, and solving problems. It is a pedagogical approach that focuses on exploring through a scientific process of making discoveries. This process follows a set of steps and goes through many phases. Pedaste, Mäeots, Siiman, de Jong, van Riesen, Kamp, Manoli, Zacharia, and Tsourlidaki (2015) identified different phases and sub-phases of the process of inquiry-based learning as follow:

1. **Orientation phases:** The inquiry process begins with stimulating curiosity about a topic and challenge learners to define a problem statement. The teacher's role is to select relevant topics.

2. **Conceptualization phase:** This is the process of stating research questions and hypotheses. It is divided into two sub-phases:

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- Questioning sub-phase: The process of defining research questions when learners have little knowledge about the chosen topic.

- Hypothesis generation sub-phase: The process of generating hypotheses after gaining knowledge on the chosen topic.

3. **Investigation phase:** It is the process of exploring evidence, gathering and analyzing data to answer the research questions. The teacher's role is to monitor and assist learners. There are three sub-phases that fall under this phase:

- Exploration sub-phase: It is a systematic process of planning data generation based on the research questions. The teacher's role is to urge learners to plan the relevant data.

- Experimentation sub-phase: The process of conducting an experiment to test the hypotheses.

- Data interpretation sub-phase: In this sub-phase, learners construct meaning out of the collected data and integrate a set of new knowledge.

4. **Conclusion phase:** Learners report research findings and draw conclusions by comparing the obtained data with the suggested hypotheses. The teacher's role is to encourage learners to share the research findings with their peers.

5. **Discussion phase:** This phase is connected to all the previous phases. It is based on communicating research findings and reflecting on each phase of the inquiry cycle. It consists of two sub-phases:

- Communication sub-phase: It is the process of presenting the findings of each phase or the whole inquiry cycle and gathering feedback from teachers and peers.

- Reflection sub-phase: The process of describing the whole inquiry cycle focusing on developing learners' scientific and creative thinking, critical

thinking and problem solving skills in addition to socio-scientific decision making abilities.

- Thinking and problem solving skills in addition to socio-scientific decision making abilities.
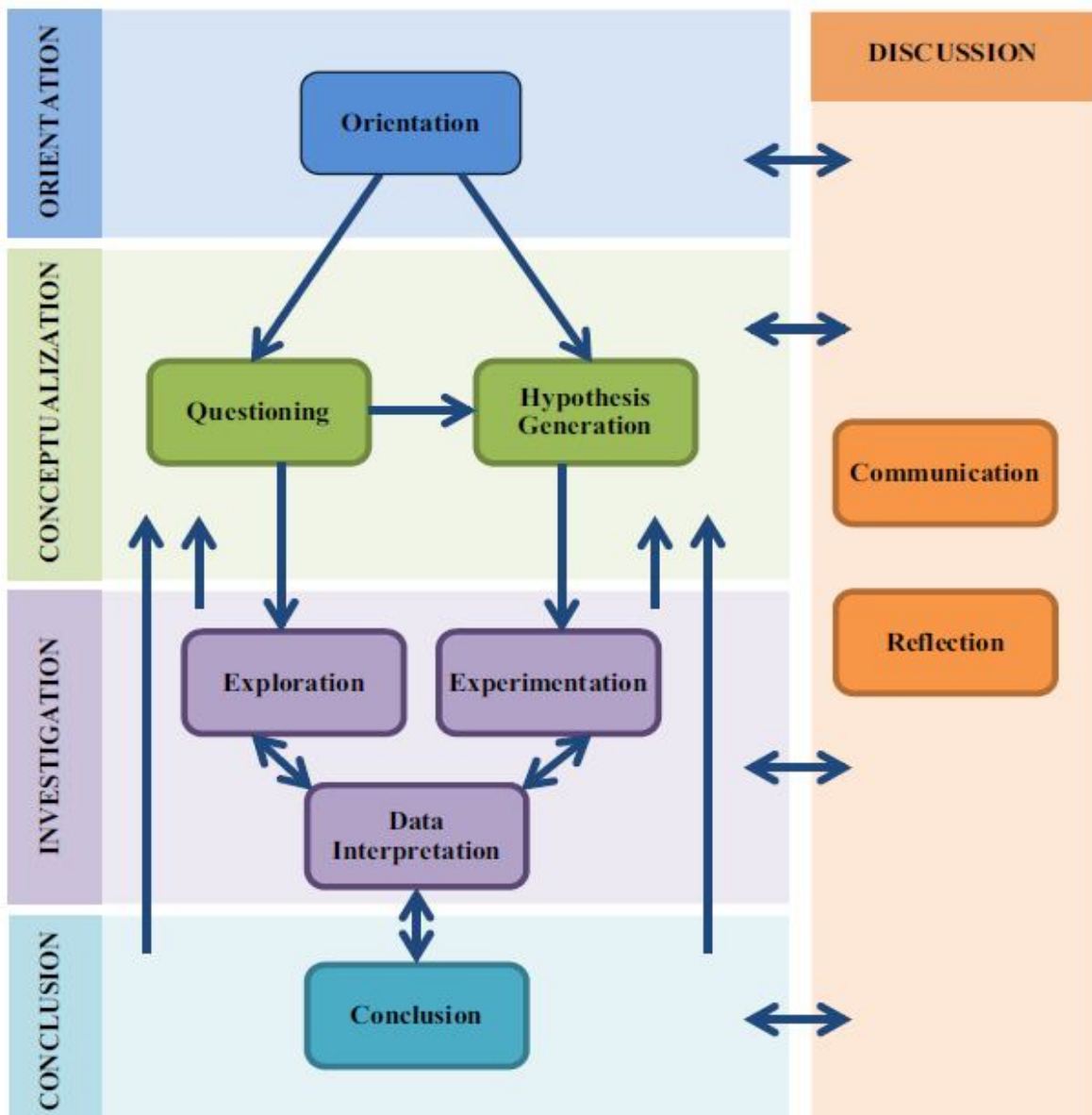
Figure 2: Inquiry-based learning framework (general phases, sub-phases, and their

relations)

(Pedaste et al, 2015, pp 56).

Figure 2 was introduced by Pedaste, Mäeots, Siiman, de Jong, Riesen, Kamp, Manoli, Zacharia, and Tsourlidaki (2015) to illustrate the phases and sub-phases of the inquiry process.

1.4. Planning Inquiry-based Learning Activities

According to the traditional mode of learning, learners are required to memorize knowledge presented by their teachers; however, in the inquiry-based learning environment, learners construct knowledge and develop their skills through a scientific procedure of questioning, formulating hypotheses, collecting and analyzing data, and reporting findings.

1.4.1. The inquiry model

The inquiry model emerged in the 1960 s, during the "discovery learning" movement. It is based on the idea that individuals should learn through investigating scenarios and problems, and within a social context rather than memorizing information from books and handouts. The teacher's role is to encourage learners to conduct investigations and search for knowledge to develop their skills and mental abilities (Pappas, 2014).

The inquiry model can support both teachers and learners, and can be used in different ways (Donham, 2001; as cited in, Alberta, 2004.).Alberta 2004 pointed out that the inquiry model can be used as: a scaffold for instruction, a 'gauge for feelings', a common language for teachers and students, and as a guide for both students and teachers. The inquiry model provides scaffolding for instructions by identifying the content and outlining the required skills and strategies during the planning of inquiry-based learning activities.

Moreover, the inquiry process brings different feelings. Learners may experience a different range of emotions including apprehension, enthusiasm, frustration and

excitement; however, by referring to the inquiry model, teachers are able to recognize when students are experiencing different emotions and they are able to provide support and reflective activities that can help learners to continue the process of inquiry-based learning.

Furthermore, the inquiry model increases effective communications between teachers and students. Students can discuss the processes involved in the inquiry model and build a better understanding about the IBL approach. The inquiry model encourages students to develop their own knowledge and direct their learning. Teachers can use the model of inquiry to assess students' progress and evaluate the effectiveness of the teaching instructions.

1.4.2. Types of inquiry-based learning

Martin-Hansen (2002) suggested that inquiry-based learning approach has four types of inquiry:

1. Open or full inquiry: The National Research Council (1996) and Colburn (2000) agreed on defining open or full inquiry as a student-centred approach that starts with students formulating questions then conducting investigations to find answers and report results.

2. Guided inquiry: The guided inquiry starts with the teacher choosing the questions to begin the investigations. Learners decide how to proceed the investigation required to reach open-inquiry investigations. The teacher opts for guided inquiry to develop students researching skills and prepare them for more complex investigations of open-inquiry.

3. Coupled inquiry: Dankhase (2000) defined coupled inquiry as a combination between guided inquiry and open inquiry (as cited in, Martin-Hansen, 2002). The teacher chooses the first question to be investigated then students generate

questions that are closely related to first investigation. In this type of IBL, learners connect their concrete experiences to abstract concepts.

4. Structured inquiry: It refers to directed inquiry which is mainly guided inquiry directed by the teacher. Learners are required to follow the teacher's directions and instructions. The teacher allows learners to make choices about the investigation.

1.4.3. The role of the teacher

Teachers are challenged to engage learners in the learning process to develop a set of skills and knowledge they need to cope with the requirements of the modern world. Inquiry-based learning is a student-centred approach where learners construct knowledge and direct their learning; however, teachers are required to guide and assess their learners during the different phases of the inquiry cycle.

"Capacity Building Series Magazine" (2013) stated that:

> In this process, educators play an important role. Teachers model how to contribute and extend ideas, how to question and how to carry out an investigation of one's ideas or theories. They play the role of "provocateur," finding creative ways to introduce students to ideas and to subject matter that is of interest to them and offers "inquiry potential" or promise in terms of opportunities for students to engage in sustained inquiry of their own (p. 2).

The teacher's role in inquiry-based learning environment as a resource is to provide materiel resources needed in the inquiry activities. Teachers should encourage and motivate learners to generate questions and conduct investigations by planning and assessing the suitability of the classroom activities. The inquiry activities should be

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designed to expose learners to new knowledge and to develop their creativity, critical thinking skills and social skills such as: collaboration and communication (Dostàl, 2015, pp 111-113).

Briefly, teachers' role in the inquiry cycle is to construct meaningful activities that will encourage learners to develop a set of new skills. Moreover, they are required to provide guidance and instructions that will facilitate learners' process of inquiry. Inquiry-based learning is a student-centred approach where the emphasis is on learners as knowledge builders. Teachers in this approach create inquiry opportunities for their learners and target the essential skills they need to reach new knowledge. They foster their research and inquiry skills in addition to critical thinking and reasoning skills.

1.4.4. The role of the students

In the inquiry cycle, learners are responsible of their own learning. They should generate questions, formulate hypotheses and conduct investigations to explore new knowledge. They are members of a responsive learning community where they ask questions, share ideas with their classmates and make connections (Capacity Building Series, 2013). In the inquiry environment learners should be collaborative, flexible, and self-directed. They should think critically and creatively to make reflections and draw conclusions.

1.5. Benefits of Inquiry-based Learning Approach

Inquiry-based learning is a flexible approach and works for different types of projects in different settings. It provides learners with opportunities to direct their learning and boost their confidence and self-esteem. Moreover, inquiry-based learning reinforces multiple skills and expands different area of knowledge. It creates a collaborative learning environment and team projects where all learners can be truly involved in the inquiry cycle. Inquiry-based learning works for any age group. Young and old learners can be

involved in "age-appropriate" inquiry activities to obtain knowledge and develop their inquiry skills (Education Development Centre, 2016, pp. 1-2).

The Education Development Centre (2016) also stated that:

> The inquiry-based approach acknowledges that children, especially children from minority and disadvantaged communities, have what researcher Luis Moll calls "funds of knowledge" that are often ignored by traditional curricula. An inquiry-based approach validates the experience and knowledge that all kids bring to the learning process (p. 2).

Furthermore, Guido (2017) argued that IBL develops learners' abilities to analyze, synthesize and evaluate information and promotes students' high-level thinking according to *Bloom's Taxonomy*. IBL improves learners understanding to the core concepts of the content and stimulates their curiosity to investigate and construct knowledge.

To summarise, inquiry-based learning is an educational approach that provides equal chances for all learners with different ages and social backgrounds to develop their learning skills and reach new knowledge. It stimulates learners' inquiry-mindset and creates opportunities for real learning that is based on investigation and experience to take place. Inquiry-based learning challenges learners to acquire new skills such as: innovation, creativity, critical thinking and problem solving skills, in addition to build new knowledge.

1.6. Challenges of Implementing Inquiry-based Learning Approach

Inquiry-based learning is a promising educational approach that improves teaching and learning quality; however, the successful implementations of this approach may create

significant challenges. Edelson, Gordin and Pea (2011) pointed out five significant challenges of implementing inquiry-based learning:

1. Learners' motivation to participate effectively in inquiry activities.

2. Mastering investigation techniques such as data collection and interpretation skills to obtain meaningful results from the inquiry process.

3. Learners' background knowledge about the research process that involves formulating questions, suggesting hypotheses, planning the investigation, collecting and analyzing data.

4. To successfully achieve open-inquiry, learners are required to organize and manage 'complex, extended activities'.

5. Designing inquiry activities within the constraints of the learning environment.

1.7. Teachers' Perceptions about the Implementing of Inquiry-based Learning

Teachers' perceptions and attitude about an educational approach influence their teaching strategies and practices in the classroom. Pajares (1992), Hansen and Lotter (2006), Saad and BouJaoude (2012) argued that the implementation of inquiry-based learning approach is strongly related to teachers' beliefs about the teaching and learning process and classroom management (as cited in, Ramnarain and Haltswayo, 2018).

Teachers who have positive attitude to the use of student-centred instructions are more likely to utilize inquiry-instructions to engage learners in the learning process. Aslup (2005) found that inquiry-based instructions in higher education have positive impacts on teachers' self-efficacy and influence their choice of implementing inquiry-based learning approach (as cited in, Taylor and Bilbrey, 2011).

Moreover, Teachers' beliefs and perceptions about IBL is the key to the success of this approach and the development of learners' academic achievement. Haury (1993) believed that teachers can lead students' inquiry-based instruction by facilitating group

works, controlling argumentative dialogues and debates, and assessing learners' direct exploration and experimentations (as cited in, Bansal, 2018).

To conclude, the implementation of a student-centred approach requires teachers with positive attitude and beliefs toward the shift in roles. In inquiry-based learning approach, the teacher's role changes from the source of knowledge to a guide to learners in the inquiry process. This requires teachers to master new teaching roles such as: facilitator, guide, and monitor. Teachers' attitude to inquiry-based learning approach influences the teaching quality and students' success.

1.8. The Need of an Inquiry-based Pedagogical Approach

Inquiry-based learning is a promising pedagogical approach that helps learner to develop their twenty-first century skills throughout the inquiry process (Kuhlthau et al. 2015, as cited in, Chu et al. 2017).

1.8.1. Inquiry project-based learning

Inquiry-based learning is a student-centred approach where learners are active knowledge builders. They identify problems, gather information and analyze data to solve problems. Inquiry-based learning can be applied in classrooms through the use of research projects (Krajcik et al., 1998, as cited in, Chu et al., 2011). Combining inquiry-based learning and project-based learning results an inquiry project-based learning approach that mainly engages learners in an inquiry cycle where they formulate research questions and design investigations to obtain knowledge.

1.8.2. Teachers and students readiness

Chu, Reynolds, Tavares, Yi Lee (2017) stated that:

Nothing is more important than a teacher's readiness

and confidence when trying out a new initiative in

education. While the concept of inquiry-based learning

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stresses the role of teachers as facilitators rather than instructors, it is critical that teachers understand that facilitation does not mean adoption of a laissez-faire hands-off approach. Inquiry-based learning can be equated to student-centred learning (p.132).

The teacher's role as a guide and facilitator in the inquiry process will help learners to engage in the learning process; however, teachers should be familiar with their learners' abilities and skills in order to contextualize the design of inquiry activities. Learners should be motivated and possess background knowledge about the research steps and techniques. They are required to direct their research and enhance their critical thinking and problem solving skills in addition to practicing collaboration, presentations and social skills.

Conclusion

To recapitulate, the modernization has influenced the educational area and has demanded critical changes in teaching and learning modes. The implementation of a student-centred approach has become the goal of all educational systems. Engaging learners in real-life tasks and preparing them for real world challenges are the significant goals of inquiry-based learning approach. Through this chapter, we attempted to provide clear and general information about inquiry-based learning as an innovative teaching approach, its history, main characteristics and benefits, stages and challenges, in addition to its crucial relationship to research projects and project-based learning approach.

Chapter Two

Project-based Learning

And

Research Projects

Table of Content

Introduction

Undergraduate students are expected to conduct research and submit a dissertation by the end of their final academic year to obtain a Master degree. Most students face problems when doing research, and they lack the necessary skills. In the traditional teaching approaches, the focus is on the teacher as the source of knowledge. Learners are less interested in engaging in the learning process and constructing their own knowledge. Project-based learning is an innovative educational approach that directs the focus on the learners and promotes student-direct learning where learners are active participant of the learning process. This approach prepares students to become life-long learners and develops their critical thinking and problem solving skills, in addition to their social skills. In this chapter, we attempt to provide a general overview about project-based learning and research projects, their definition, characteristics, significance and challenges.

I. General Overview about Project-based Learning

Project-based learning is a modern teaching methodology where learners obtain knowledge and develop and practice a set of 21st century skills by working on projects that is based on investigations and in-depth inquiries on a specific topic.

2.1.1. Definition of the Main Concepts

Being familiar with the meaning of the different concepts is an important stage to gain more familiarities and knowledge about a specific subject. Knowing the basic definitions of the related terms and the specific details can increase the general understanding of the subject.

2.1.1.1. Definition of project

Merriam-Webster Dictionary online (2020) defined project as: "a planned undertaking: such as: (a) a definitely formulated piece of research, (b) a large usually government-supported undertaking, (c) a task or problem engaged in usually by a group of

students to supplement and apply classroom studies." Project is a form of activity that is designed to achieve a set of goals.

The Ministry of Education Singapore website (2018) viewed project work as:

> Project work is a learning experience which aims to provide students with the opportunity to synthesise knowledge from various areas of learning, and critically and creatively apply it to real life situations. This process, which enhances students' knowledge and enables them to acquire skills like collaboration, communication and independent learning, prepares them for lifelong learning and the challenges ahead.

All in all, projects are a designed process to obtain specific results and develop a set of skills and knowledge. They can be done individually or with a group of learners as classroom activities that promote autonomy, research skills, and inquiry skills. Through projects, learners are expected to be prepared for the real world challenges and develop an inquiry mindset.

2.1.1.2. Definition of project-based learning

Project-based learning (PBL) can be defined in many ways. Ursula (1988) stated that project-based learning can indicate that learners are required to prepare a written project; or, it can mean identifying the relationship between the prepared written projects. Thomas (2000) defined project-based learning as an educational approach that emphasises on the use of projects as the main learning activities (as cited in, Tan and Chapman, 2016).

Tan and Chapman (2016) also explained that:

> According to Jones, Rasmussen and Moffitt (1997),
>
> Thomas, Mergendoller and Michaelson (1999) and

Ngeow and Kong (2001), projects are complex tasks, based on challenging questions or problems that involve students in design, problem-solving, decision-making, or investigative activities, and giving students the opportunity to work relatively autonomously over extended periods of time, and culminating in realistic products or presentations (p.1).

Project-based learning is a student-centred approach where learners are engaged in the learning process through projects and real-life tasks. They are required to solve problems and develop their cognitive skills such as: critical thinking, in addition to social skills such as: collaboration and communication. Through project-based learning approach and the process of preparing projects, learners gain knowledge and acquire necessary skills to improve their academic achievement and deal with real world challenges.

Sommer (2013) argued that:

Project-Based Learning is not the same as doing projects but many people have trouble grasping this distinction. With PBL, the project in itself is how students learn. It is not a culminating authentic assessment to see if your students have met your objectives, rather it is the vehicle through which students learn. You are teaching through the project, not teaching and then doing the project. This more traditional process of teaching and then assigning a project for students to do describes "doing projects" and should not be confused with PBL.

As a result, project-based learning exposes learners to authentic investigations and experiences that build their skills and knowledge. The educational content is implemented through learners' inquiries and projects. Learners construct critical conclusions and build their knowledge and deep understanding of the content. Project-based learning is a carrier tool to the educational content in an innovative methodology that motivates learners to actively engage in the learning process and direct their learning and skills development.

2.1.2. Theoretical Foundation of Project-based Learning

Project-based learning is associated with the constructivist learning theory. Psychological constructivism calls for educational ways to support learners' individual needs and interests; whereas, social constructivism insists on the importance of the social context during the process of teaching and learning (Fleming, 2000).

Evenson and Hmelo (2000) argued that John Dewey was one of the earliest proponents of project-based learning approach. Dewey called for a problem-based learning and introduced the concept of 'problem situation'. He insisted on encouraging learners to be engaged in real life tasks and solve related issues using different resources (as cited in, Tan and Chapman, 2016).

To conclude, project-based learning as a concept appeared in the early 20th century. It was advocated by the constructivist educators who called for engaging learners in real world experiences and encouraging them to direct their learning. Project-based learning approach has become one of the main effective educational approaches in the 21st century because of its effectiveness in preparing learners for the challenges of the modern world.

2.1.3. The Rational for Implementing Project-based Learning

Krauss and Boss (2013) pointed out that the educational and social reformer John Dewey (1997) declared that "Education is not an affair of 'telling' and being told, but an active and constructive process". Dewey called for an educational approach that

encourages learners to construct their own knowledge using critical thinking skills and making meaningful conclusions based on inquiries and experiences.

Sonnez and Lee (2003) noted that providing learners with 'experiential learning' opportunities can increase their independent learning and develop their critical skills (as cited in, Tan and Chapman, 2016). Stivers (2010) listed a number of benefits of using project-based learning approach including motivating learners and engaging them to understand, apply and construct knowledge in addition to developing collaboration and communication skills and increasing their academic achievement.

Ravitz (2010) explained that: "PBL is a constructivist-based instructional approach that is designed to support more engaged learning. This approach uses 'projects' as vehicles to encourage student motivation and to provide a means for demonstrating and explaining what they have learned". Project-based learning is a promising student-centred approach that allows learners to direct their learning and promotes an active learning environment where learners are autonomous and motivated to gain knowledge and a set of academic and social skills.

2.1.4. Elements of Project-based Learning Approach

Smith (2018) suggested that project-based learning approach consists of eight elements:

1. **Significant content**: choosing a topic is essential. The project topic should aim at developing curriculum-based skills and knowledge.

2. **21st century competencies:** project-based learning promotes essential skills for students to deal with challenges of the modern world. These skills are: critical thinking and problem solving skills, communication, collaboration, creativity and literacy skills.

3. In-depth inquiry: project-based learning activities involve the inquiry cycle of questioning, investigating and discussing results.

4. Driving question: Smith (2018) insisted on focusing the research project around a guiding question. She highlighted that the driving question should be open-ended and interesting for learners.

5. Need to know: Teachers are required to motivate learners to learn by explaining to them the importance of each project they undertake.

6. Voice and choice: project-based learning is a student-driven approach. Teachers are required to guide and scaffold learners to make choices and decisions about their projects.

7. Critique and revision: teachers' role in project-based learning approach is to provide learners with different types of feedback so they make revisions and reflections.

8. Public audience: In the end of the inquiry cycle, learners are expected to present their findings and results to their classmates and teacher to practice communication and get involved in meaningful discussions.

To sum up, Smith (2018) mentioned that project-based learning tasks are not 'one' session activity. They last for several weeks and cover many skills and curriculum content. Project-based learning activities consist of many essential elements including: a curriculum- related topic, 21st century skills, an inquiry cycle, guiding question, students' choice and voice, the urge to know, discussion and reflection, and the target audience. These elements promote significant benefits on learners' progress and guarantee the success of project-based learning approach.

2.1.5. Characteristics of Project-based Learning

Fleming (2000) explained that the successful implementation of project-based learning approach requires teachers and learners to play specific roles. Teachers serve as coaches, guides, monitors and facilitators. Learners' role is to be actively engaged in the learning process and to develop their cognitive skills and acquire a critical mindset. In project-based learning environment, learners work individually or collaboratively in small groups to prepare projects and develop a deeper understanding of the educational content.

Stivers (2010) illustrated the characteristics of classrooms using project-based learning as an instructional approach:

- Organized around a problem or challenge without a predetermined solution

- Creates a need to know of essential content and skills

- Students design the process for reaching a solution

- Requires critical thinking, problem solving, collaboration, and various forms of communication

- Provide the opportunity for students to examine the task from different perspectives using a variety of resources, separate relevant from irrelevant information, and manage the information they gather

- Students learn to work independently and take responsibility when they are asked to make choices

- Students regularly reflect on what they' re doing

- A final product (not necessarily material) is produced and is evaluated for its quality

- The classroom has an atmosphere that tolerates error and change

- The teacher takes on the role of a facilitator rather than a leader (p, 4)

In short, project-based learning approach is characterised by a set of significant elements including: the focus around solving a research problem and reaching solutions, in addition to skills development and knowledge construction by learners. Learners are expected to develop their autonomy and a set of 21st century skills such as: critical thinking, problem-solving, communication, and collaboration. Moreover, PBL approach is characterized by the shift in roles. Teachers work as monitors and facilitators, and promote opportunities for learners to search for answers and discuss and reflect on their findings.

2.1.6. Challenges of Project-based Learning

Project-based learning is a student-centred approach where learners are actively engaged in preparing projects while their teacher guides and assesses them. This approach prepares learners to become life-long learners and face the challenges of the modern world. However, this educational approach has some major challenges that may result in negative outcomes to the teaching and learning process.

Habok and Nagy (2016) stated that project-based learning is: "highly time consuming activity and requires great attention to details" (as cited in, Aldabbus, 2018). Moreover, Johnson and Johnson (1989) noted that collaborative projects activities can be hard task for learners with social interactions problems (Aldabbus, 2018). Some teachers argued that PBL approach is time consuming and they find the process of scaffolding and assessing learners difficult and challenging. Also, introvert learners are less motivated to engage in collaborative PBL tasks.

However, Aldabbus (2018) mentioned that:

Harmer and Stokes (2014) suggested that, in certain cases, PBL can be used as a supplementary method of instruction if teachers think that consistent use of PBL may affect the accomplishment of the learning goals. Besides that, PBL is demanding in terms of planning and preparation, facilities, student discipline and monitoring and evaluating students. Therefore, "teachers should reconsider the potential benefits that project work may cover with the potential problems that are associated with them'' (Heines, 1989, p.74).

All in all, project-based learning is a promising educational methodology which promotes a number of benefits and increases the quality of the teaching and learning process; so; educators should plan and design project-based learning activities considering the challenges and issues that they may face when implementing this approach and they can try to adopt different strategies to eliminate the related issues.

II. Research Projects

Research projects are one of the main real-life tasks that teachers can assign to implement student-centred approaches such as inquiry-based learning approach and project-based learning approach.

2.2.1. Definition of Research Projects

Textbooks and Academic Authors Association (2016) stated that:

> A Rutgers University resource titled, Definition of a research project and specifications for fulfilling the requirement, "A research project is a scientific endeavour to answer a research question." Specifically, projects may take the form of "case studies, case control study, cohort study, randomized, controlled

trail, survey, or secondary data analysis such as decision analysis, cost effectiveness analysis or meta-analysis.

Hampshire College defined research as: "a process of systematic inquiry that entails collection of data; documentation of critical information; and analysis and interpretation of that data/ information". Neville (2007) also explained that research is: "a process of enquiry and investigation; it is systematic, methodical and ethical; research can help solve practical problems and increase knowledge".

Research project is a scientific investigation to gain knowledge. It is the process of collecting, obtaining and analyzing data to reach new conclusions. Fleming (2000) viewed projects as: "intensive experiences that engage students in activities that are interesting to them and important to the course(s) of study". Research projects can be conducted individually or collaboratively with a group of learners.

To sum up, Research projects are systematic processes of inquiry. Learners are expected to start with general idea to be explored and investigated. This idea will be developed into a research question with a limited scope of study. Then, learners formulate hypotheses to be tested and collect data through scientific methods. The next step is analyzing and interpreting the obtained results to reach new knowledge.

2.2.2. Types of Research Projects

Neville (2007) listed four types of research projects: exploratory, descriptive, analytical, and predictive.

1. **Exploratory:** the aim of this research project is to explore new patterns and hypotheses of an area of research that has not been tackled, and only few or no previous studies have been undertaken. Research techniques are: case studies, observation and literature review.

2. **Descriptive:** the aim of this research project is to describe and identify the elements of the research subject. Quantitative techniques are adopted to gather and analyze data.

3. **Analytical:** this research project aims at suggesting and explaining the 'why' and 'how' something is happening.

4. **Predictive:** the aim of this type of research is to undertake a close analysis of available data to make future prediction.

2.2.3. Significance and Benefits of Research Projects

Fleming (2000) concluded that:

> Projects offer rich opportunities for helping students make interdisciplinary connections, address academic standards and goals, discover personal talents and interests, develop social skills, and use technology. Within a unit of study, projects help students connect personal interests with course content as they explore a theme in greater depth. Teachers often assign both project activities and whole-class activities to help students gain a greater perspective on a theme (pp, 2-3).

Research projects are one form of activities of student-direct learning. They develop learners' confidence and increase their motivation to self-direct their learning and explore their own knowledge through a scientific investigation. Through research projects, learners are expected to master a set of 21st century skills such as: communication and collaboration, critical thinking and problem solving skills, literacy skills and responsibility.

Process skills	Presentation skills	Management skills	Personal skills
Problem formulation	Effective use of language	Project planning	Independence
Problem solving	Data awareness	Setting objectives	Self-confidence
Assessing information	Oral communication	Project management	Self-reliance
Sifting and balancing evidence	Audience awareness	Progress review and evaluation	Self-discipline
Research techniques	Debating and arguing	Time management	Self-enquiry
Literature searching and sourcing	Persuading an encouraging	Working to deadlines	Imagination
Reading scientific information	Effective use of display technology	Working with others	Originality
Developing arguments	Report writing	Person management	Ability or learn
Designing investigations and experiments	Writing for different audiences	Coping with crises	Making decisions
Analysing data	Writing for different purposes	Entrepreneurship	Being adaptable
Attention to detail			Accepting criticism
Numeracy			
Literacy			
Computing skills			
Lab skills			
Safety awareness			
Writing for different purposes			

Table 1 Skills obtained from projects
(Adopted from Luck, 1999) (as cited in, Luck, 2008)

2.2.3.1. Student engagement

The term student engagement has emerged in the late 1990 s. Educators believe that student engagement is new term to an already existing concept in higher education. McCormick, Kinzie, and Gonyea (2013) stated that student engagement historical roots can be traced in the 1930 s in the work of many scholars including Tyler, Pace, and Astin.

Astin (1984) called for an educational theory focused on 'involvement'. He defined involvement as: "the amount of physical and psychological energy that the student devotes to the academic experience". Involvement and motivation are interrelated. He argued that motivation is a psychological state, whereas involvement is the behavioural state. These terms contribute to the conceptualization of the term 'student engagement' (as cited in, McCromick et al, 2013).

McCromick, Kinzie, and Gonyea (2013) defined student engagement as students' exposure and active participation in effective educational tasks at higher education. Research projects are designed processes to involve learners in the learning process and

provide them with real-life tasks that contribute to their skills development. Research projects create a rich educational environment that increases students' engagement and provide them with opportunities to be involved in authentic experiences and construct their own knowledge.

2.2.3.2. Increased motivation

Jenkins, Breen, Lindsay and Brew (2003) defined motivation as: "those inner processes that determine whether learners will engage in a task, the amount of effort they will expend, the length of time they will persevere and the persistence they will show when obstacles are encountered" (as cited in, Kozlova and Atamanova, 2013). Implementing research-based teaching approach will increase the amount of efforts learners make to obtain knowledge. As a result, it will increase their motivation to be involved in the learning process.

Wood (2009) stated that research-based teaching can integrate research projects as an educational practice that involves more students in research activities at the university level (as cited in, Kozlova and Atamanova, 2013). Research projects promote learners autonomy and responsibility which increase their motivation and sense of accomplishment. Fleming (2000) highlighted that projects connect learners to their interests and they spend more time doing research projects outside the classroom.

To conclude, Research projects increase students 'involvement' and efforts to accomplish these learning tasks. Learners spend more time and efforts preparing their projects and constructing their own knowledge instead of relying on their teachers as the source of knowledge. Research projects are student-centred approach learning tasks that increase students' motivation and involvement.

2.2.3.3. Improved academic achievement

Project-based learning is a constructivist teaching approach that focuses on engaging learners in research projects. Conducting research project is an inquiry process of deep investigation and collection of data to gain knowledge. Kızkapan and Bektaş (2017) stated that: "project works bring opportunities for students to promote their achievement". Learners are expected to develop their scientific and social skills, and improve their academic achievement.

Fleming (2000) listed a number of benefits of using projects as an instructional strategy including increased achievement. He concluded that: "students practice higher level of thinking through direct application of factual knowledge in making interpretations, conclusions, and critical judgments". He also highlighted that through assigning research projects, teachers encourage learners' curiosity, persistence, flexibility, creativity, responsibility and commitment to excellence.

Finally, research projects are one of the main tasks that promote learners' self-direction and autonomy. It increases learners' 21st century skills and inquiry skills. Learners are expected to be engaged in the learning process and develop the essential research skills to make inquires and expand their own knowledge. This can increase students' engagement and academic achievement.

2.2.3.4. Teaching critical thinking skills

The challenges of the 21st century require learners with critical mindset. Critical thinking is an essential skill to cope with the modern world requirements. Cottrell (2005) defined critical thinking as: "a cognitive activity, associated with using the mind. Learning to think in a critically analytical and evaluative ways means using mental processes such as attention, categorisation, selection and judgment." Critical thinking is a cognitive process that improves learners' thinking and understanding.

Cottrell (2005) listed a number of benefits of developing critical thinking including: improving observation and attention, developing a set of skills for more focused reading and ability to identify the key elements of a message such as: reasoning, analysis, decision-making, judgment, persuasion and problem-solving. Critical thinking is a process of deep thinking and analysis of key issues.

Lin (2018) concluded that: "it is clear that teachers can teach students to think critically by introducing the relevant skills, cultivating their dispositions, and creating the opportunities for them to engage in this reflective, problem-solving and decision-making process." So, critical thinking can be taught through creating opportunities for learners to solve problems and use higher order thinking to deeply understand the content and gain knowledge.

To summarise, Fleming (2000) highlighted that through the assignment of research projects: "students think about their own thinking, assess their own work, reflect on what they are learning, and set their own goals and objectives." Research projects promote learners' critical thinking and encourage them to develop a critical mindset. Research projects allow learners' inquiries to create solutions and reach research findings. Learners use deep thinking and analysing skills to solve problems and build knowledge. The process of inquiry increases learners' critical thinking and problem-solving skills.

2.2.4. Evaluation Mechanisms of Research Projects

Smith (2018) argued that the common way to assess projects is through the use of rubrics. She stated that she combined three assessment techniques to assess her learners' projects: rubrics, self-assessment, and reflection. She explained that:

> Rubrics are a fair way to grade students on their
> individual contributions to the project. Just one rubric
> allows you to grade every student at their individual

level, based on their individual contributions. Student-

friendly rubrics also tell students your expectations for

the project and help you justify the grades you've given

them." (p.21)

Also, she insisted that the rubric should be open-ended and cover all the aspects of the project including every step the learners take during the inquiry process and the skills they require when preparing their projects. The rubric should be open to adjustments and teachers can edit it by adding skills or steps the learners take during the preparation of research projects.

The second evaluation mechanism used to assess learners' projects is self assessment. Teachers are required to create a 'student-friendly rubric' for learners to guide them toward their goals. Through this rubric learners state how much efforts they have made in each step including the difficulties they have faced (Smith, 2018).

The last assessment mechanism is reflection. Learners should be encouraged to reflect on each part of the research project. Teachers can ask their students oral questions about their project and their research process, or guide them to submit a written production at the end of their projects (Smith, 2018).

In short, research projects are one form of activities of student-centred approaches. The teacher's role is to guide and assess learners during the process of building their own knowledge. Teachers can use different types of assessments including: rubrics, self-assessment, and reflection. These types of teachers' assessments can increase learners' engagement and motivation. Moreover, they allow learners to reach the learning goals and develop their academic achievement.

2.2.5. Challenges of Using Research Projects

Research projects are promising student-centred approach tasks that provide learners with the chance to develop their cognitive and social skills to meet the requirements of the modern life. However, some scholars pointed out that research projects can create some issues and different challenges for both teachers and learners. Fleming (2000) agreed that despite the significant benefits of projects, it may create some issues. He stated that:

> Projects can present some concerns for students. Projects often require concentrated effort over an extended period of time; this may be a challenging experience for some. Others may have difficulty choosing a project focus or deciding on the format for a culminating presentation or product. Other student concerns include managing time and materials, working independently, and working with others (p.6).

Also, Todd, Smith, and Bannister (2006) listed a number of challenges learners may face when they undertake a research project including: time management and how to choose and narrow the scope of the study (as cited in, Mujtaba Alsied and Winis Ibrahim, 2017). Teachers should guide their learners to select a topic of their interest. Learners should opt for a researchable topic that meets their research skills and time constraints.

Moreover, Teachers may face different difficulties when assigning research projects. Krajcik and Blumenfeld (2006) argued that some teachers believe that projects are time consuming and they do not have sufficient time to plan and assign research projects (as cited in, Intykbekov, 2017). Additionally, teachers may find the assessment procedure of research projects difficult. Teachers' role in student-centred approach tasks is

guiding and monitoring learners. Nicola and Allison (2014) noted that some teachers find practicing their role as facilitators during learners' research projects difficult and hard to be achieved (as cited in, Intykbekov, 2017).

To sum up, research projects promote learners' autonomy and self-direction. They change the focus from teacher-centred approach to student-centred approach. Learners construct their own knowledge while their teacher guide and monitor their progress. However, research projects may present some issues for both teachers and learners. So, in order to successfully gain knowledge using research projects teachers and learners should work collaboratively for promoting positive outcomes.

2.2.6. Teachers and Students Perceptions

Fleming (2000) highlighted that: "Teachers embarking on project work may need to learn new roles or skills such as guiding students through questioning, applying new technologies, and collaborating in new ways with others in the school or larger community."(p. 6). Teachers' role in students' research projects is monitoring and guiding learners' progress. This shifts the role of the teacher from the source of knowledge to a guide and facilitator. This change in teacher's role demands teachers with positive attitude toward student-centred approaches.

Palmer and Hall (2011) reported that learners who were engaged in real-life tasks and research projects believed that these tasks were valuable, however they demanded more time and collaborative work where they noted that some learners did little work compared to others (as cited in, Virtue and Hinnant-Grawford, 2019). Learners can develop different academic and social skills during the preparation of research projects. They can practice independence and responsibility and increase their critical and reasoning skills; however, during teamwork some learners receive unequal distribution of work and some others prefer working individually.

Conclusion

In conclusion, inquiry-based learning and project-based learning are interrelated student-centred approaches where the ultimate goal is encouraging learners to direct their learning, and engaging them in real-life tasks that will prepare them for the challenges of the 21st century. One form of these approaches is research projects. Research projects are the scientific process of inquiring and obtaining knowledge. Through research projects, learners construct knowledge and develop their inquiry skills. In this chapter, we attempted to provide general information about project-based learning approach and research projects. We defined the concepts and illustrated their significance, characteristics, and challenges.

Chapter Three

The findings of the Study

And

The Interpretation of the Results

Table of Contents

Introduction

The current chapter deals with the field work of the study. It consists of two parts: the theoretical background of the research methodology, and the data analysis and procedure. The first part deals with the significant stages of the research methodology including: the research approach, the research design, sampling and population, and data collection methods. However, the second part includes the detailed data analysis. It aims at exploring the role of research projects to promote students' inquiry-based learning. Moreover, it presents the analysis and interpretation of the collected data. Furthermore, it states the discussion of the obtained results to check the hypothesis of the current study, and suggests recommendations for the future researchers.

3.1. Research Methodology

Research is a process with systematic methods and procedures (Harris, 2020). In order to succeed in conducting a research project, researchers follow a specific research methodology which represents the overall plan of the research. Kothari (2004) stated that: "Research methodology is a way to systematically solve the research problem". Research methodology is a set of various steps to undertake a research study**.**

3.1.1. Research approach

Research approach is the theoretical background of the research project. Creswell and Creswell (2018) defined research approaches as follow: "Research approaches are plans and procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation". Research approach is the selection of a specific theoretical framework to carry out a research study.

Creswell and Creswell (2018) listed three research approaches: qualitative, quantitative, and mixed methods. First, they defined the qualitative research approach as: "an approach for exploring and understanding the meaning individuals or groups ascribe to

a social or human problem". Qualitative research approach is an approach that deals with variables using words. It deals with exploring, describing and understanding specific phenomena such as: attitude, beliefs, assumptions, behaviours, reactions, and different phenomena that are hard or impossible to measure using numerical data.

Second, Creswell and Creswell (2018) explained that quantitative research approach is: "an approach for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures". Moreover, Kothari (2004) noted that the quantitative approach involves: "the generation of data in quantitative form which can be subjected to rigorous quantitative analysis in a formal and rigid fashion". So, quantitative research approach generally deals with the measurement of variables and the numerical and empirical investigations of different phenomena.

The third research approach is the mixed methods research. Creswell and Creswell (2018) viewed mixed methods research as: "an approach to inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks". They explained that this type of research approach is a combination of both qualitative and quantitative research approaches. The data used in this type involve numerical and non-numerical data. The mixed methods research approach deals with exploring, describing, and understanding people's attitudes, behaviours, and assumptions using words in addition to numerical data and statistical measurements.

To conclude, researchers opt for a specific research approach that represents the theoretical framework of the research study. They select a quantitative or qualitative research approach, or opt for a combination of these research approaches which refers to the mixed methods research approach.

3.1.2. Research approach of this study

Creswell and Creswell (2018) argued that: "the selection of a research approach is also based on the nature of the research problem or issue being addressed, the researchers' personal experiences, and the audience of the study". They pointed out that choosing the research approach is based on the nature of the research study, the experiences of the researcher, in addition to the addressed population.

The current study aims at describing the role of research projects to promote students' inquiry-based learning. In addition to highlight the relationship between research projects and inquiry-based learning approach. We opted for a mixed methods research approach as we are concerned with collecting teachers and students' thoughts and perceptions about the use of research projects in language classrooms to promote students' inquiry-based learning. Also, the nature of this study requires quantitative data to understand to what extent research projects can promote inquiry-based learning approach.

To sum up, the mixed methods research approach is the suitable approach for the nature of the current study. It provides opportunities for the researcher to collect precise and credible data to explore the role of research projects to promote students' inquiry-based learning, in addition to teachers and students' thoughts and attitude to the use of research projects and the implementation of inquiry-based learning approach in English as foreign language (EFL) classrooms.

3.2. Research Design

The research design is a map or a plan of action that the research follows carefully to collect and analyse credible data. Pandey and Pendey (2015) defined research design as follow:

> A research design is simply the framework or plan for a
>
> study that is used as a guide in collecting and analyzing

the data. It is a blue print that is followed in completing

a study. Research design is the blue print for collection

measurement and analysis of data. Actually it is a map

that is usually developed to guide the research (p. 18).

In other words, a research design is a conceptual structure that guides the researcher when conducting a research study. It directs the steps of collecting and analysing data for obtaining reliable results. The research design provides a clear and solid plan of the research methods and analysis techniques of the research study. It facilitates the research process and influences the credibility of the obtained results.

3.2.1. Research design of this study

During the research process, researchers are required to select a research design that represents their research outline and helps them answer their research questions and obtain reliable results. Creswell and Creswell (2018) stated that:

The researcher not only selects a qualitative, quantitative, or mixed methods study to conduct; the inquirer also decides on a type of study within these three choices. Research designs are types of inquiry within qualitative, quantitative, and mixed methods approaches that provide specific direction for procedures in a research study (p. 49).

The selection of a research design is based on the nature and objectives of the research study. The research design has a number of forms within a specific research approach. Bhattacherjee (2012) listed a number of popular research designs such as: experimental studies, field surveys, case research (case study research), focus group research, ethnography, action research, and secondary data analysis. The researcher should

opt for a specific research design to conduct the research objectively, directly, and within the constraints of time and money.

For the current research study, we adopted a case research design (case study, small-scale study) due to the nature of our research study. Bhattacherjee (2012) argued that: "researchers tend to select those research designs that they are most comfortable with and feel most competent to handle, but ideally, the choice should depend on the nature of the research phenomenon being studied". As a result, a case study research design is the suitable research design for the nature of the current study as we are concerned with in-depth exploration of the role of research projects to promote students' inquiry-based learning, and the description of teachers and students' attitudes to the relationship between research projects and inquiry-based learning approach.

Kumar (2011) viewed the case study research as a research design that can be classified under the qualitative research approach, the quantitative research approach, or a combination of both qualitative and quantitative research approaches which means a mixed method research approach. Zainal (2007) explained that the case study research design provides opportunities for the researcher to closely explore data within real-life context. Moreover, it allows the use of both qualitative and quantitative analyses, and in-depth exploration and description of the relationship between variables, which explains and simplifies the complexities of the research study.

To conclude, due to the nature of our research study, we adopted a case study research design (small-scale study). The case study research design simplifies the complexities of our research study and provides in-depth insights into the relationship between research projects and inquiry-based learning approach. It helps to explore and describe teachers and students' perceptions and behaviours about the use of research projects to promote inquiry-based learning in real-life context (EFL classrooms).

3.3. Sampling and population

In the current research study, we dealt with EFL teachers and students to gather their feedback and views to check the validity of the research hypothesis and collect data in order to answer the research questions.

– **For Teachers**

The researcher dealt with (n=7) volunteer teachers of English at Mohamed Khider University of Biskra. Those teachers were chosen randomly. They teach different courses at different levels.

– **For Students**

The population of this study is first year Master English language students of sciences of the language at Mohamed Khider University of Biskra. We have chosen this population for the following reasons. First, they are assigned research projects during the academic year in some major courses. Second, they are expected to develop their research skills as well as critical thinking and reasoning skills. Finally, they will be required to submit a dissertation in their second year to fulfill their Master degree.

Therefore, after the discussion with the supervisor, from a population of about (n=131) students. The researcher decided to deal with a sample of (n=42) students. Those students have been chosen based on a random volunteering technique.

3.4. Data Collection Methods

Data collection methods are tools used by the the researcher to gather information and facts for a research study. Walliman (2011) stated that: "Research uses data as the raw material in order to come to conclusions about some issue. It depends on the issue being investigated what data needs to be collected". Data collection methods are instruments that any researcher uses to collect data for a research study.

Furthermore, there are many types of data collection methods. Pandey and Pandey (2015) mentioned a number of data collection methods such as: questionnaires, interviews schedules, observation techniques, and rating scales. The selection of data collection methods should depend on the nature of the research study and the issue being studied. Researchers are required to choose carefully the suitable data collection methods for their study, considering their research nature and topic, their abilities and skills, and the constraints of time and money.

All in all, data collection methods are significant tools that researchers use to collect data and obtain credible results. In the current study, we dealt with a semi-structured questionnaire for both EFL teachers and students to collect data and obtain valid results for our research study.

3.4.1. Questionnaire

The questionnaire is a data collection method that is commonly used in social sciences researches. Mathers, Fox, and Hunn (2009) pointed out that questionnaires are often used in health services research and the social sciences. Moreover, the questionnaire is a flexible data collection tool that can collect wide range of data. The questionnaire consists of questions. There are three types of questionnaires: structured, unstructured, and semi-structured.

3.5. Data Analysis and Procedures

The researcher is going to analyze data through descriptive statistical analysis. Singh (2006) explained that: "Descriptive statistical analysis is concerned with numerical description of a particular group". The researcher is going to analyse data through percentages and numbers by using statistics. Also, she is going to use descriptive analysis to describe and interpret teachers and students perceptions on the use of research projects

and the implementation of inquiry-based learning, in addition to the relationship between research projects and inquiry-based learning.

3.6. Students' Questionnaire

The researcher used a semi-structured questionnaire which was administered to EFL students at Mohamed Khider University of Biskra. Students' questionnaire aim was to collect students' thoughts and attitude toward the use of research projects and the implementation of inquiry-based learning.

3. 6.1. Description of the students' questionnaire

The questionnaire was a semi-structured questionnaire addressed to (42) first year Master English language students of sciences of the language at The University of Mohamed Khieder Biskra. It was divided into three sections:

Section One: General Information

The first section of this questionnaire consists of three questions. These questions were designed to collect general information about the participants. The students were asked about their learning experience at the university level and if they faced any difficulties. Also, they were asked to highlight the kind of difficulties they had. Furthermore, the participants had to identify if the application for Master degree was their personal decision, or their parents decision, or someone else advice; and they also mentioned the reason for the application for Master degree if it was their own decision. Moreover, the researcher intended to explore students' attitudes and thoughts toward their learning experience at the Master level. They were asked if the learning experience at the Master level was easier, or more difficult, or the same as it was in the License level.

Section two: Twenty-first Century Skills and Inquiry-based Learning Skills

This section consists of six questions about the 21st century skills and inquiry-based learning. First, the researcher wanted to know if the participants were familiar with the 21st

century skills. Then, the participants were given a list of skills to choose which one they thought was more important in their learning. Additionally, this section of the questionnaire estimated to know if the participants master any of the 21st century skills and know the meaning of inquiry-based learning. Moreover, we wanted to explore students' attitude and strategies to understand lessons and lecture. They were required to state whether they rely on memorization or making critical conclusion about the content they have been taught and explain their answers. In the end of this section, we aimed at understanding how often students search for answers of their own questions by providing different options to choose including: (Always, sometime, rarely, never) and then the students were required to explain their choice.

Section Three: The Relationship between Research Projects and Students' Inquiry-based Learning.

The last section of this questionnaire consists of six questions. It aimed at exploring students' thoughts and opinions about the relationship between research projects and inquiry-based learning. First, we attempted to know how often EFL teachers assign research projects. The participants were asked how often do their teachers assign research projects and if they were interested in conducting research. Students had to explain their answers to provide us with more detailed insights into their behaviours and attitudes toward research projects assignments. Second, the participants were asked to state their opinions about research projects and inquiry-based learning. They had to explain their thoughts about the consequences of preparing research projects and if assigning research projects can develop their inquiry skills, improve their academic achievement, and promote students' inquiry-based learning. Then, they were given a list of skills to choose which one they thought could be improved through the assignment of research projects and the implementation of students' inquiry-based learning. Finally, the researcher wanted to understand and explore students' thoughts and attitudes toward inquiry-based learning

approach. The participants were required to explain if it is important to implement inquiry-based learning approach.

3. 6.2. Aims of the students' questionnaire

The aim of the students' questionnaire was to collect data from first year Master English language students of sciences of the language at The University of Mohamed Khider Biskra. This questionnaire was used as a data collection method for the study to understand EFL students' perceptions and thoughts about the assignment of research projects. It aimed at exploring their attitude toward assigning research projects in EFL classrooms. In addition, this questionnaire was designed to check if students were interested in conducting research and consider research projects as beneficial learning task. Furthermore, it aimed to check students' familiarity with the 21st century skills and inquiry-based learning approach. It attempted to collect EFL students' opinions about the role of research projects as a learning task to implement students' inquiry-based learning.

3.6.3. Piloting and validation

After the preparation of the first draft of students' questionnaire, and the correction and approval of the supervisor, the researcher used it as a piloting draft to check its validity before the administration stage. In the piloting stage, six participants from the study population were chosen randomly to answer the questionnaire. The questionnaire in this stage was distributed online via E-mail. The aim of the piloting stage of students' questionnaire was to verify the questions difficulty, ambiguity, or if there were any repeated questions. Also, we wanted to receive feedback on the layout of the questionnaire and the general organization and order of the questions.

Due to the global health issue and the quarantine, the researcher had to contact the delegate of first year Master English language students of sciences of the language at The University of Mohamed Khider Biskra via Facebook, and she requested some volunteers e-

mails to participate in the piloting stage of the study. The volunteers emailed back the answers within a short period of time (March, 13th, 2020/ March, 15th, 2020). The delegate of the target population and the volunteers suggested that the researcher should opt for an online administration of the questionnaire and post it on their Facebook group so it would be easier for them to answer it rather than sending the questionnaire as a word file via E-mail.

Moreover, the participants stated that there were some repeated questions in the first section of the questionnaire. They assumed that the first question: "How did you find the learning experience at the university level?" was similar to the second question: "Did you find any difficulties at the university level?" Furthermore, they all agreed that the questionnaire was simple, direct, comprehensive, and the layout was formal and well-organized. The researcher took into consideration students' feedback and revised and improved the final draft of students' questionnaire.

Apart from students' feedback, the supervisor suggested that "the opinionnaire" part should not be included in the final administration phase. Also, when revising and correcting the first draft of students' questionnaire and before approving it, she made significant remarks concerning the word order of some sentences, the word choice of some vocabularies, some repeated words and some unnecessary quotes that the researcher included. She also suggested that some questions needed to be open-ended by adding an explanation part so students would provide detailed explanation and express their perceptions and thoughts freely, which would improve the credibility of the obtained data and the research quality.

All in all, the supervisor's feedback, remarks, and suggestions, besides the students' assumptions, opinions, and suggestions have been taken into consideration for the improvement of the final draft of students' questionnaire. The researcher has

considered all the remarks and revised, edited, and improved the final draft. She deleted the repeated words, and questions. Also, she omitted the unnecessary quotes and the opinionnaire part in the final draft of students' questionnaire.

3. 6.4. Administration of the Questionnaire

After the piloting and the validation stage, we prepared the final draft of students' questionnaire. For the administration phase, we opted for an online distribution of the questionnaire for a number of reasons. First, we were on the quarantine. Second, the obtained data can be organized directly into a data-base. Most importantly, the students have suggested the online administration of the questionnaire. The link of the online form of the questionnaire was posted on the target population's Facebook group. After the discussion with the supervisor, we decided to work with 42 EFL students of first year Master of sciences of the language at The University of Mohamed Khider Biskra. We could receive clear and completed answered questionnaire within almost two weeks (March, 16th, 2020/ March, 27th, 2020).

3. 6.5. Analysis and interpretation of students' questionnaire

The students' questionnaire was designed to collect students' perceptions, thoughts, attitudes, behaviours, and opinions about the role of research projects to promote students' inquiry-based learning. The obtained data were analyzed, and interpreted to test (prove/reject) the researcher's hypothesis.

Section One: General Information (From item 1 to item 3)

Item 01. The existence of difficulties at the university level

From this item, we intended to know if the participants experienced any difficulties at the university level (yes or no). Then, we aimed at exploring the main difficulties that face students.

Table 3. 1: The existence of difficulties at the university level

Option	Number	%
Yes	25	59.5
No	17	40.5
Total	42	100%
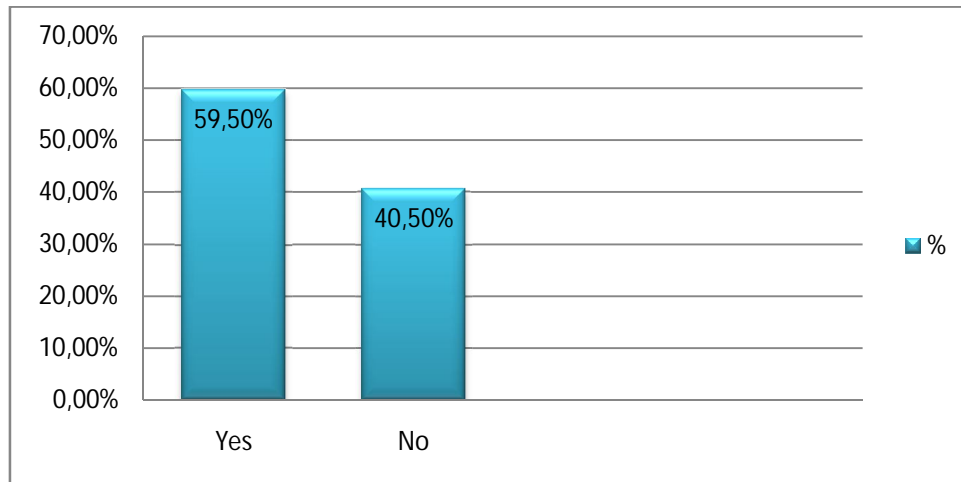
Graph 3. 1 : The existence of difficulties at the university level

The table 3.1 indicated that the majority of the respondents encountered difficulties at the university level. (25) Respondents that represent (59.5%) stated that they found difficulties at the university level. Whereas, a number of (17) respondents that represent (40.5%) claimed that they did not face any difficulties. As a result, we noticed that the majority of students reported that they faced difficulties at the university level. So, we can conclude that the learning experience at university is not an easy task and it requires considerable efforts.

- **Respondents' Justifications if they choose 'yes'**

From the (25) respondents who chose 'yes' a number of (23) respondents answered this question and listed a range of difficulties they have encountered during their learning experience at the university level. Most of the respondents (eight (8) respondents) agreed that time management, loaded timetables, and the the different assignments of many courses were the major difficulties they faced during their study at the university level.

They claimed that studying at the university required a considerable amount of time and efforts as one of the respondents stated: "*A lot of modules, study for many hours at one day. It takes time and effort*". As a result, we assumed that the main difficulties that our respondents faced were mainly related to time and the different assignments of many courses.

In fact, a number of three (3) other respondents insisted on the difficulty of dealing with many courses. They argued that they find it difficult to study many courses and receive a lot of different information. One of them answered by saying: "*Keeping up with all modules*". Another respondent noted: "*In general I have problems with recognizing the high amount of information of each module and making relation with this information*". In another word, we could understand that the respondents had problems with the number of courses. They found it hard to deal with many courses and make critical conclusions about the information they had been taught.

Moreover, another three (3) respondents highlighted that writing skills in general and conducting research papers in particular were the main difficulties they dealt with. One respondent stated: "*Difficulties at various levels such as writing research papers*". Additionally, other three (3) respondents affirmed that they had problems with the teaching methodology and the lack of teachers' feedback. Besides the teaching methodology and teachers' feedback, two (2) respondents claimed that studying at the university level was difficult concerning the higher educational system. Another two (2) respondents stated that they faced difficulties with scoring and how courses are taught. Subsequently, we concluded that writing skills besides the higher educational system in general and the teaching methodology in particular were the significant difficulties many of the respondents faced at the university level.

Furthermore, other respondents listed different types of difficulties they encountered during their learning experience at the university level. One (1) respondent highlighted that the main problem was memorization. S/he noted that the main obstacle was memorization in some courses. Another one (1) respondent mentioned that the main difficulty s/he faced was speaking skills. S/he answered "*Speaking skill*". Therefore, we could identify students differences based on their learning obstacles. Some respondents had difficulties with memorization, others with the different language skills such as speaking skills.

In conclusion, from all the responses we collected, we could assume that most of students experienced different range of difficulties at the university level. The majority of EFL students at the University of Mohamed Khider Biskra experienced difficulties with time management, loaded schedules, and ten (10) courses. Some other students had difficulties with understanding the higher educational system, the teaching methodology, and mastering the different language skills. All in all, we concluded that the learning experience at the university level requires considerable time and efforts. Students should make efforts and consider the importance of time management.

Item 02 Respondents' application for the Master degree

This item aimed at identifying respondents' choices about the application for the Master degree. We attempted to understand if their choice was based on a personal decision, or their parents decision, or someone else advice. In addition, we aimed at exploring the reasons for their application for Master degree if it was their own decision.

Table 3. 2: Respondents' application for the Master degree

Option	Number	%
Your personal decision.	38	90.5%
Your parents' decision.	1	2.4%
Someone's advice.	3	7.1%
Total	42	100%
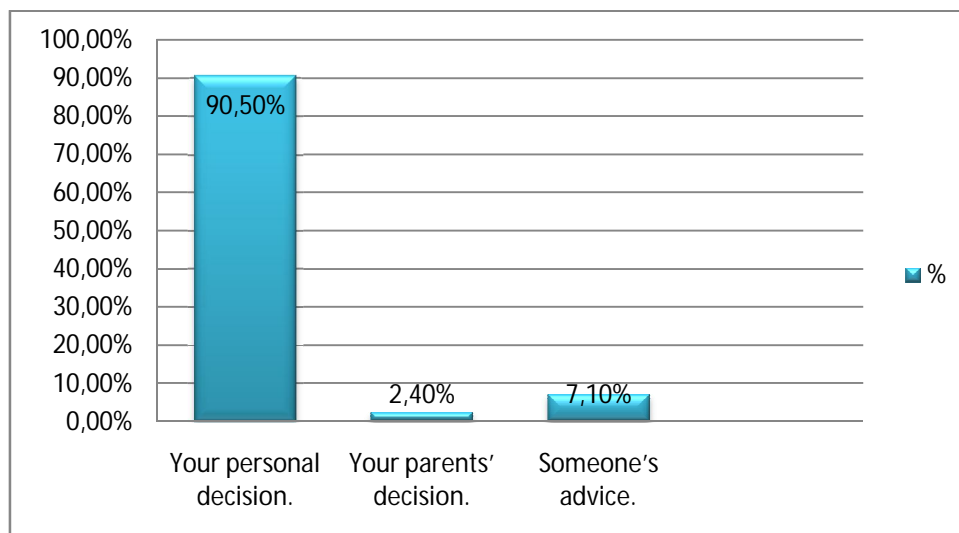
Graph 3. 2: Respondents' choice for the application for the Master degree

From table 3.2, it is clear that the majority of the respondents applied for the Master degree based on their personal decision. (38) Respondents that represent (90.5%) made a personal decision about their application for the master degree, while three other (3) respondents adopted someone's advice ,and only one respondent who applied for the Master degree based on his/her parents' decision. So, the majority of the applications for the Master degree in the division of English at the University of Mohamed Khider Biskra were personal decisions. This highlighted students' control over their professional life and their high demands to pursue their Master studies.

- **Aims for the Master degree application**

Through this sub-question, we aimed at exploring respondents' aims for the Master degree application if their application was based on their personal decision.

Table 3. 3: Aims for the Master degree application

Option	Number	%
To improve your educational level.	20	51.3%
To get more job opportunities.	14	35.9%
To conduct research and develop your research skills	3	7.7%
Others	2	5.1%
Total	39	100%
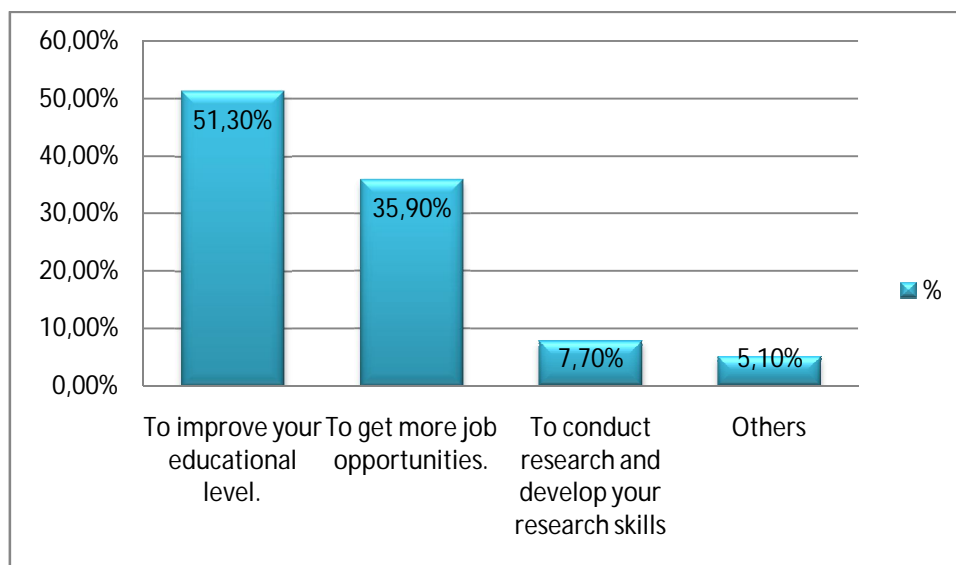
Graph 3. 3 : Aims for the Master degree application

We noticed that (38) Respondents made a personal decision about their application

for the master degree, however, (39) respondents chose to answer this question about their

aims behind the application for the Master degree if it was their personal decision. So, as it

is clearly observed, the majority of the respondents (51.3%) applied for the Master degree

to improve their educational level. Whereas, (14) respondents that represent (35.9%)

applied for the Master degree to get more job opportunities, and three (3) respondents who

represent (7.7%) chose to apply for the Master degree to conduct research and develop

their research skills. Additionally, two (2) respondents who represent (5.1%) chose to

apply for the Master degree for other reasons. One of them stated "*and for 2 purpose too*",

while the other one said "*I see myself as applied linguist one day*". To conclude, the majority of EFL students in the division of English at the University of Mohamed Khider Biskra have applied for the Master degree to improve their educational level. This could illustrate students' goal to be effective learners and develop their academic level.

Item 03 Respondents' evaluation of the learning experience at the Master level

Through this item, the respondents were asked to evaluate their learning experience at the Master level and compare it to their learning experience at License level. Then, they were asked to justify their answers.

Table 3. 4 Respondents' evaluation of the learning experience at the Master level

Option	Number	%
The same as it was in License level.	3	7.1%
Easier than it was in License level.	2	4.8%
More difficult than it was in License level.	37	88.1%
Total	42	100%
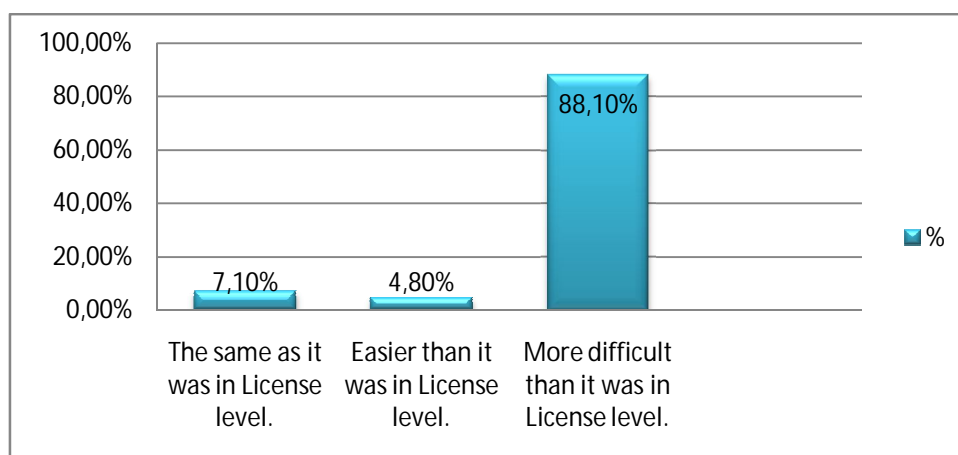
Graph 3. 4 : Respondents' evaluation of the learning experience at the Master level

Table 3.4 indicated that the majority of the respondents (88.1%) claimed that their learning experience at the Master level was more difficult than it was License level. However, three (3) respondents that represent (7.1%) stated that their learning experience at the Master level was the same as it was in License level, and other two (2) respondents

that represent (4.8%) found learning at the Master level easier than it was in License. So, we concluded that studying English at the Master level for EFL students at the University of Biskra is more difficult than studying at the License level. This is a logical situation for students as they pursue an advanced level in their academic learning.

- **Respondents' Justification of Their Answers**

Through this question, we aimed at exploring the respondents' justifications of their opinions about the learning experience at the Master level compared to learning at License level. First, the majority of the respondents insisted on the difficulty of learning at the Master level compared to learning at License level for a number of reasons including: time management, long curriculums, loaded timetables, a considerable number of courses with many assignments, the teaching methodology, and the lack of independent learning skills.

In fact, many respondents highlighted that it was difficult for them to deal with many courses and long curriculums. They claimed that they had loaded timetables with a list of assignment in each course. They argued that they were aware of the necessity of conducting research but it was hard to manage with the considerable number of sessions. One respondent said: "*Master students need to do many researches but since there are many sessions per day, there is no time even to have some rest*". Another respondent noted: "*More modules, more tasks, more workshops, and more engagement*". In another word, we could understand that students found the learning experience at the Master level difficult because of mainly time management, charged timetables and several courses.

Second, other respondents explained that learning at the Master level was difficult compared to learning at License level because of shift in the teaching methodology from teacher-centred learning to student-centred learning. They observed that the teaching and learning process was connected to their abilities and learning skills. They argued that independent learning and autonomy were the necessary skills to succeed in learning at the

Master level. The respondent stated that the learning at the Master level was difficult because they had to depend on themselves and on their personal learning skills. One respondent said: "*because the system is different we start making presentations in all the modules (Td ones) I mean it means you get the information by yourself*". Another one noted: "*...the way of studying is based more on the capacities of the student*". So, we concluded that students lacked the necessary skills for independent learning. The learning experience at the Master level was difficult for many students because of their lack of autonomy.

Furthermore, many respondents explained that learning at the Master level was difficult compared to License level because of the new requirements of learning at the Master level. They argued that learning at the Master level emphasised on writing and researching skills. They highlighted that they faced many issues at the Master level because of the lack of writing and researching skills. They were required to conduct research and submit many written assignments. Clearly, we concluded from this question and the previous question (Item 1) about the difficulties students faced at the university level that, students lack writing skills and the necessary research skills. These became one the main reasons behind students' opinions about the difficulty of learning at the Master level compared to learning at License level.

Finally, three (3) respondents claimed that the learning experience at the Master level was the same as it was in the License level. One of them reported: "*To be honest, the level of studies is not really that difficult, too many modules with absolute and repeated content*". Another respondent justified his/her opinion by saying: "*because in some modules we are repeating the same things we have studied*". Apart from this, two (2) other respondents answered that the learning experience at the Master level was easier that it was in License level. One of them explained his/her point of view by saying: "*I developed a*

learning style over the 3 previous years". As a result, we assumed that few students could deal with the changes in the Master level. They found the learning experience at the Master level comfortable compared to the License level.

In short, from all the justifications that the respondents stated, we noticed that the majority of EFL students at the University of Mohamed Khider Biskra found the learning experience at the Master level more difficult than it was in the License level for many reasons. These reasons are mainly related to time management, loaded timetables, the different courses, and students' learning skills. Therefore, EFL students at the University of Mohamed Khider Biskra need a range of changes and improvements. They are required to work on their learning skills and develop a set of independent learning skills and research skills that will promote their autonomy. Also, they need some changes in their learning curriculum and timetables.

Section Two: Twenty-first Century Skills and Inquiry-based Learning Skills (From item 4 to item 9)

Item 04 Respondents' Knowledge about the Twenty-first Century Skills

Through this item, we aimed at exploring students' background knowledge about the 21st century skills. We attempted to understand if the participants were familiar with the 21st century skills.

Table 3. 5 Respondents' Knowledge about The Twenty-first Century Skills

Option	Number	%
Yes	16	61.9%
No	26	38.1%
Total	42	100%
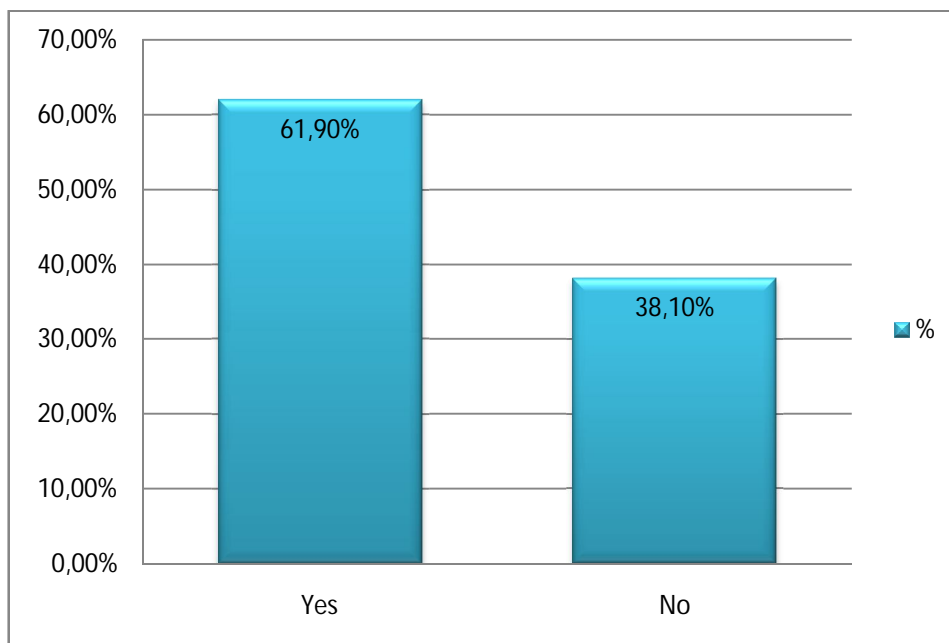
Graph 3. 5 Respondents' Knowledge about The Twenty-first Century Skills

Table 3.5 revealed that the majority of the respondents were not familiar with the 21st century skills. (26) Respondents who represent (61.9%) stated that they had no background knowledge about the 21st century skills. Whereas, (16) respondents who represent (38.1%) affirmed that they were familiar with the 21st century skills. As a result, we concluded that most of EFL students at the University of Mohamed Khider Biskra had no background knowledge about the 21st century skills.

Item 05 the importance of the Twenty-first Century Skills in EFL Students' Learning Progress

This item aimed at exploring students' thoughts and perspectives about the importance of the 21st century skills and inquiry skills in their learning progress.

Table 3. 6 the importance of the Twenty-first Century Skills in EFL Students' Learning

Progress

Option	Number	%
Critical thinking and problem solving	4	9.5%
Communication and collaboration	0	0%
Creativity and innovation	5	11.9%
Digital literacy	0	0%
Self-direction and responsibility	2	4.8%
All of them	31	73.8%
Total	42	100%
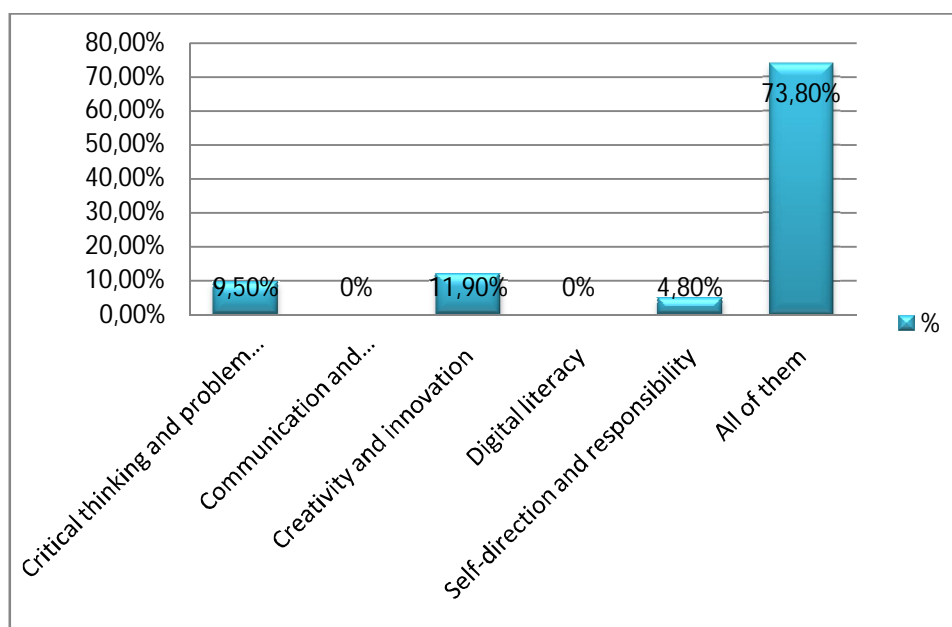
Graph 3. 6 the importance of the Twenty-first Century Skills in EFL Students'

Learning Progress

Table 3.6 displayed that the majority of the respondents believed that all the listed skills were crucial in their learning progress. (31) Respondents that represent (73.8%) stated that all the 21st century skills and inquiry skills (critical thinking and problem solving, communication and collaboration, creativity and innovation, digital literacy, self-direction and responsibility) are crucial in their learning process. Moreover, five (5)

respondents that represent (11.9%) insisted on the importance of creativity and innovation, while four (4) respondents that represent (9.5%) agreed that critical thinking and problem solving were the most crucial skills in their learning process. Other two (2) respondents that represent (4.8%) chose self-direction and responsibility as the most crucial skills in their process of learning. However, no one chose the following skills: digital literacy, communication and collaboration. To conclude, the majority of EFL students at the University of Mohamed Khider Biskra believe in the importance of the 21st century skills and inquiry skills in their learning process. So, they are required to develop a set of 21st century skills and inquiry skills including: critical thinking and problem solving, communication and collaboration, creativity and innovation, digital literacy, self-direction and responsibility. These skills are essential in the modern world and prepare students to be lifelong learners and face the requirements and challenges of the real world.

Item 6 Respondents' Mastery of the Twenty-first Century Skills and Inquiry Skills

The purpose of this item was to explore the respondents' mastery of the 21st century skills and inquiry skills. We aimed at collecting information about the respondents' learning skills and their mastery of some inquiry skills and 21st century skills.

Table 3. 7: Respondents' Mastery of the Twenty-first Century Skills and Inquiry Skills

Option	Number	%
Yes	24	57.1%
No	18	42.9%
Total	42	100%
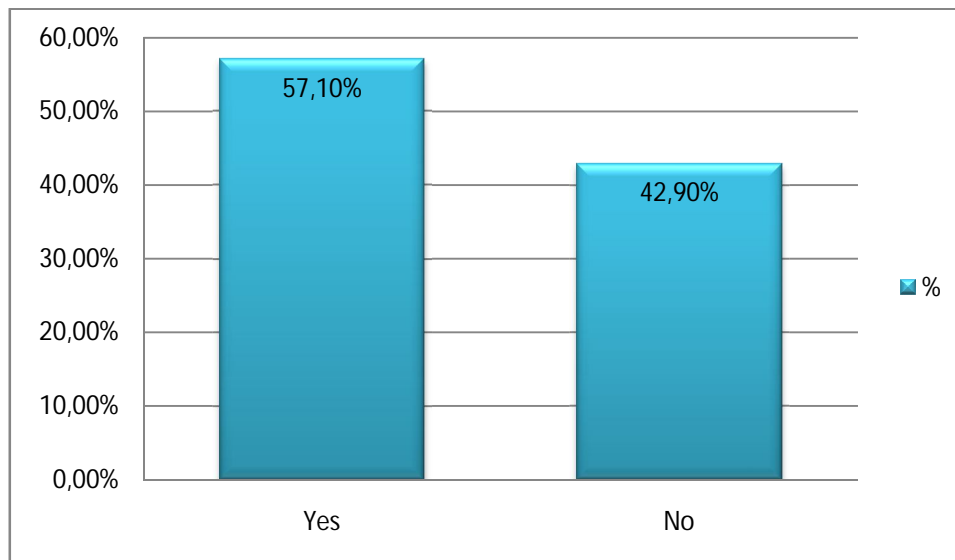
Graph 3. 7 Respondents' Mastery of the Twenty-first Century Skills and Inquiry Skills

Unlike what the respondents stated in the previous question (item 4) about their unfamiliarity with the 21st century skills, it is clearly observed in table 3.7 that the majority of the respondents master some of the 21st century skills and inquiry skills. (24) Respondents that represent (57.1%) claimed that they master some of the 21st century skills and inquiry skills. While, (18) respondents that represent (42.9%) stated that they do not master any of the 21st century skills and inquiry skills. Therefore, we could assume that the majority of first year Master English language students of sciences of the language at the University of Mohamed Khider Biskra master some of the 21st century skills and inquiry skills, however, they were not familiar with the terminology of the set of those skills (21st century skills) and through the list of skills we provided in the previous question (item 5), they could get a clearer idea about the concept of (the 21st century skills).

Item 7 Respondents' Knowledge about Inquiry-based Learning approach

This item aimed at exploring students' background knowledge about inquiry-based learning approach. We attempted to understand if the participants were familiar with inquiry-based learning approach.

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Table 3. 8: Respondents' Knowledge about Inquiry-based Learning approach

Option	Number	%
Yes	5	11.9%
No	37	88.1%
Total	42	100%
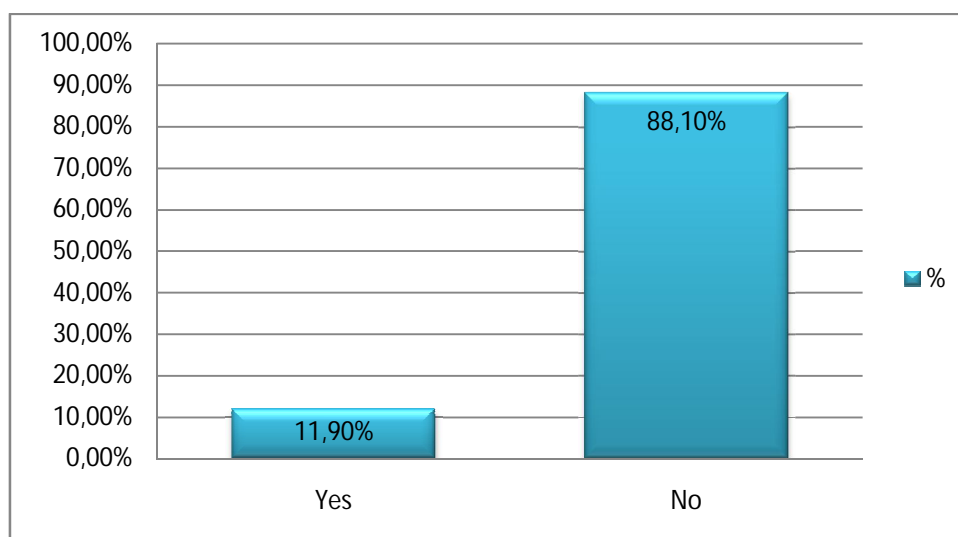
Graph 3. 8 Respondents' Knowledge about Inquiry-based Learning approach

As it is shown in table 3.8, the majority of the respondents are not aware of the meaning of inquiry-based learning approach. (37) Respondents that represent (88.1%) stated that they were not aware of the meaning of inquiry-based learning approach. While, only five (5) respondents that represent (11.9%) claimed that they are familiar with the meaning of inquiry-based learning approach. As a result, we concluded that the majority of first year Master English language students of sciences of the language at the University of Mohamed Khider Biskra are not familiar with the meaning of inquiry-based learning.

Item 8 Respondents' strategies to understand lessons and lectures

This item aimed at exploring students' attitude and strategies to understand lessons and lectures. We attempted to understand what learning methodology the respondents use to understand the presented lessons and lectures. We asked them if they rely on memorization or making critical conclusions about what teachers present. Then, we asked them to explain their answers.

Table 3. 9: Respondents' strategies to understand lessons and lectures

Option	Number	%
Memorization	6	14.3%
Making critical conclusions	16	38%
Both	18	43%
Others	2	4.7%
Total	42	100%
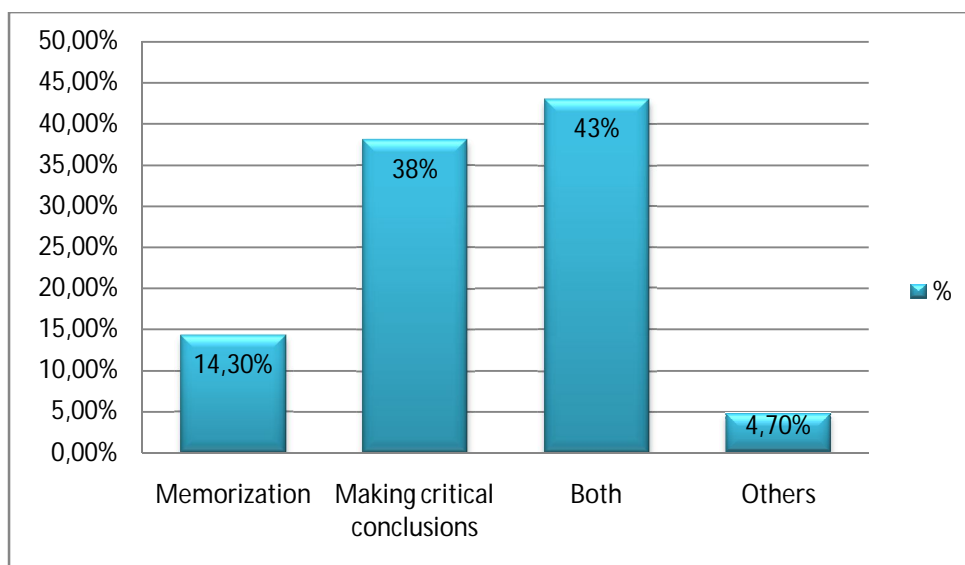
Graph 3. 9: Respondents' strategies to understand lessons and lectures

From a statistical perspective, we observed that the majority of the respondents rely on both memorization and making critical conclusions to understand the content that they have been taught. (18) Respondents that represent (43%) revealed that they rely on both memorization and making critical conclusions about what teachers present. Another (16) respondents that represent (38%) stated that they rely on making critical conclusions to understand lessons and lectures. They argued that they cannot rely on memorization. However, six (6) respondents noted that they rely on memorization, while two (2) respondents answered with other. To conclude, the majority of first year Master English language students of sciences of the language at the University of Mohamed Khider Biskra rely on both memorization and making critical conclusions about the content that they have been taught to understand lessons and lectures. This highlights the importance of both

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strategies for EFL students at the University of Biskra. So, they should develop a set of important skills including critical thinking skills, note-taking, interpretation and synthesise of what teachers present.

- **Respondents' Explanation of Their Learning Strategies**

Through this sub-question, we aimed at exploring the respondents' explanations and detailed descriptions about their learning strategies, their intentions and reasons for their personal learning styles. We observed that the majority of EFL students at the University of Biskra opt for both memorization and making critical conclusions to understand lessons and lectures.

First, most of the respondents highlighted the importance of relying on both memorization and making critical conclusions to understand what teachers present as lectures and lessons. One of the respondents said: "*I take notes from the lecture then I copy them down in my copybook and in exams, I revise them by thinking critically then I try to memorize*". Another respondent claimed: "*Some ideas need to be memorized as they are, others are better to be explained using my own words by linking it to my prior knowledge*". Moreover, many respondents insisted on the importance of making critical conclusions and memorizing their notes. One participant stated: "*First, with the teacher I understand and try to make critical conclusions, why's and how's, then when it comes to exams I memorize things I already understood and set it on my own words*". In another word, the majority of the respondents noted some essentials skills to understand what they have been taught including: note-taking skills, critical thinking skills, and memorization.

Second, a number of respondents revealed that they rely on making critical conclusions to understand lessons and lectures. They argued that they cannot rely on memorization. One of these respondents argued that memorization is a difficult task. S/he said: "*I can't memorize things by heart, so I try to understand while I'm in class*". Another

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respondent insisted on the effectiveness of making critical conclusions. S/he said: "*I find it better than memorization as I am interested in really grasping the presented information rather than just memorizing it*". Additionally, some respondents highlighted the importance of research skills and the ability to interpret and synthesise information. One of them noted: "*I cannot memorize everything the teachers present; also, they ask you to give answers in your own words*". Another respondent said: "*I try to use critical thinking in analysing what the teacher said and make further research about it, and lastly draw my own conclusion*". In short, many EFL students at the University of Biskra prefer to draw their own conclusions to understand the content they have taught. They mentioned the importance of practicing critical thinking, interpretation, and synthesise skills.

Furthermore, some of the respondents claimed that memorization is their suitable learning style. They argued that they are not critical thinkers and they can rely only on memorization to understand what the teachers present. One of the respondents said: "*Because I am not a critical thinker*". Another one said: "*Because I am a visual learner I depend completely on my memory*". So, we concluded that the respondents share different learning approaches and prefer different learning styles. Memorizing the presented information was an effective strategy for some students to understand lectures and lessons. All in all, some EFL students at the University of Biskra lack critical thinking skills and they depend completely on their memory. They tend to memorize what their teachers present during lessons and lectures.

To conclude, from all the explanations that the respondents stated, we noticed that the majority of EFL students at the University of Mohamed Khider Biskra rely on both memorization and making critical conclusions to understand lessons and lectures. Most of the students are aware of the importance of both memorization and the use of critical thinking skills. They explained that EFL teachers at the University of Biskra encourage

students to draw critical conclusions and make their own analysis and interpretation of knowledge. Therefore, Master English language students of sciences of the language at Biskra University are required to develop a set of learning skills such as: note-taking skills, critical thinking skills, synthesis, analysis, and interpretation skills.

Item 9 The frequency of respondents' search for answers of their own questions

This item was designed to obtain data about the respondents' attitude and behaviours to understand lessons and explore knowledge for their own. We aimed at understanding the frequency of students' autonomy and how often they explore and search for answers of their own questions. Then, we asked them to explain the reasons of their choice.

Table 3. 10 The frequency of respondents' search for answers of their own questions

Option	Number	%
Always	22	61.9%
Sometimes	19	33.3%
Rarely	1	4.8%
Never	0	0%
Total	42	100%
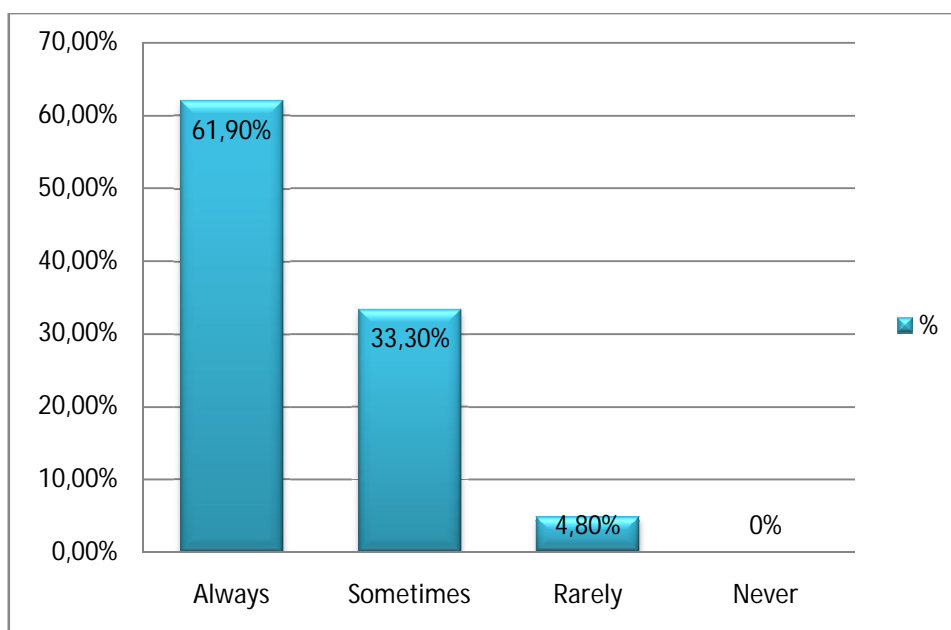
Graph 3. 10 The frequency of respondents' search for answers of their own questions

Table 3.10 revealed that the majority of the respondents always explore for their own and search for answers of their questions. (22) Respondents that represent (61.9%) stated that they always search for answers of their own questions. Another (19) respondents that represent (33.3%) revealed that sometimes they try to investigate and find answers of their own questions. Whereas only one (1) respondent who admitted that s/he rarely make inquiries and explore answers of his/her questions. So, we concluded that the majority of EFL students at the University of Biskra are autonomous and self-directed. They always explore answers of their questions and search for knowledge for their own.

- **Respondents' Explanation of Their reasons for Their Search of knowledge frequency**

This sub-question aimed at exploring the respondents' reasons for their search of knowledge frequency. We observed that the majority of EFL students at the University of Biskra always search for answers of their own questions. While the rest of them claimed that they sometimes do their search of knowledge. In another word, the majority of first year Master English language students of sciences of the language at Biskra University are active learners.

First, most of the respondents mentioned the importance of doing research and investigating for their own. They insisted on doing inquiries to gain more knowledge and avoid ambiguity. One of the respondents mentioned: "*Simply, I can't accept ambiguity and unclear things, so I always look for answers*". Another one reported: "*I always search for answers to my questions to gain more knowledge*". Thus, EFL students at the University of Biskra are aware of the importance of self-directed learning. They make inquiries and promote their autonomy by doing investigation and research.

Moreover, a considerable number of participants highlighted the significant role of research in improving their academic achievement. They argued that the content that is

presented in the class is not enough and the teacher's role is just to guide them. They insisted on doing their own research and filling the gaps of knowledge through extra sources on the Internet or in books. One respondent noted: "*I feel that the presented content is not enough, so I look for additional information online or in books*". Another student stated: "*I always do my own research to learn more and expand my knowledge*". Generally, many respondents value the role of personal efforts and research to achieve better academic results.

Finally, some respondents admitted that they value research and the personal process of inquiry to expand their knowledge; however, they argued that they struggle with time management and organization. One of them stated: "*Sometimes I forget, I am not very organized, but I am working on it*". Another respondent noted: "*because of time and a lot of studies to do everyday*". So, time management is one of significant struggles that EFL students at the University of Biskra encounter every day. They are required to work on their time management skills and improve an organized mindset.

All in all, the majority of first year Master English language students of sciences of the language at Biskra University are aware of the importance of autonomy and mastering research skills. They value independent learning and understand their role as active participants in the learning process. They always try to expand their knowledge; however, they struggle with time management skill. So, EFL students at the University of Biskra are required to improve their learning skills including: research skills, time management and organization skills.

Section Three: The Relationship between Research Projects and Students' Inquiry-based Learning (From item 10 to item 15)

Item 10 The frequency of Research Projects Assignments

This item aimed at understanding teachers attitudes toward the assignment of research projects. The respondents were asked to identify how often their EFL teachers assign research projects. We aimed at exploring the frequency of assigning research projects in EFL classrooms.

Table 3. 11 The frequency of Research Projects Assignments

Option	Number	%
Always	26	61.9%
Sometimes	14	33.3%
Rarely	2	4.8%
Never	0	0%
Total	42	100%
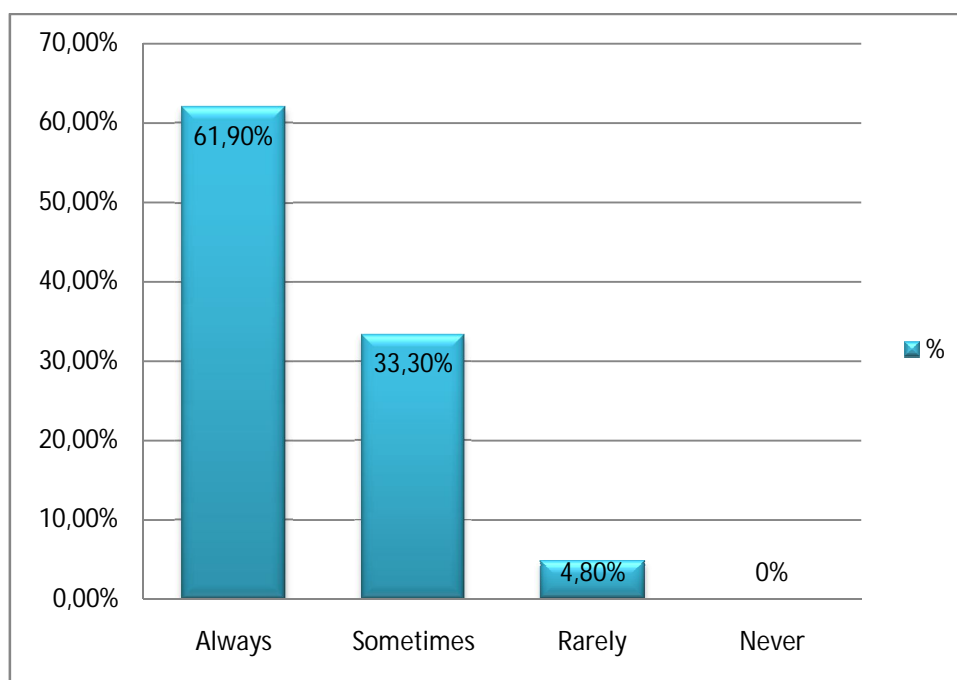
Graph 3. 11 The frequency of Research Projects Assignments

From a statistical perspective, we noticed that EFL teachers always assign research projects. The majority of the respondents claimed that their teachers always assign research projects. (26) Respondents that represent (61.9%) stated that their teachers always assign research projects, while (14) respondents noted that their teachers sometimes assign research projects; however, only two (2) respondents argued that their teachers rarely assign research projects. To conclude, the majority of EFL teachers at the University of

Biskra always assign research projects as one of the main learning activities for first year Master English language students of sciences of the language at Biskra University.

Item 11 Students' Interest in Preparing Research Projects

This item was designed to explore students' attitude and behaviours toward the assignment of research projects. The participants were asked to choose one option among three options. They were asked to select if they were very interested in preparing research projects, or somehow interested, or not interested at all. Then, they had to provide a detailed explanation to their choice.

Table 3. 12 Students' Interest in Preparing Research Projects

Option	Number	%
Very interested	8	19%
Somehow interested	31	73.8%
Not interested at all	3	7.1%
Total	42	100%
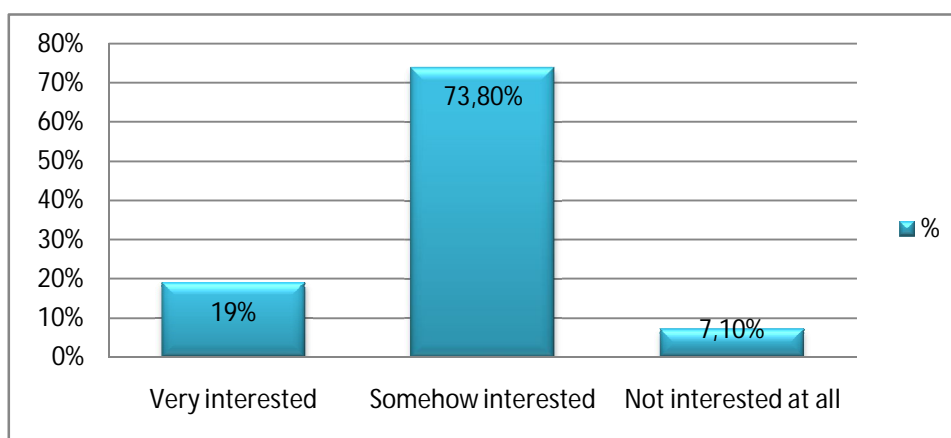
Graph 3. 12 Students' Interest in Preparing Research Projects

Graph 3.12 revealed that the majority of the respondents are somehow interested in preparing research projects. (31) Respondents that represent (73.8%) claimed that they are somehow interested in conducting research and preparing research projects, while eight (8) respondents that represent (19%) revealed that they are very interested in preparing research projects. However, only three (3) respondents that represent (7.1%) admitted that they are not interested at all in preparing research projects. So, we concluded that the

majority of EFL students at the University of Biskra are somehow interested in preparing research projects. Most of first year Master English language students of sciences of the language at the University of Mohamed Khider Biskra are comfortable with research projects assignments.

- **Respondents' Explanations**

Through this sub-question, we aimed at collecting students' detailed explanations behind their attitude toward the assignment of research projects. We tried to explore their thoughts and opinions about preparing research projects. We noticed that the majority of EFL students at Biskra University are somehow interested in preparing research projects.

First of all, the majority of the respondents revealed that they are somehow interested in preparing research projects because of a number of reasons including the significant role of conducting research in expanding students' knowledge and developing their research skills. One respondent said: "*Research projects help students to have clear idea about different subjects and expand their knowledge*". Another respondent noted: "*As Master one student I wanna train myself to do research. Research projects help me to become a good researcher*". So, the majority of EFL students at the University of Biskra are aware of the benefits of preparing research projects.

Moreover, many respondents stated that they are very interested in preparing research projects. They insisted on the positive effects of conducting research in increasing their engagement and reinforcing students' active role in the learning process. One respondent said: "*I am very interested in preparing research projects because it makes me feel that I am engaged in the learning process*". So, the respondents highlighted the positive feeling they endure when preparing research projects and stated that doing research increase their academic achievement. One student noted: "*Research improves my academic achievement*". To sum up, many EFL students at Biskra University mentioned

the positive effects of preparing research projects in increasing students' engagement and academic achievement.

However, few respondents stated that they are not interested in preparing research projects at all. They argued that research projects are time consuming and require considerable efforts. One respondent said: "*It takes time and efforts, and as Master students, time is not there, we do research but under a lot of pressure*". Another one stated: "*I am not interested in making research projects because I find it hard and I don't know how to do it in a good way*". So basically, EFL students at the University of Biskra encounter difficulties with time management and their timetables, in addition to the lack of the necessary skills to conduct research.

Finally , from this item, we noticed that the majority of first year Master English language students of sciences of the language at Biskra University are fully aware of the significant effects of preparing research projects in developing students' knowledge and research skills, in addition to increasing their engagement and academic achievement. So, EFL students at Biskra University are interested in preparing research projects, however, they should consider time management and improve their research skills.

Item 12 Students' Thoughts toward the Assignment of Research Projects

This item was designed to explore students' thoughts about the relationship between the assignment of research projects and the development of students' inquiry learning skills and their academic achievement. The respondents were asked to state their thoughts about the role of assigning research projects in enhancing students' inquiry skills and their academic achievement by choosing (yes) or (no) and then justifying their answers.

Table 3. 13: Students' Thoughts toward the Assignment of Research Projects

Option	Number	%
Yes	40	95.2%
No	2	4.8%
Total	42	100%
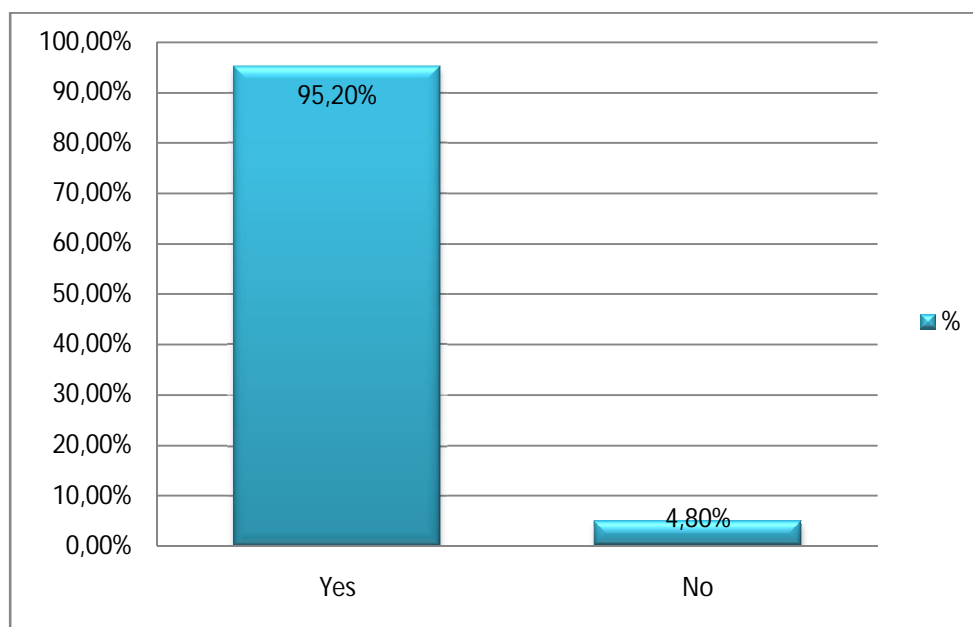
Graph 3. 13: Students' Thoughts toward the Assignment of Research Projects

As it is clearly shown in graph 3.13, the majority of the respondents think that assigning research projects can develop students' inquiry learning skills and increase their academic achievement. (40) Respondents that represent (95.2%) affirmed that they believe that research projects assignments affect students' inquiry skills and their academic achievement positively. However, only two (2) respondents that represent (4.8%) disagree and stated that they do not think that assigning research projects can neither develop students' inquiry skills nor increase their academic achievement. In short, the majority of EFL students at the University of Biskra have positive thoughts and attitude toward the assignment of research projects. They believe in the positive outcomes of assigning research projects in students' inquiry learning skills development and the improvement of their academic achievement.

- **Respondents' Justifications**

The respondents were asked to explain their reasons behind their thoughts and attitude toward the relationship between assigning research projects and developing EFL students' inquiry learning skills and increasing their academic achievement. We noticed that the majority of EFL students at the University of Biskra think that the assignment of research projects has positive outcomes on students' inquiry learning skills and their academic achievement.

First of all, the majority of the respondents insisted on the role of assigning research projects in developing students learning skills. They mentioned that they believe doing many research projects will improve a set of skills and promote the four language skills. One of them said: "*Research projects help them practicing more skills and gain more knowledge*". They also highlighted the role of research projects in engaging them in the learning process. One respondent noted: "*This type of assignments will engage learners in the learning process and will help them develop different skills*". Another respondent listed a set of skills s/he believed that it could be promoted through research projects assignments. S/he stated: "*Research projects improve your writing style, critical thinking, creativity, memory*". So, EFL students at Biskra University have positive attitude toward assigning research projects to develop students' learning skills.

Moreover, many respondents insisted on the importance of preparing research projects to develop inquiry and research skills. They noted that the more research projects they prepare the more inquiry and research skills they gain. One of the respondents said: "*the more they make research, the better learners become in conducting research...*". S/he also added that research projects will make students more autonomous. S/he noted: "*...and make them more autonomous in their learning*". Another respondent highlighted that the process of preparing research projects will help Master students to develop different skills

and prepare them for the challenges of writing their Master dissertations. S/he mentioned: "*It will help them to develop their reading and writing skills, and will pave the way for them to write their Master two dissertations well, so they will score better*". Briefly, many EFL students at the University of Biskra value research projects assignments and believe in their positive outcomes to promote their research skills and increase their academic achievement.

Furthermore, some of the respondents argued that the assignment of research projects can promote students autonomy and many 21st century skills including critical thinking skills, communication skills, and problem solving skills. One of the respondents stated: "*They will gain more experience through exploring topics. Students will build critical thinking and communication skills*". Another respondent claimed: "*Absolute development to the students' ability to solve problems when it comes to facing similar situations in the future*". Additionally, some respondents listed students' autonomy as one of the positive outcomes of research projects assignments. One respondent explained: "*Research projects push students to be autonomous and help them learn more*". So, some of EFL students at the University of Biskra believe in the positive effects of assigning research projects to promote students autonomy and a set of 21st century skills.

To summarise, the majority of first year Master English language students of sciences of the language at Biskra University have positive attitude toward the assignment of research projects and believe in the promising outcomes of this type of assignment. They value the process of preparing research projects to develop their research skills. One of the respondents noted: "*Practice make perfection*". They are aware of the importance of preparing research projects to develop their learning and inquiry skills in addition to increase their academic achievement.

Item 13 Students' Attitude toward the Relationship between Research Projects and Students' Inquiry-based Learning

This item was designed to explore students' thoughts about the relationship between research projects and students' inquiry-based learning. The respondents were asked to identify their thoughts about the relationship between research projects and students' inquiry-based learning. They had to choose (yes) or (no) to illustrate their opinions about the role of research projects to promote students' inquiry-based learning. After that, they had to explain their thoughts about the relationship between research projects and students' inquiry-based learning.

Table 3. 14 Students' Attitude toward the Relationship between Research Projects and Students' Inquiry-based Learning

Option	Number	%
Yes	41	97.6%
No	1	2.4%
Total	42	100%
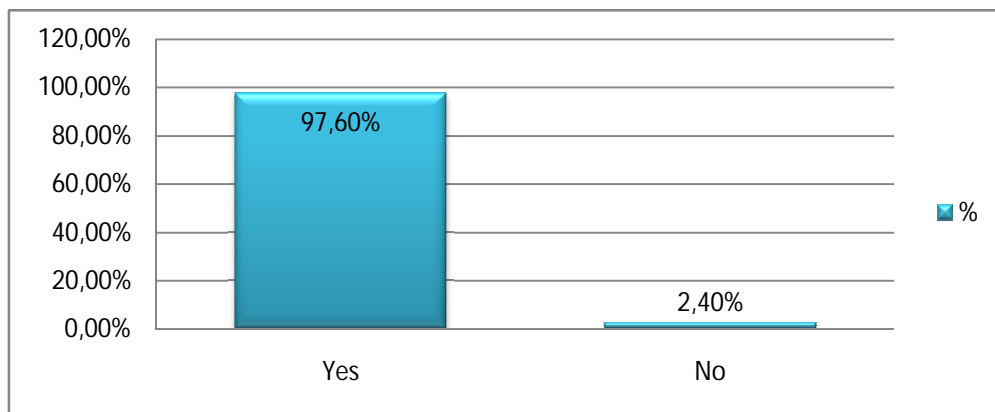
Graph 3. 14 Students' Attitude toward the Relationship between Research Projects and Students' Inquiry-based Learning

From a statistical perspective, we noticed that the majority of the respondents think that research projects can promote students' inquiry-based learning. (41) Respondents that represent (97.6%) affirmed that they believe in the positive outcomes of research projects in promoting students' inquiry-based learning. However, only one (1) respondent who

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claimed that research projects cannot promote students' inquiry-based learning. As a result, we concluded that the majority of EFL students at the University of Biskra have positive opinions about research projects and believe in the promising outcomes of the relationship between research projects and students' inquiry-based learning.

- **Respondents' Explanations**

From this sub-question, we aimed at understanding students' reasons behind their thoughts and opinions toward the relationship between research projects and students' inquiry-based learning. We noticed that the majority of first year Master English language students of sciences of the language at Biskra University have positive thoughts about the role of research projects in promoting students' inquiry-based learning. Their responses highlighted their knowledge about students' inquiry-based leaning and the benefits of research projects in developing their learning skills.

First, the majority of the respondents illustrated that research projects are the essence of students' inquiry-based learning. One of the respondents noted: "*Yes, this approach is based on doing research projects*". The respondents explained that the process of doing research projects creates opportunities for learners to explore for their own and encourages them to make inquiries to expand their knowledge. One respondent answered: "*It creates an atmosphere of curiosity and allows students to search*". Another respondent stated: "*Yes because learners will be encouraged to investigate and look for knowledge*". To conclude, the majority of EFL students at the University of Biskra think that research projects can promote students' inquiry-based learning and encourage them to make inquiries.

Moreover, some respondents listed a number of skills that can be improved through research projects including: autonomy, critical thinking, creativity, and research skills. One of the respondents mentioned: "*because research projects help students with their critical*

thinking and research skills". Another one stated: "*it help students to be creative, autonomous, critical thinkers, independent*". This indicates that most of the students are aware of the benefits of research projects and the importance of doing their own inquiries. They believe that this assignment can promote students' inquiry-based learning and creates for them more opportunities to develop their learning skills. So, most of EFL students at Biskra University link research projects to the development of many learning skills including research skills and autonomy.

In conclusion, the majority of first year Master English language students of sciences of the language at Biskra University think that research projects can promote students' inquiry-based leaning because of many reasons. They believe in the positive outcomes of research projects and students' inquiry-based learning including the development of their learning skills. Also, they insisted on the importance of the relationship between research projects and students' inquiry-based learning in increasing students' creativity, autonomy, and critical thinking skills.

Item 14 Research Projects and Students' Inquiry-based Learning Role in Developing the Twenty-first Century Skills.

This item was designed to explore students' thoughts and perspectives about the role of research projects and students' inquiry-based learning in improving the 21st century skills. The participants were asked to choose the skills they thought could be developed through research projects and the implementation of students' inquiry-based learning.

Table 3. 15: Research Projects and Students' Inquiry-based Learning Role in Developing
the Twenty-first Century Skills.

Option	Number	%
Critical thinking and problem solving	13	31%
Communication and collaboration	1	2.4%
Creativity and innovation	6	14.3%
Digital literacy	0	0%
Self-direction and responsibility	2	4.7%
All of them	20	47.6%
Total	42	100%
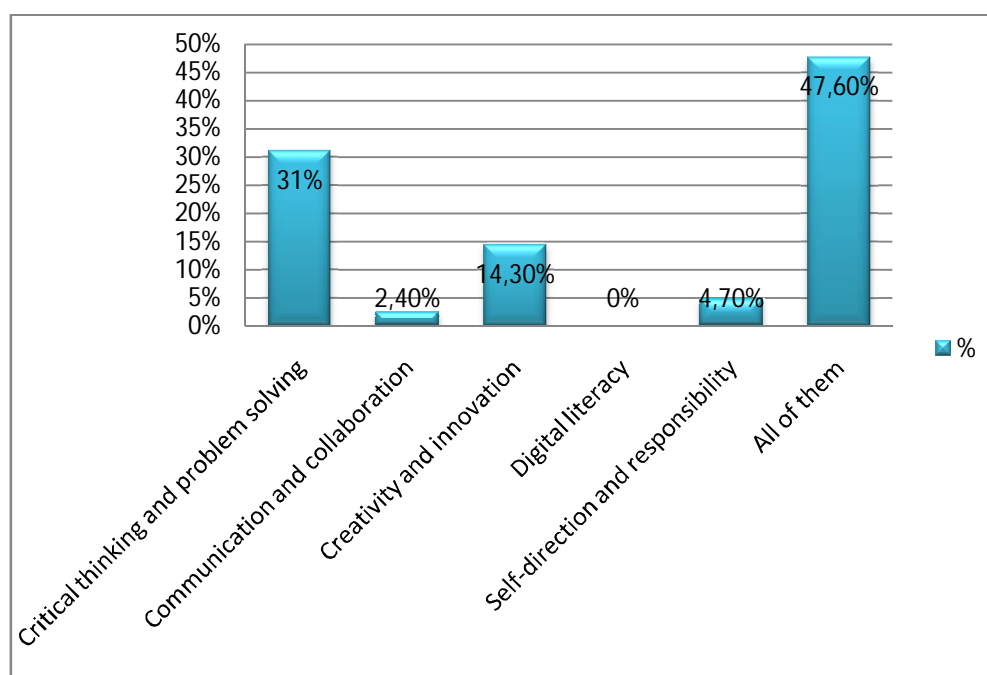
**Graph 3. 15: Research Projects and Students' Inquiry-based Learning Role in
Developing the Twenty-first Century Skills.**

Table 3.15 revealed that the majority of the respondents believed that all the 21st
century skills can be developed through the assignment of research projects and the
implementation of students' inquiry-based learning. (20) Respondents that represent
(47.6%) stated that all the 21st century skills and inquiry skills (critical thinking and
problem solving, communication and collaboration, creativity and innovation, digital

literacy, self-direction and responsibility) can be increased in EFL students through the assignment of research projects and the implementation of students' inquiry-based learning. Furthermore, (13) respondents that represent (31%) thought that critical thinking and problem solving were the main outcomes of using this type of assignment and the implementation of this approach, while six (6) respondents that represent (14.3%) chose creativity and innovation as the skills that can be increased through assigning research projects and implementing inquiry-based learning approach. Another two (2) respondents that represent (4.7%) believed that self-direction and responsibility were the only skills that could be improved through research projects and inquiry-based learning. Moreover, one respondent chose communication and innovation skills, however, no one chose digital literacy skill. In short, the majority of first year Master English language students of sciences of the language at the University of Mohamed Khider Biskra believe that all the 21st century skills and inquiry skills can be promoted in students' learning process through assigning research projects and implementing inquiry-based learning approach .

Item 15 Students' Attitude toward the Implementation of Inquiry-based Learning Approach

This item was designed to collect students' attitude toward the implementation of inquiry-based learning approach. We wanted to know students' behaviours and beliefs about inquiry-based learning. We aimed at understanding students' evaluation of inquiry-based learning approach and whether they thought this approach was important in their learning process or not. They were asked to choose (Yes) or (No) to reveal their thoughts about the importance of implementing this student-centred approach. Then they had to explain their ideas and opinions.

Table 3. 16: Students' Attitude toward the Implementation of Inquiry-based Learning

Approach

Option	Number	%
Yes	41	97.6%
No	1	2.4%
Total	42	100%
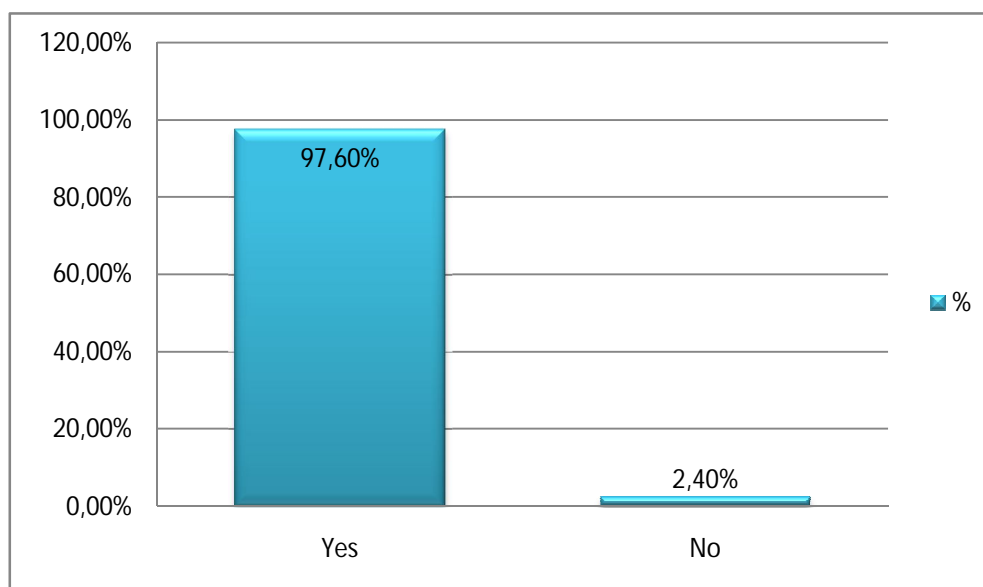
Graph 3. 16: Students' Attitude toward the Implementation of Inquiry-based

Learning Approach

Graph 3.16 displayed that the majority of the respondents agreed on the importance of implementing inquiry-based learning approach. (41) Respondents that represent (97.6%) affirmed the importance of implementing this approach in EFL classrooms. They believed in the positive outcomes of this student-centred approach and chose (yes) to illustrate their thoughts about the significance of implementing inquiry-based learning approach in EFL learning. However, only one (1) respondent who claimed that promoting inquiry-based learning approach in EFL classes is unnecessary. To conclude, the majority of first year Master English language students of sciences of the language at the University of Mohamed Khider Biskra insist on the importance of implementing inquiry-based learning approach.

- **Respondents' Explanations**

From this sub-question, we aimed at understanding students' reasons, thoughts, and attitude toward the importance of implementing inquiry-based learning approach. We wanted to explore their reasons behind their beliefs about inquiry-based leaning approach and its implementation in EFL classrooms. We noticed that the majority of the respondents affirmed the importance of the implementation of this approach for a set of reasons and outcomes.

First, the majority of the respondents revealed that inquiry-based learning provide many opportunities for students to increase many skills and enhance their learning process. One of the respondents explained: "*Through this approach, students explore a topic, build critical thinking skills. This helps them foster more curiosity about the material and teaches students skills that they can use to continue exploring topics they are interested in*". Another respondent noted: "*It develops learners' self-motivation, autonomous learning and other learning skills*". So, the majority of the respondents affirmed the importance of implementing inquiry-based leaning approach because of the positive outcomes of this approach in students' learning process. They listed a number of skills including critical thinking, motivation, and autonomy.

Moreover, the respondents argued that this approach is a modern teaching methodology and meets the requirement and the challenges of the modern world. One respondent assumed: "*it is an innovative teaching approach that focuses on providing students with opportunities to be self-directed*". Another respondent argued: "*because of this digital age and the availability of internet, it is easy to use it*". Also, many respondents mentioned the importance of practicing and making inquiries to improve students' research skills. One respondent noted: "*It is important especially for Master students since they are at higher level where they need to acquire research skills*". This

proves students' awareness of the importance of implementing inquiry-based learning in EFL classes   .

All in all, the majority of first year Master English language students of sciences of the language at the University of Mohamed Khider Biskra insisted on the importance of implementing inquiry-based learning approach in EFL classrooms to meet the requirement of the modern world and improve students' inquiry and 21st century skills. One respondent said: "*it gives room for 'real' learning to take place*", So, EFL teachers at the University of Biskra should encourage students' inquiries and research activities to promote inquiry-based learning approach.

3. 6.6. Discussion and interpretation of the findings

The analysis and interpretation of students' questionnaire provide significant finding. These findings present a set of valuable responses and a range of different information that supported our hypothesis. First of all, we noticed that the learning experience at the university level for EFL learners is somehow difficult due to different reason including time management, loaded timetables, several courses especially at the Master level, in addition to difficulties with understanding the higher educational system and the teaching methodology.

Second, the respondents called for changes in the teaching methodology. They insisted on the need to learn the necessary skills for active and independent learning. Teachers are required to foster students' autonomy through teaching them the essential independent learning skills and provide them with opportunities to enhance their role in the learning process through developing their research skills. Also, syllabus designers and decision makers should reform their learning curriculums and timetables.

Furthermore, the respondents showed little knowledge about the 21st century skills; however, after listing a number of 21st century skills, they revealed more knowledge and

mastery of some of these skills. This proved that students had little knowledge about the terminology. Also, the majority of them were not familiar with the term inquiry-based learning approach. Then, through the questions they could get clearer idea about these terminologies.

After that, the respondents highlighted the importance of making critical conclusions and using memorization to understand lessons and lectures. They mentioned that their learning progress requires mastering a set of skills including: critical thinking, note-taking, analysis, interpretation and inquiry skills. Consequently, teachers should encourage students to draw critical conclusions and improve their note-taking skills, interpretation skills, analysis and synthesis skills.

Additionally, EFL students at the University of Biskra have positive thoughts and attitude toward the assignment of research projects. They mentioned that teachers use this type of assignments to promote a set of positive outcomes. However, they mentioned the lack of time management skills and organized mindsets. They also agreed on the positive outcomes of the relationship between research projects and inquiry-based learning approach.

The respondents affirmed the importance of assigning research projects and implementing inquiry-based learning approach. They highlighted that encouraging students to make inquiries increases their engagement and academic achievement in addition to their 21st century skills and inquiry skills which are crucial nowadays. Teachers are required to focus on direct their teaching methodology toward student-centred approaches to prepare EFL students to the challenges and the requirements of the modern world.

3.7. Teachers' Questionnaire

In the current study, we also used a semi-structured questionnaire which was addressed to EFL teachers at Mohamed Khider University of Biskra. The aim of this

questionnaire was to collect teachers' feedback and attitude toward the use of research projects and the implementation of inquiry-based learning.

3. 7.1. Description of the teachers' questionnaire

The questionnaire was a semi-structured questionnaire addressed to EFL teachers at the University of Mohamed Khider Biskra. It was divided into three sections:

Section One: General Information

The first section of this questionnaire consists of two questions. These questions were designed to collect general information about EFL teachers at the University of Biskra. We aimed at exploring the teachers' degree and their teaching experience. We asked them to identify the degree they hold, in addition to stating for how long they have been teaching.

Section two: Twenty-first Century Skills and Inquiry-based Learning Skills

This section consists of six questions about the 21st century skills and inquiry-based learning. First, we wanted to know if EFL teachers at the University of Biskra were familiar with the 21st century skills. Then, they were given a list of skills to choose which one they thought was crucial in EFL teaching and learning process. Furthermore, the teachers were asked if their students master some of the 21st century skills. Moreover, we wanted to explore teachers' definitions and opinions about inquiry-based learning approach, in addition to their attitude and thoughts about the implementation of this approach in EFL classes. In the end of this section, the teachers were asked to identify and explain the activities they could use to promote students' inquiry-based learning.

Section Three: The Relationship between Research Projects and Students' Inquiry-based Learning.

This section consists of five questions. It aimed at exploring teachers' thoughts and opinions about the relationship between research projects and inquiry-based learning. First, we attempted to know how often EFL teachers assign research projects and if their students

were interested in preparing research projects. Then, the teachers were asked to state their opinions about research projects assignments to develop students' 21ˢᵗ century skills and inquiry skills. Moreover, we aimed at exploring to what extent students' inquiry skills are important in EFL context, according to EFL teachers' experiences. Finally, the teachers were asked to state their thoughts about the role of assigning research projects to promote students' inquiry-based learning. In all these questions, teachers were required to explain their thoughts and answers.

Section Four: Suggestions and Comments:

The last section of this questionnaire was devoted for teachers' comments and suggestions. We intended to provide EFL teachers with a space for them to add any comments or suggestions.

3. 7.2. Aim of the teachers' questionnaire

The aim of the teachers' questionnaire was to collect data from EFL teachers at The University of Mohamed Khider Biskra. This questionnaire was used as a data collection method for the study to understand EFL teachers' perceptions and thoughts about the assignment of research projects. It aimed at exploring their attitude toward assigning research projects and promoting inquiry-based learning approach in EFL classrooms. Moreover, it attempted to collect EFL teachers' opinions about the role of research projects as a learning task to implement students' inquiry-based learning.

3. 7.3. Validation of teachers' questionnaire

After the preparation of the first draft of teachers' questionnaire, the supervisor suggested to devote a section for teachers' comments and suggestions. The researcher took into consideration the supervisor's feedback and prepared the final draft.

3. 7.4. Administration

For the administration phase, we opted for an online distribution of the questionnaire because of the quarantine. The link of the online form of the questionnaire

was sent to a number of EFL teachers at the University of Biskra (20 teachers who were selected randomly) via e-mail or Facebook. We received clear and completed answered questionnaire from seven (7) teachers within almost two months (April, 16th, 2020/ June, 19th, 2020).

3. 7.5. Analysis and interpretation of teachers' questionnaire

The teachers' questionnaire was designed to collect teachers' perceptions, thoughts, attitudes, behaviours, and opinions about the role of research projects to promote students' inquiry-based learning. The obtained data were analyzed, and interpreted to test (prove/reject) our hypothesis.

Section One: General Information (From item 1 to item 2)

Item 01: Teachers' degree

This item was designed to collect data about the different degrees that EFL teachers at the University of Mohamed Khider Biskra hold.

Table 3. 17: Teachers' degree

Option	Number	%
Master	0	0%
Magister	4	57.1%
Doctorate	3	42.9%
Total	7	100%
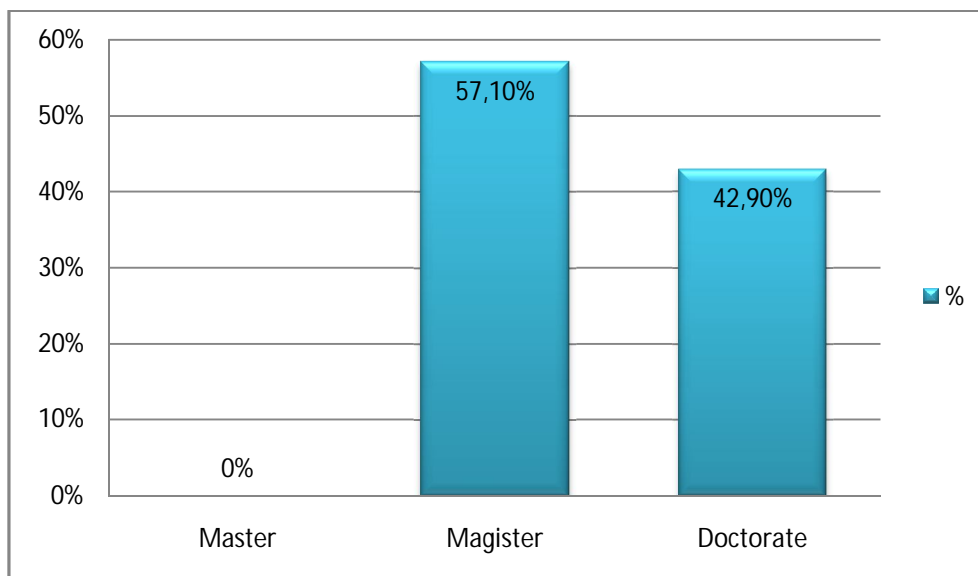
Graph 3. 17: Teachers' degree

From graph 3.17, we noticed that the majority of EFL teachers at the University of Mohamed Khider Biskra have Magister degree. Four (4) teachers that represent (57.1%) have Magister degree while three (3) teachers that represent (42.9%) have Doctorate degree. However, none of them have Master degree. So, we noticed that EFL teachers at the University of Mohamed khider Biskra have different degrees which will provide us with different thoughts and attitude toward inquiry-based learning approach and research projects assignments.

Item 02: Teachers' teaching experience

This item was designed to explore EFL teachers' teaching experience. We intended to know for how long they have been teaching by listing different options for them to choose (1-5 years, 6-9 years, more than 10 years.)

Table 3. 18 Teachers' teaching experience

Option	Number	%
1-5 years	1	14.3%
6-9 years	0	0%
More than 10 years	6	85.7%
Total	7	100%
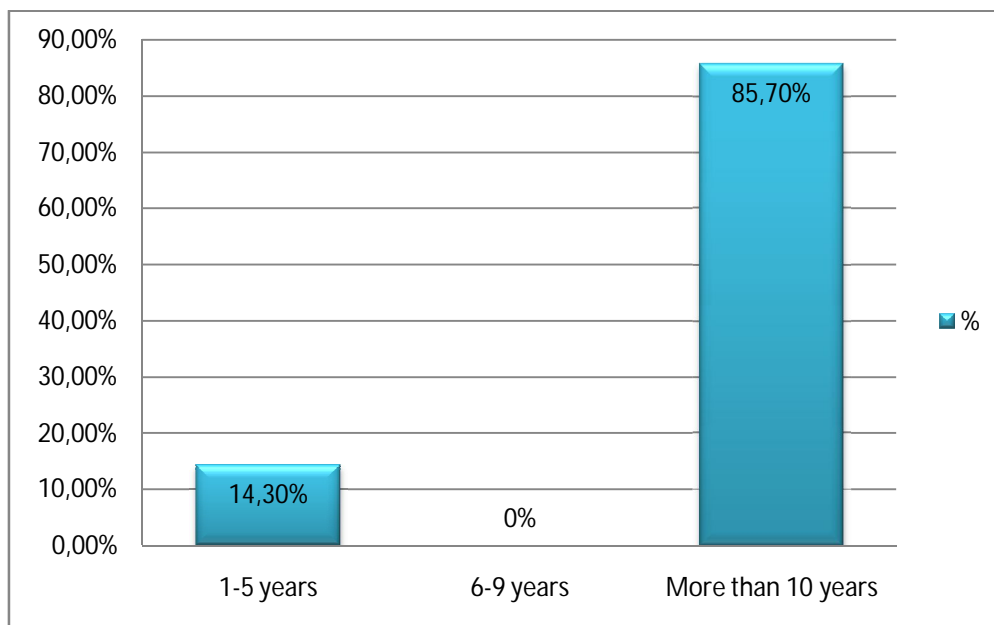
Graph 3. 18 Teachers' teaching experience

Graph 3.18 indicates that the majority of EFL teachers at the University of Mohamed Khider Biskra have more than 10 years teaching experience. Six (6) teachers that represent (85.7%) stated that they have been teaching for more than 10 years, while one (1) teacher stated that s/he has been teaching for about 1-5 years. To sum up, EFL teachers at the University of Biskra have different teaching experience, however, the majority of them have more than 10 years teaching experience. This will provide us with different thoughts and opinions about the role of research projects to promote students' inquiry-based learning.

Section two: Twenty-first Century Skills and Inquiry-based Learning Skills (From item 3 to item 8)

Item 03: Teachers' familiarity with the 21st century skills

Table 3. 19 Teachers' familiarity with the 21st century skills

Option	Number	%
Yes	5	71.4%
No	2	28.6%
Total	7	100%
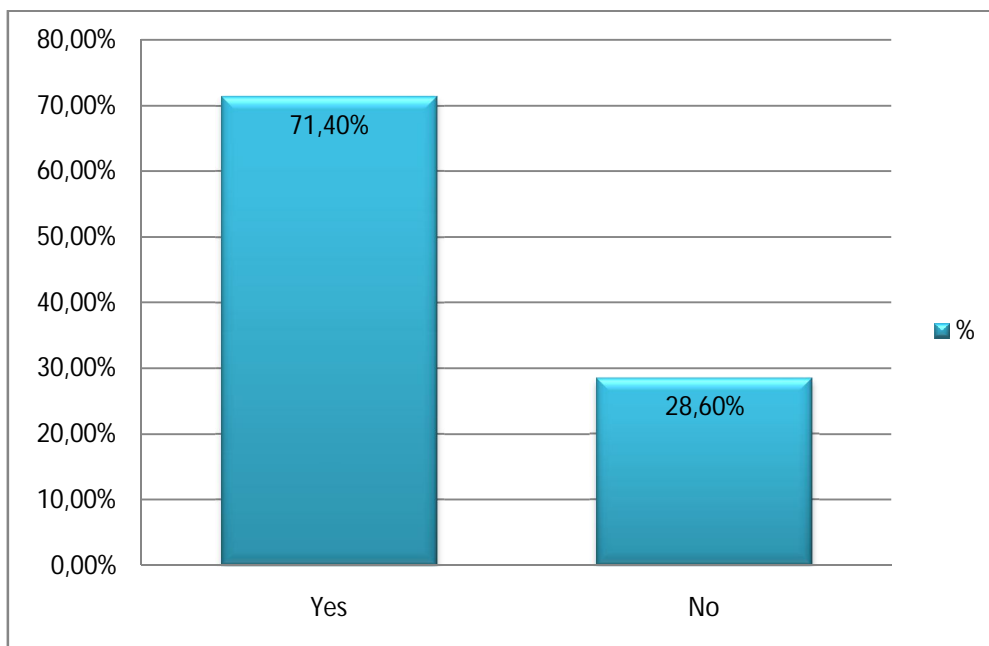
Graph 3. 19: Teachers' familiarity with the 21ˢᵗ century skills

As it is clearly shown in table 3.19, the majority of EFL teachers at the University of Mohamed Khider Biskra are familiar with the 21ˢᵗ century skills. Fiver (5) teachers that represent (71.4%) stated that they are familiar with the 21ˢᵗ century skills. However, Two (2) teachers that represent (28.6%) mentioned that they are not familiar with the 21ˢᵗ century skills. In short, the majority of EFL teachers at the University of Mohamed Khider Biskra are familiar with the 21ˢᵗ century skills. They are aware of the required learning skills to cope with the challenges of the 21ˢᵗ century.

Item 04: Teachers' Thoughts about the Importance of the Twenty-first Century Skills in EFL Teaching and Learning Process

This item was designed to explore EFL teachers' attitudes and opinions about the importance of the 21ˢᵗ century skills in EFL teaching and learning process. We listed a number of 21ˢᵗ century skills and inquiry skills and intended to understand EFL teachers' thoughts about the most important skills in EFL teaching and learning process at the University of Biskra.

Table 3. 20: Teachers' Thoughts about the Importance of the Twenty-first Century Skills

in EFL Teaching and Learning Process

Option	Number	%
Critical thinking and problem solving	0	0%
Communication and collaboration	0	0%
Creativity and innovation	0	0%
Digital literacy	0	0%
Self-direction and responsibility	0	0%
All of them	7	100%
Total	7	100%
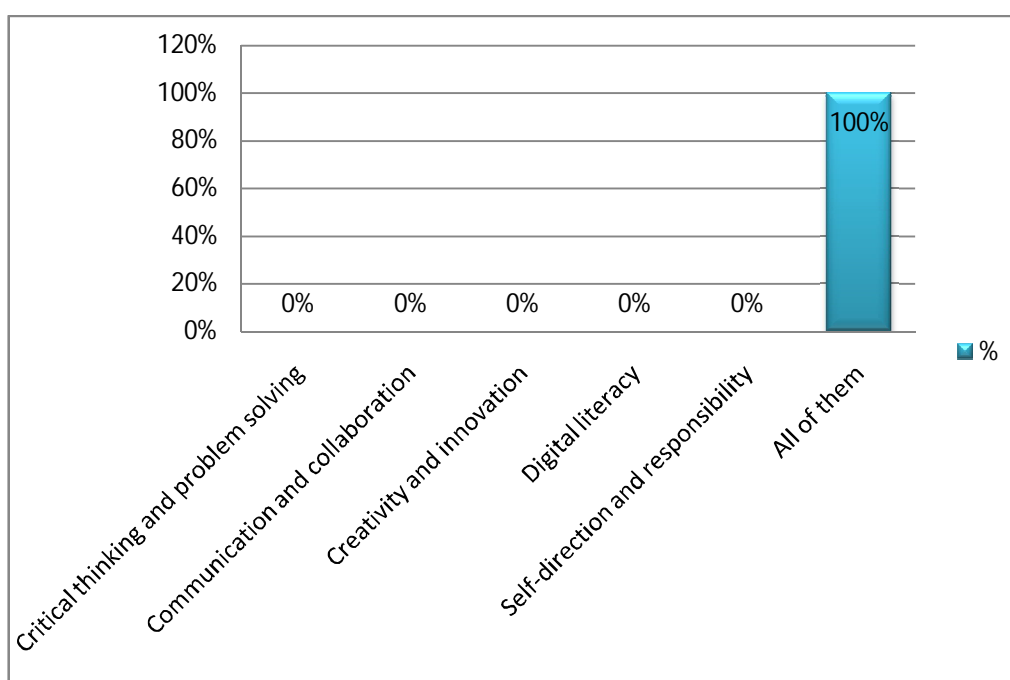
Graph 3. 20 Teachers' Thoughts about the Importance of the Twenty-first Century

Skills in EFL Teaching and Learning Process

As it is clearly observed from graph 3.20, (100%) of the participants believe in the importance of all the 21st century skills and inquiry skills in EFL teaching and learning process. This indicates that EFL teachers at the University of Mohamed Khider Biskra have positive attitude toward the 21st century skills and inquiry skills. Also, this reveals that teachers who stated that they are not familiar with the 21st century skills in the

previous question could have unfamiliarity with the terminology not necessarily the 21st century skills and inquiry skills.

Item 05: Student' Mastery of the Twenty-first Century Skills and Inquiry Skills

This item aimed at exploring EFL teachers' thoughts about their students' mastery of some of the 21st century skills and inquiry skills. Teachers were asked to state whether their students master some of the 21st century skills or not. They had to choose (yes) or (no).

Table 3. 21: Student' Mastery of the Twenty-first Century Skills and Inquiry Skills

Option	Number	%
Yes	6	85.7%
No	1	14.3%
Total	7	100%
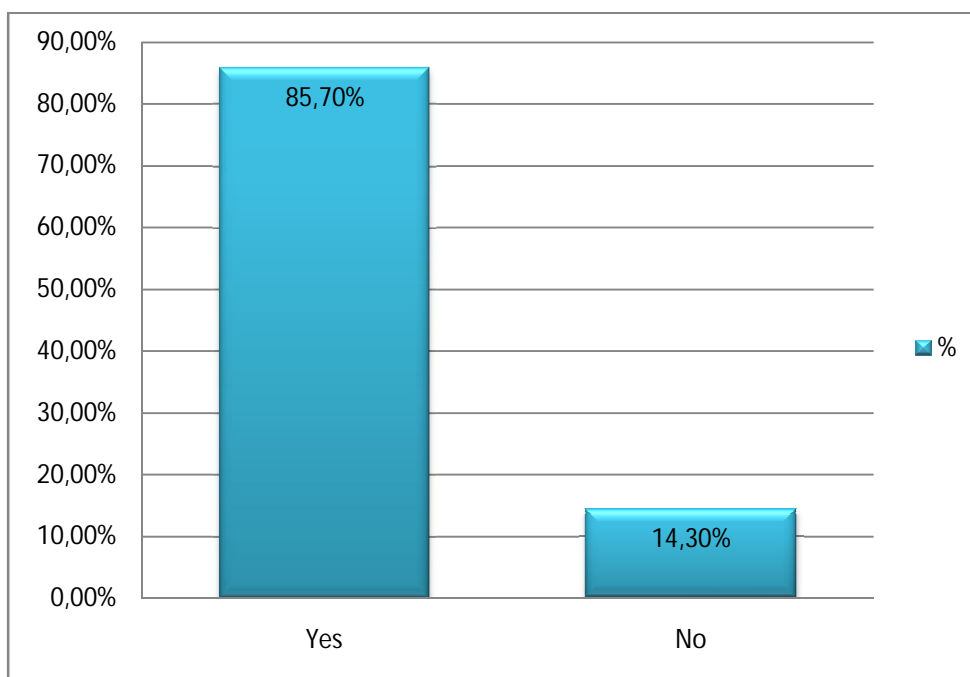
Graph 3. 21: Student' Mastery of the Twenty-first Century Skills and Inquiry Skills

Graph 3.21 revealed that the majority of EFL teachers at the University of Mohamed Khider Biskra believe that their students master some of the 21st century skills. Six (6) teachers that represent (85.7%) affirmed that their students master some of the 21st century skills. While one (1) teacher mentioned that his/her students do not master the 21st

century skills. Briefly, the majority of EFL teachers at the University of Mohamed Khider Biskra believe that their students master some of the 21st century skills. So, EFL students at the University of Mohamed Khider master some of the 21st century skills.

Item 06: Teachers' definition of inquiry-based learning approach

This item was designed to explore EFL teachers' definition and concepts of inquiry-based learning approach. The respondents were asked to define inquiry-based learning approach. The aim of this item was to understand teachers' perceptions and thoughts about inquiry-based learning approach.

Through this item teachers defined inquiry-based learning approach using their own words and expressed their thoughts about this approach.

Teacher 01: "*Autonomous learning.***"**

Teacher 02: "*It is an approach where learners are supposed to seek information alone.***"**

Teacher 03: "*It is an approach based on research making.***"**

Teacher 04: "*It is an approach based on letting students investigate solutions to open questions.*"

Teacher 05: "*It is an approach based on developing learners' critical thinking through self-inquiry. The role of the learner here is emphasized since he/she has to take more responsibility over his learning by asking qqs, exploring materials, sharing ideas... he/she builds knowledge by himself through self exploration and discussion.*"

Teacher 06: "*Learning via questioning and researching to solve certain study problem ie students learn in the course of research process (questioning, reasoning, critical thinking and concluding "make inference".*"

Teacher 07: "*Learning based on autonomous search for knowledge.*"

From EFL teachers' definitions of inquiry-based learning approach, we noticed that all EFL teachers at the University of Mohamed Khider Biskra agreed on defining inquiry-based learning approach as an autonomous learning approach where learners seek their own knowledge based on making inquiries and doing research. Teachers highlighted the role of learners in this student-centred approach and mentioned the emphasized role of learners in building their own knowledge through the process of inquiry.

Item 07: Teachers' attitude toward Inquiry-based learning approach

This item aimed at exploring EFL teachers' thoughts and opinions about the implementation of inquiry-based learning approach. We wanted to understand their evaluation of inquiry-based learning approach and whether they think the implementation of this approach is important in EFL classes. They were asked to reveal their thoughts about the importance of implementing this student-centred approach. Then they had to explain their ideas and opinions.

Table 3. 22: Teachers' attitude toward Inquiry-based learning approach

Option	Number	%
Yes	7	100%
No	0	0%
Total	7	100%
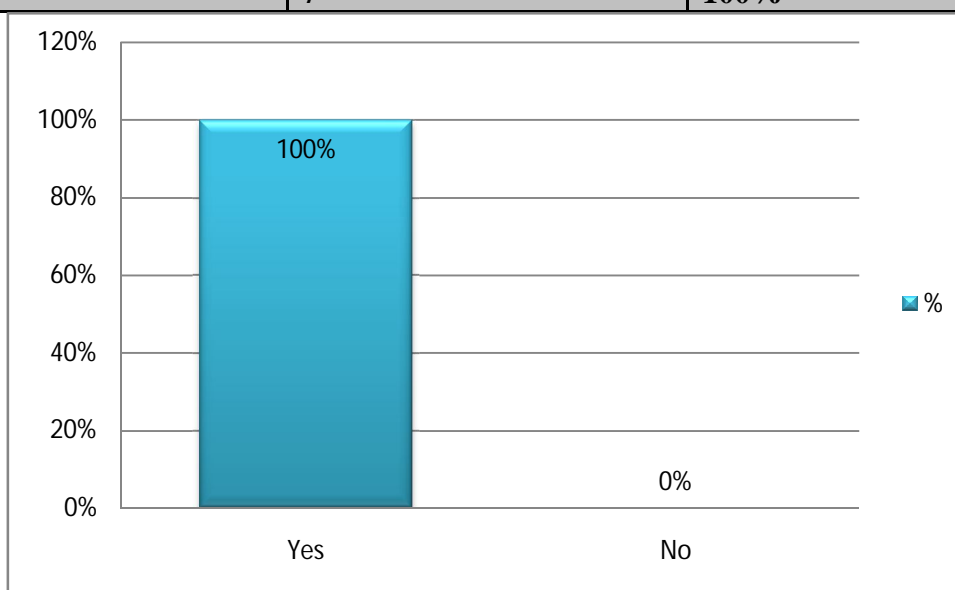
Graph 3. 22: Teachers' attitude toward Inquiry-based learning approach

As it clearly stated in graph 3.22, (100%) of the participants affirmed the importance of implementing inquiry-based learning approach. All the seven (7) EFL teachers who participated in this questionnaire said 'yes' to the importance of implementing this teaching approach. So, all EFL teachers at the University of Mohamed Khider Biskra have positive thoughts and attitude to the implementation of student-centred approaches in general and inquiry-based learning approach in particular in EFL classes.

- **Teachers' Explanations**

Through this sub-question, we aimed at deeply exploring teachers' thoughts and attitude toward inquiry-based learning approach. Teachers were asked to explain their point of views about the implementation of this approach. EFL teachers at the University of Mohamed Khider Biskra explained their opinions as follow:

Teacher 01: "*It allows students to develop soft skills related to academic and professional life*."

Teacher 02: "*It would help foster students' autonomy*."

Teacher 03: "*It enhances learners' autonomy and self-reliance. It encourages them to think critically and develop their communicative skills. It enhances their experience in learning by exploring different topics, sharing opinions... It encourages creativity*."

Teacher 04: "*It develops all the skills you mentioned in the previous questions*."

Teacher 05: "*Because it promotes deeper understanding of the content*."

Teacher 06: "*This will enhance the learners' centred approach and motivates learners to use material by themselves to learn the language*."

Teacher 07: "*It encourages learners to be more autonomous*."

From EFL teachers' explanations, we noticed that EFL teachers at the University of Mohamed Khider Biskra have positive attitude toward the implementation of inquiry-based

learning approach in EFL classes, because of a number of reasons including promoting students' autonomy and self-direction, developing students' learning skills, and increasing their engagement and motivation. Moreover, EFL teachers have positive thoughts about the implementation of student-centred approaches and the direction of the teaching process toward student-direct learning. To summarise, EFL teachers at the University of Mohamed Khider Biskra can promote student-centred approaches. They can direct the teaching process toward inquiry-based learning approach and increase their learners' engagement, motivation, and autonomy, because of their positive beliefs and attitude toward student-centred approaches.

Item 08: Teachers' teaching tasks to promote students' inquiry-based learning

Through this item, the participants were asked to list the teaching activities they thought could promote students' inquiry-based learning. We aimed at exploring the teaching activities that EFL teachers at the University of Mohamed Khider Biskra use to promote inquiry-based learning approach in EFL classes. After that, the teachers had to explain why they chose these activities.

> **Teacher 01: "***Critical reading activities, researching and making class presentations.***"
>
> **Teacher 02: "***Pair and group works, discussions, debates.***"
>
> **Teacher 03:** "*class discussion, oral presentation, making a project.*"
>
> **Teacher 04:** "*Critical evaluation of documents, extensive reading, discussions.*"
>
> **Teacher 05:** "*Group projects.*"
>
> **Teacher 06:** "*There are many of them: preferably structured inquiry, guided inquiry, or open inquiry activities.*"
>
> **Teacher 07:** "*Assign homework.*"

From teachers' responses, we could understand that EEF teachers at the University of Mohamed Khider Biskra emphasised on the activities that are related to the inquiry process. They mentioned research projects and the related required activities to do research projects such as: critical evaluation of documents, extensive reading, presentations, class discussion, group works. Teachers' responses highlighted the possibilities of implementing inquiry-based learning in EFL classes at the University of Mohamed Khider Biskra, in addition to teachers' knowledge and awareness of inquiry-based learning activities.

- **Teachers' Explanations**

Through this sub-question, teachers were asked to explain the reasons behind listing the previous mentioned teaching activities that promote inquiry-based learning. EFL teachers at the University of Mohamed Khider Biskra illustrated their reasons as follow:

Teacher 01: "*They include many skills that provoke inquiry and research.***"**

Teacher 02: "*It'd help communication and self-expression.***"**

Teacher 03: "*It encourages students' use of different strategies to solve problems.*"

Teacher 04: "*They all make of the student responsible and develop his autonomy and critical thinking*"

Teacher 05: "*These activities oblige students to use their prior knowledge and search for new information, ask qqs, rely on their critical thinking and autonomy to find solutions. These activities encourage students to communicate and share ideas and rely less on the teacher. Students become actively involved in the task and more curious.*"

Teacher 06: "*These inquiry-based learning activities are geared toward achieving control over what u wish to teach your students but at the same time allowing them to freely discover the topics themselves.*"

Teacher 07: "*They look for data and make research.*"

From EFL teachers' explanation, we could understand that the teaching activities they suggested to promote inquiry-based learning aim at developing students' autonomy, responsibility, critical thinking, research skills, and communication. Teachers believe they can teach their students the required learning gaols implicitly through these student-directed activities. These skills are essential for students' academic achievement and professional life. In short, EFL teachers at the University of Mohamed Khider Biskra aim at increasing EFL students' research and inquiry skills by developing their learning skills, and engaging them in inquiry-based learning activities.

Section Three: The Relationship between Research Projects and Students' Inquiry-based Learning.

Item 09: Students' research assignments

Through this item, EFL teachers at the University of Mohamed Khider Biskra were asked to state how often they assign research projects in EFL classes. They were given four options to choose (always, sometimes, rarely, never) how often they assign research projects. Then, they had to explain their reasons.

Table 3. 23: Students' research assignments

Option	Number	%
Always	0	0%
Sometimes	7	100%
Rarely	0	0%
Never	0	0%
Total	7	100%
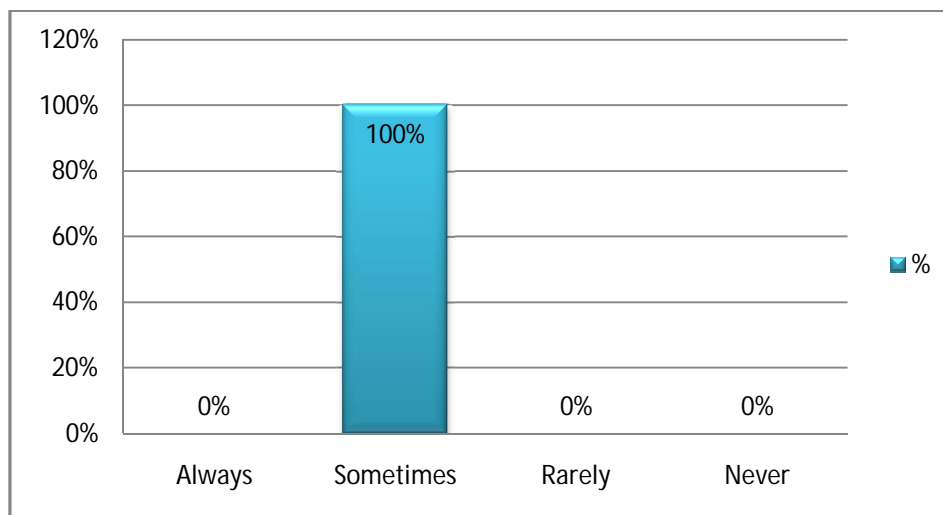
Graph 3. 23 Students' research assignments

As it is clearly shown in table 3.23, (100%) of the participants stated that they sometimes assign research projects. So, EFL teachers at the University of Mohamed Khider Biskra sometimes assign research projects in EFL classes.

- **Teachers' Explanations**

This sub-question was designed to understand teachers' reasons and explanations to research projects assignments' frequency.   Six (6) EFL teachers listed the following explanations:

Teacher 01: "*Class time and materials constraints.***"**

Teacher 02: "*Learners need to be guided by the teacher from time to time.***"**

Teacher 03: "*To enhance students' self reliance because they have the habit to wait for the teacher to provide all lessons which make of them extremely passive student.*"

Teacher 04: "*It is a very effective way to encourage learner centeredness as learners have to rely on themselves to prepare projects. Many skills are to be developed. Learners will have to learn how to use books, online sources, how to cite/ paraphrase, summarize as well as how to explore different options, analyze data...* "

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Teacher 05: "*It depends on the purpose and allotted time of the course.*"

Teacher 06: "*Helps students rethink about what has been presented in class and again be responsible for their own learning.*"

From EFL teachers' explanations, we noticed that EFL teachers at the University of Mohamed Khider Biskra sometimes assign research projects because of a number of reasons that can make it difficult to assign research projects in EFL classes. Teachers believe in the importance of student-centred approaches and research projects assignments. However, they face problems with time management, the time and environment constraints, in addition to the constant need to teachers' guidance to the students during the process of inquiry. We know that EFL classes at the University of Mohamed Khider Biskra are large classes and the teacher cannot assist and guide all the students.

Item 10: Students' interest in preparing research projects

This item was designed to explore EFL teachers' thoughts about their students' interest in preparing research projects. The teachers were asked to identify whether their students were interested in research projects assignments or not, and their thoughts about their reasons behind their attitude toward research projects assignments.

Table 3. 24: Students' interest in preparing research projects

Option	Number	%
Yes, they are interested	2	28.6%
Somehow, they are interested	5	71.4%
No, they are not interested	0	0%
Total	7	100%
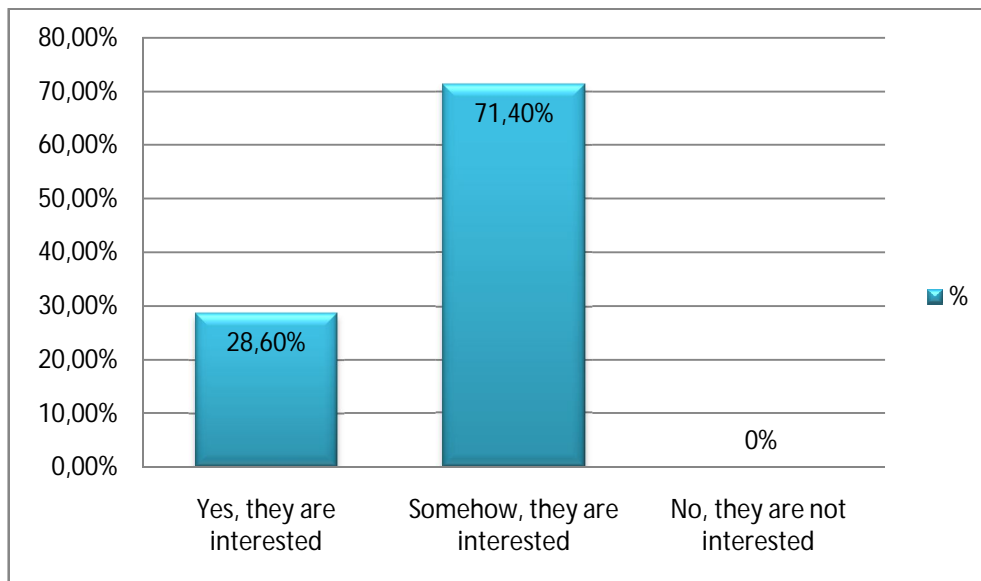
Graph 3. 24: Students' interest in preparing research projects

From a statistical perspective, we observed that the majority of EFL teachers at the University of Mohamed Khider Biskra believe that their students are somehow interested in preparing research projects. Five (5) teachers that represent (71.4%) stated that their students are somehow interested in preparing research project, while, two (2) teachers that represent (28.6%) mentioned that their students are interested in research projects assignments. To recapitulate, EFL teachers at the University of Mohamed Khider Biskra believe that their EFL students have positive attitude toward preparing research projects. This indicates students' interest in research projects assignments and inquiry activities.

- **Teachers' Explanations**

Through this sub-question, teachers were asked to state their thoughts about the reasons behind their EFL students' attitude toward research projects assignments:

Teacher 01: "*They haven't been inculcated research apprenticeship procedures at early stages of language learning.***"**

Teacher 02: "*There is a lack of motivation for some of them.***"**

Teacher 03: "*With technology research is now easy to undertake.*"

Teacher 04: "*Most of them prefer individual work*"

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Teacher 05: "*Many students find difficulties to learn by themselves in general. Others do not know how to use a word processor or how to avoid plagia. The process of searching is somehow challenging; time and effort consuming.*"

Teacher 06: "*They believe this method helps them learn better and develop more skills (and of course increase their scores).*"

Teacher 07: "*Laziness maybe... lack of motivation and interest.*"

From teachers' explanations, we observed that EFL teachers at the University of Mohamed Khider Biskra believe that their students have positive attitude toward research projects assignments because they can develop their learning skills and increase their academic achievement. However, EFL students at the University of Mohamed Khider Biskra face difficulties with the research process because of the lack of knowledge and skills required to prepare research projects, the considerable required time and efforts, the lack of motivation and autonomy, in addition to the lack of practice at early stages in their learning process. So, EFL students at the University of Mohamed Khider Biskra are required to increase their autonomy and motivation. Moreover, they have to develop their research skills by increasing their engagement in the learning process and practicing the research steps.

Item 11 Teachers' thoughts toward the assignment of research Projects

This item was designed to explore teachers' thoughts about the relationship between the assignment of research projects and the development of students' inquiry learning skills and 21st century skills.

Table 3. 25: Teachers' thoughts toward the assignment of research Projects

Option	Number	%
Yes	7	100%
No	0	0%
Total	7	100%
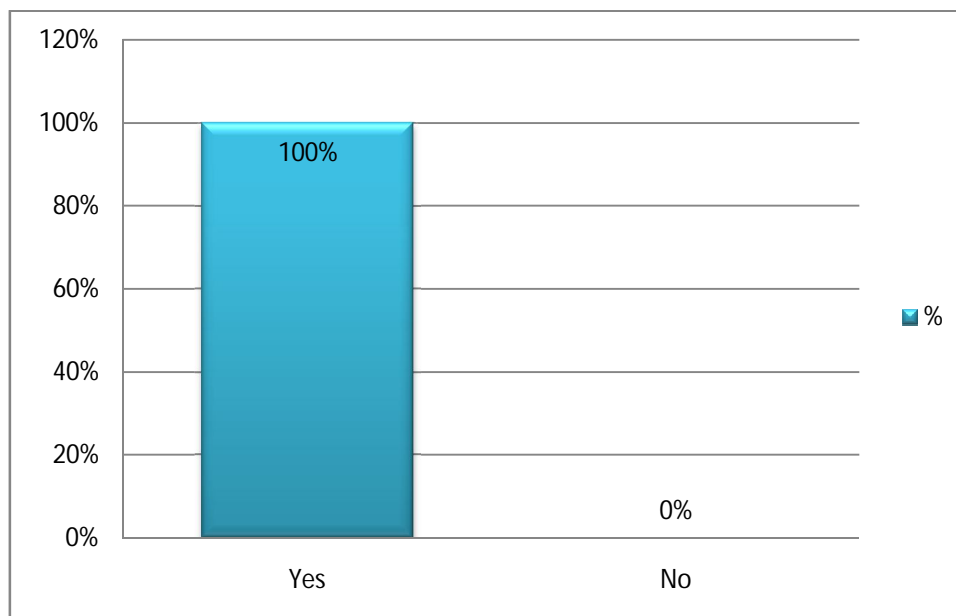
Graph 3. 25: Teachers' thoughts toward the assignment of research Projects

As it is clearly shown in graph 3.25, (100%) of the participants affirmed the role of assigning research projects in developing students' 21st century skills and inquiry skills. So, EFL teachers at the University of Mohamed Khider Biskra believe in the positive role of research projects assignments to increase students' inquiry skills and the 21st century skills.

- **Teachers' Explanations**

Through this sub-question, teachers were asked to explain the role of assigning research projects in developing students' 21st century skills and inquiry skills:

Teacher 01: "*Research in general is a combination of many soft and 'hard' skills.***"**

Teacher 02: "*Makes students take charge of their lives and learning.***"**

Teacher 03: "*It demands a high autonomy, reasoning and critical thinking, large engagement and a sense of creativity and originality. It enhances problem-solving skills.*"

Teacher 04: "*Exchanging ideas.*"

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Teacher 05: "*It's all a matter of knowledge. You dig deep and you expand it. When you want to know you develop a sense of inquiry to go further by yourself, and this is the beginning of learning.*"

Teacher 06: "*Most learners are able to work alone if they are gieven the opportunity.*"

From teachers' explanations, we noted that EFL teachers at the University of Mohamed Khider Biskra believe in the positive outcomes of assigning research projects in improving students' inquiry skills and the 21st century skills because research is a process of obtaining many necessary skills. They mentioned that assigning research projects creates opportunities for EFL students to direct their learning and increase their autonomy, creativity, critical thinking and reasoning skills.

Item 12 Teachers' thoughts toward the importance of inquiry skills in EFL classes

This item aimed at understanding EFL teachers' thoughts and attitude toward the importance of inquiry skills in EFL classes

Table 3. 26 Teachers' thoughts toward the importance of inquiry skills in EFL classes

Option	Number	%
Very important	5	71.4%
Somehow important	2	28.6%
Not important at all	0	0%
Total	7	100%
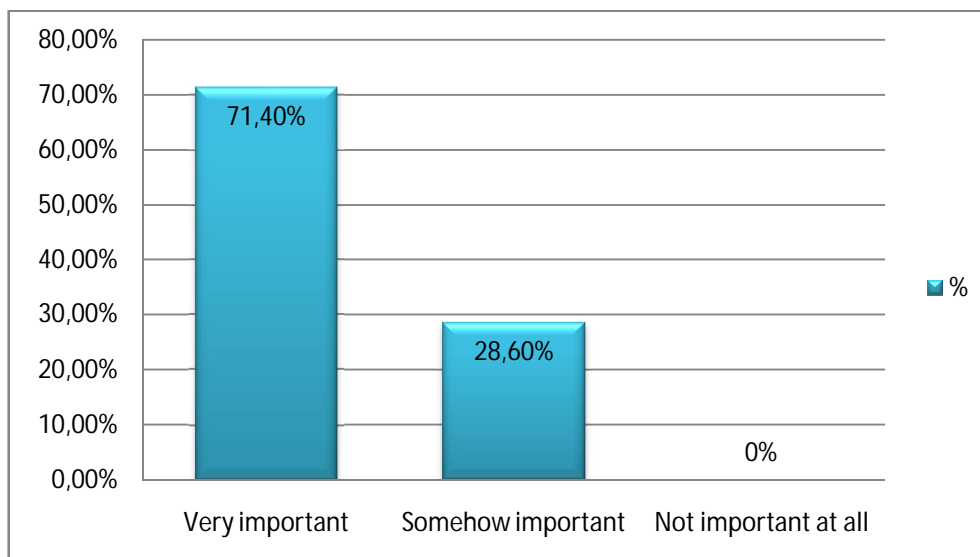
Graph 3. 26: Teachers' thoughts toward the importance of inquiry skills in EFL classes

Table 3.26 revealed that the majority of EFL teachers believe that students' inquiry skills are very important in EFL context. Five (5) teachers that represent (71.4%) stated that students' inquiry skills are very important in EFL context. While, two teachers (2) that represent (28.6%) reported that students' inquiry skills are somehow important in EFL context. To sum up, most of EFL teachers at the University of Mohamed Khider Biskra have positive thoughts and attitude toward student- centred approaches and the development of students' inquiry skills.

- **Teachers' Explanations**

Through this sub-question, we aimed at understanding the reasons that have affected EFL teachers' thoughts and attitude toward the importance of students' inquiry skills in EFL classes. We noticed that most of EFL teachers that participated in this questionnaire believe in the importance of students' inquiry skills. Five (5) teachers listed the following explanations:

Teacher 01: "*These skills need support by other skills, namely language skills.***"**

Teacher 02: "*It is a good way to engage learners in the learning process.***"**

Teacher 04: "*Inquiry skills are the basic for a successful autonomous learning.*"

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Teacher 05: "*They permit students to face the world academic and job challenges.*"

Teacher 06: "*Helps them be attached to the times where they live.*"

From the respondents' explanations, we noticed that EFL teachers at the University of Mohamed Khider Biskra believe in the importance of students' inquiry skills. They explained that students' inquiry skills promote their autonomy and prepare them for real world challenges. Moreover, they increase students' engagement and involvement in the learning process. These skills are important in preparing lifelong learners.

Item 13 Research projects' assignments to promote Inquiry-based learning

This item aimed at exploring teachers' thoughts and attitude toward assigning research projects to promote students' inquiry-based learning. EFL teachers at the University of Mohamed Khider Biskra were asked to mention whether they thought research projects assignments can promote students' inquiry-based learning or not. Then, they had to explain their opinions.

Table 3. 27: Research projects' assignments to promote Inquiry-based learning

Option	Number	%
Yes	7	100%
No	0	0%
Total	7	100%
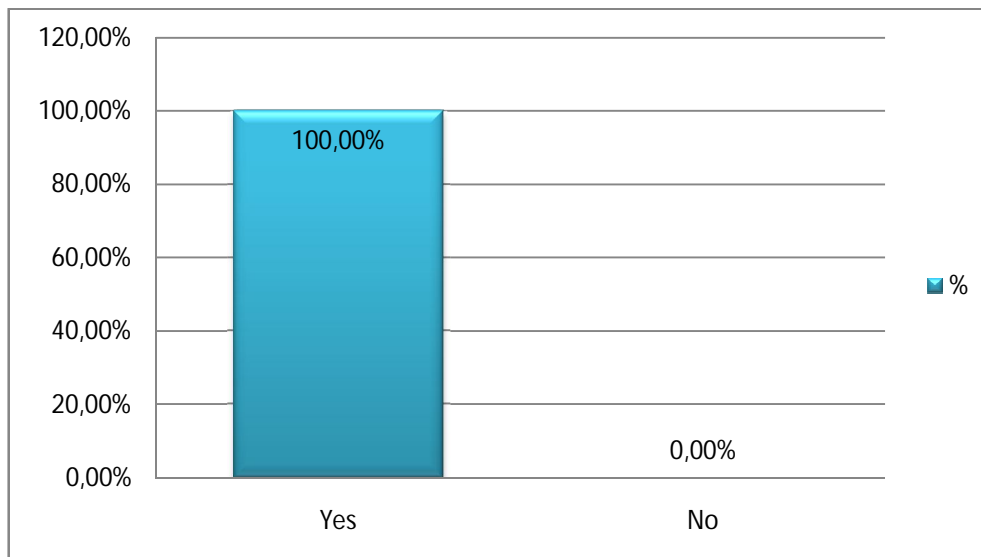
Graph 3. 27: Research projects' assignments to promote Inquiry-based learning

As it is clearly illustrated in table 3.27, (100%) of EFL teachers affirmed the role of assigning research projects to promote students' inquiry-based learning. EFL teachers at the University of Mohamed Khider Biskra have positive attitude toward the use of research projects assignments to promote inquiry-based learning approach.

- **Teachers' Explanations**

This sub-question aimed at understanding the reasons that have influenced EFL teachers' thoughts and attitude toward the role of research projects assignments to promote students' inquiry-based learning. We noticed that EFL teachers at the University of Mohamed Khider Biskra have positive attitude toward inquiry-based learning approach and research projects assignments for a number of reasons. Four (4) teachers listed the following explanations:

Teacher 01: "*This provides the learner with the possibility to rely on oneself and guide the learning process in accordance to one's ability.***"**

Teacher 02: "*They learn how to look for the information and report it using skills such as: paraphrasing, summarising, and quoting.***"**

Teacher 03: "*Autonomy.*"

Teacher 04: "*Research projects make students use their inquiry skills as they have to use internet and other materials, use books and other references, analyse data, keep the essential, think critically on how to organize things and make conclusions and analyse results.*"

From teachers' explanations, we noted that EFL teachers at the University of Mohamed Khider Biskra have positive attitude toward the use of research projects assignments to promote students' inquiry-based learning for the following reasons including promoting students' autonomy, in addition to the role of research process in developing students' inquiry skills through doing research. The process of doing research is interrelated to the inquiry process. It directs learning toward student-centred approaches and engages students to make inquiries.

Section Four: Suggestions and Comments:

This section was designed to provide EFL teachers at the University of Mohamed Khider Biskra with the opportunity to list their comments and suggestions freely.

Teachers supported the role of inquiry skills in creating lifelong learners, and preparing them for the challenges and requirement of the modern world. They mentioned that it is high time to introduce EFL students to new teaching approaches that direct the focus on the role of learners in building their own knowledge. One of the EFL teachers at the University of Mohamed Khider Biskra stated: "*Acquiring skills are essential ingredients of language learning and essential for life as well to be a proficient learner and a good responsible citizen.*" Another teacher explained: "*It is really high time for educational programs in Algeria to integrate the 21st century skills as they are the trend in modern pedagogy.*" Teachers' comments and responses highlighted the positive attitude of EFL teachers at the University of Mohamed Khider Biskra toward student-centred approaches in general and inquiry-based learning approach in particular. We could

understand that they are ready to integrate 21st century skills and inquiry skills, in addition to direct teaching and learning toward students' inquiry-based learning.

3. 7.6. Discussion and Interpretation of the Findings

The analysis and interpretation of teachers' questionnaire present valuable data for our research study. The obtained results contribute in answering our research questions. From teachers' responses, we noted that the 21st century skills and inquiry skills are essential in EFL teaching and learning process. Teachers insisted on the role of these skills in EFL classes. They mentioned that most of their EFL students master some of the 21st century skills and inquiry skills. These skills are crucial to cope with the requirements of the modern world.

Moreover, teachers defined inquiry-based learning approach as a student-centred approach that promotes students' autonomy and engages them in the learning process to build their own knowledge based on doing research and making inquiries. Teachers affirmed the importance of implementing this approach in EFL classes because of the positive consequences of directing learning toward inquiry-based learning approach. They mentioned that this approach increases students' engagement and motivation, and develops their soft and hard skills. EFL teachers at the University of Mohamed Khider Biskra have positive attitude toward students' centred approaches. They encourage learners to direct their learning.

Furthermore, teachers highlighted the possibilities of implementing inquiry-based learning approach through a set of activities that are related to research projects. They listed critical evaluation of documents, presentations, extensive reading, class discussions, and group works. Teachers believe that they can teach EFL students the required skills and knowledge implicitly through inquiry-based learning activities. They use research projects

assignments as one of the main activities that increase students' engagement and academic achievement.

EFL teachers at the University of Mohamed Khider Biskra believe that research projects assignments enhance students' autonomy and research skills. However, there are some difficulties they face when assigning research projects in EFL classes such as: time and environment constraints, the lack of materials, students' laziness and dependence on the teacher, and the considerable number of EFL students per class that make it difficult for teachers to guide and assess students during the inquiry process. Also, EFL students have positive attitude toward research projects assignments, but they face difficulties during the research process because of the considerable required time and efforts, in addition to, the lack of practice at early stage of their learning and the lack of the necessary skills and knowledge.

Finally, EFL teachers at the University of Mohamed Khider Biskra insisted on the role of assigning research projects to integrate the 21st century skills and inquiry skills in EFL classes. They affirmed the importance of preparing EFL students to face the challenges and requirements of the modern world through implementing student inquiry-based learning. Therefore, they called for engaging students in research projects practices at early stage of their learning, in addition to teaching them the necessary skills to make inquiries and build their own knowledge.

3.8. Summary of the Results

The aim of this research study was to investigate the role of research projects to promote students' inquiry-based learning. We aimed at exploring the importance of inquiry-based learning approach to promote student-centred learning outcomes, in addition to identifying the different outcomes of research projects assignments in EFL classes. Moreover, we designed questionnaires to explore both teachers and students' perceptions

and attitude toward the role of research projects assignments to implement inquiry-based learning approach.

Moreover, through this research study we intended to highlight the importance of the 21st century skills and inquiry skills in creating life-long learners. We aimed at introducing inquiry-based learning approach as one of the main student-centred approaches that promotes students' autonomy and engagement. We highlighted the significant outcomes of research projects assignments in developing students' research and inquiry skills. Additionally, we described the relationship between assigning research projects and promoting students' inquiry-based learning.

First, the obtained results from students' questionnaire showed students' struggles with time management and loaded timetables. They mentioned the difficulties they face when dealing with many courses especially at the Master level. These reasons decrease their engagement and motivation. So, they called for implementing new teaching methods that can direct the focus on their needs to learn the necessary skills to achieve independent learning.

Furthermore, the collected data revealed students' lack of knowledge concerning the terminology of some concepts such as the 21st century skills and inquiry-based learning approach. However, through the questions they could understand these terms. Also, students insisted on using critical thinking, note-taking, analysis, interpretation, and inquiry skills, in addition to memorization, and synthesis skills to understand lessons and lectures and build their own knowledge.

They demanded more chances to develop their skills and direct their learning. They had positive attitude toward research project assignment as a student-centred activity. They argued that research projects assignments provided them with opportunities to increase their autonomy and academic achievement, in addition to their 21st century skills and

inquiry skills. In general, EFL students at the University of Mohamed Khider Biskra affirmed the necessity of assigning research projects and implementing inquiry-based learning approach in EFL classes.

Similarly, the obtained results of teachers' questionnaire illustrated EFL teachers' interest in student-centred approaches in general and inquiry-based learning approach in particular. They highlighted the importance of the 21st century skills and inquiry skills in EFL classes. Also, they showed their awareness and positive attitude toward inquiry-based learning approach as a promising approach to prepare EFL students for the challenges and requirements of the modern world.

Additionally, EFL teachers at the University of Mohamed Khider Biskra insisted on the possibilities of promoting students' inquiry-based learning through research projects assignments. They mentioned that it is highly possible to teach EFL students the necessary skills and knowledge implicitly through research projects. Research projects consist of all the crucial steps of the inquiry cycle and develop students' research skills, critical thinking, autonomy, collaboration, in addition to increase their motivation, engagement , and their academic achievement.

However, EFL teachers at the University of Mohamed Khider Biskra claimed that when assigning research projects in EFL classes, they face some difficulties including: time and environment constraints, the lack of materials, large classes, and students' lack of skills and knowledge. Teachers argued that EFL students lack the necessary skills to do research because of the late exposure of this type of activities. EFL students do not practice research at the early stage of their learning so they struggle when conducting research.

To recapitulate, the obtain data from both teachers and students questionnaires provided valuable and effective feedback that contribute to the validity of our research hypothesis. The collected data highlighted the possibilities of of using research projects to

promote students' inquiry-based learning in EFL classes at the University of Mohamed Khider Biskra. Research projects assignments implement inquiry-based learning approach that promotes students' autonomy and engagement. Therefore, the obtained results highlighted the importance of inquiry-based learning approach as a promising student-centred approach that increase students' 21st century skills and inquiry skills.

3.9. Synthesis of the Findings

The obtained results from both teachers and students' questionnaires provided similar results that contribute in answering the research questions and validating our research hypothesis. Both teachers and students affirmed the role of research project to promote inquiry-based learning approach. Even though, some students were not familiar with some terms such as: the 21st century skills and inquiry-based learning approach, they could understand the meaning through the questions. This highlighted the need to raise students' awareness to this area of research which was one of our aims.

Moreover, from the obtained results we understood that both EFL teachers and students at the University of Mohamed Khider Biskra have positive attitude toward student-centred approaches. They called for implementing inquiry-based learning approach as a student-centred approach that direct learning toward students' independent learning. Both teachers and students affirmed the role of research projects assignments in increasing student motivation and engagement. However, teachers and students highlighted the difficulties they face during research projects assignments.

Teachers mentioned the lack of materials, time and environment constraints, in addition to student dependent on the teacher. Students also mentioned their lack of autonomy and the required skills for the research and inquiry process. This calls for assigning research projects at early stages of EFL learning process. So, teachers and students validate our research hypothesis concerning the role of assigning research projects

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in language classrooms in promoting students' inquiry-based learning and creating life-long learners who are self-directed and self-motivated.

In short, the obtained results from both teachers and students questionnaires answered all the research questions and achieved all the research aims. Additionally, the obtained results confirmed the research hypotheses. Teachers and students mentioned the outcomes of implementing inquiry-based learning approach as a student-centred approach including increasing students' engagement and motivation. Also, we noted that teachers and students have positive attitude toward assigning research projects to implement students' inquiry-based learning. They insisted on the role of research projects in providing students with opportunities to direct their learning and develop their research and inquiry skills.

3.10. Limitations of the Study

In the current research study, we faced some difficulties during the research process. First, the lack of sources about inquiry-based learning approach especially at the local library. Second the global health issue and the quarantine that delayed the process of obtaining data especially from teachers' questionnaire. In fact, we wanted to have face-to-face interview with EFL teachers to collect more precise data and deeply explore their thoughts about our research study. Yet, this was not possible because of time limitation and the quarantine. To summarise, despite these limitations that affected our research study, we have been able to collect teachers and students' feedback that contributed in answering our research questions and confirming the validity of our research hypotheses.

Conclusion

This chapter was devoted to deal with the findings of the study and the interpretation of the results. It consisted of two parts. The first part was the theoretical background of the research methodology including: research approach, research design,

population, and sampling, in addition to data collection methods. Whereas, the second part of this chapter dealt with data analysis. It aimed at exploring the role of research projects assignments in implementing students' inquiry-based learning. It illustrated data analysis, discussion and interpretation of the findings, in addition to synthesis of the results.

General Conclusion

General Conclusion

The current study aimed at promoting students' inquiry-based learning through suggesting research projects assignment as a learning activity. We aimed at answering the research questions and testing the validity of the hypotheses, which highlighted that assigning research projects in EFL classes can promote students inquiry-based learning and create life-long learners.

This study consists of three chapters. Two chapters dealt with the theoretical background of the research study, whereas the third chapter dealt with the field work of the research study. The first chapter was devoted to the general overview about inquiry-based learning. It presented the definitions, origins, characteristics, and the characteristics of this educational approach, in addition to its significant challenges in EFL classes.

The second chapter dealt with two sections. The first section presented the general overview about project-based learning. It illustrated the definitions of the main concepts, in addition to the characteristics and challenges of project-based learning. While, section two was devoted to research projects' definition, types, benefits, evaluation mechanism and challenges, in addition to teachers and students' perceptions.

The third chapter dealt with the field work of the research study. It consists of two parts. The first part presented the theoretical background of the research methodology including: research approach, research design, population, sampling, and data collection methods. While, the second part dealt with data analysis, interpretation of the findings, and synthesis of the results.

We opted for a mixed methods research approach to fulfil our research aims. Moreover, we have chosen questionnaire for EFL teachers and students as data collection method to collect information for our research study. The questionnaires have been administrated to EFL teachers and students at The University of Mohamed Khider Biskra.

The research sample has included seven (7) EFL teachers and (42) Master English Language Students of Sciences of the Language.

Consequently, the obtained results have proved that both EFL teachers and students at the University of Mohamed Khider Biskra have positive attitude toward the use of research projects to promote students' inquiry-based learning. Both teachers and students affirmed the positive outcomes of research projects assignments including increasing students' engagement and motivation, in addition to promoting students' inquiry skills. Furthermore, teachers and students called for implementing research projects assignments at early stages of EFL learning process to increase students' opportunities to direct their learning and improve their research and inquiry skills. Moreover, both teachers and students highlighted the difficulties they face during the research process including time and environment constraints.

To conclude, research projects assignments increase students' engagement and autonomy, and develop their inquiry and research skills. Assigning research projects in EFL classes implements students' inquiry-based learning and directs learning toward student-direct learning. However, research projects assignments and inquiry-based learning approach require updating EFL classes' timetables, number of students, learning and teaching materials and curriculum.

Pedagogical Implication

Inquiry-based learning approach is a student-centred approach that increases students' autonomy and engages them in the process of building their own knowledge based on making inquiries and research. Research projects are one of the effective teaching assignments to implement students' inquiry-based learning and improve students' 21st century skills and inquiry skills. Therefore, we suggest a number of recommendations for teachers, syllabus designers, students, and policy makers.

Suggestions for Teachers and Syllabus Designer

- It is highly recommended to motivate students to make inquiries and build their own knowledge.

- Teachers should teach students the required research skills by introducing the appropriate research methodology, and targeting their analysis, synthesis, summarise, paraphrase, critical thinking skills .

- We highly recommend assigning research projects at early stages of EFL students' learning process.

- Teachers should raise students' awareness about the 21st century skills and inquiry skills.

- Teachers' collaboration to design activities and assess students is required.

Suggestions for Students

- Students are required to improve their autonomy and independent learning by practicing the different required inquiry and 21st century skills.

- Students should make their own research and evaluation of any presented information.

- Students should improve their time management skills, organization skills, and a set of independent learning skills.

- Students should develop their 21st century skills and inquiry skills such as: critical thinking and problem solving skills, communication and collaboration, creativity and innovation, digital literacy, self-direction and responsibility.

Suggestions for the Policy Makers

– Student-centred approaches require a small number of students; we highly recommend reducing the number of students in EFL classes to increase students' engagement in the learning process and help teachers to asses and guide students during the inquiry process.

– We highly recommend changes in the EFL students' timetables and curricula. The courses should be selected according to students' needs and the number of lectures should be minimized per day to increase students' motivation and encourage them to practice research.

– Teachers should be provided with the necessary materials.

– Teachers should be encouraged to collaborate to increase the effectiveness of inquiry-based learning approach.

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Appendices

Appendix 1: Students' Piloting Questionnaire

Dear students,

This questionnaire attempts to collect data for the accomplishment of a Master dissertation about "The Role of Research Projects to Promote Students' Inquiry-based Learning". Therefore, we would be thankful if you provide us with precise, clear, and complete responses. Please tick (√) the appropriate answer(s) and write full statement(s) whenever it is necessary. Your answers will be anonymous and will be used only for research purposes.

Thank you for your collaboration.

Prepared by:

Djerou khadidja

Supervised by:

Dr. Rabehi Salima

Academic year 2019/2020

Section One: General Information

Q1. How did you find the learning experience at the university level?

a) Easy ☐

b) Difficult ☐

c) So difficult ☐

Justify your answer, please.

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……

……

Q2. Did you find any difficulties at the university level?

Yes. ☐   No. ☐

If yes, what kind of difficulties?

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Q3. Applying for the Master degree was:

a) Your personal decision. ☐

b) Your parents' decision. ☐

c) Someone's advice. ☐

If it was your personal decision, your aim was:

a) To improve your educational level. ☐

b) To get more job opportunities. ☐

c) To conduct research and develop your research skills. ☐

d) Others ☐

....

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Q4. How do you find the learning experience at the Master level?

a) The same as it was in license level. ☐

b) Easier than it was in license level. ☐

c) More difficult than it was in license level. ☐

Justify your answer, please.

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Section Two: Twenty-first Century Skills and Inquiry-based Learning Skills.

Q5. Do you know what are the 21st century skills?

     Yes. ☐   No. ☐

Q6. As an EFL student, which of the following skills do you think are crucial in your learning progress? You can tick more than one.

    a) Critical thinking and problem solving. ☐

    b) Communication and collaboration. ☐

    c) Creativity and innovation. ☐

    d) Digital literacy. ☐

    e) Self-direction and responsibility. ☐

    f) All of them. ☐

Q7. Do you master some of the 21st century skills and inquiry skills?

     Yes. ☐   No. ☐

Q8. Do you know what does inquiry-based learning approach mean?

     Yes. ☐   No. ☐

Q9. To understand lessons and lectures, do you rely on memorization or making critical conclusions about what teachers present?

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Explain:

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Q10. How often do you search for answers of your questions?

    Always ☐   Sometimes ☐   Rarely ☐   Never ☐

Explain why?

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Section Three: The Relationship between Research Projects and Students' Inquiry-based Learning.

Q11. How often do your teachers assign research projects?

Always ☐ Sometimes ☐ Rarely ☐ Never ☐

Q12. Are you interested in preparing research projects?

a) Very interested. ☐

b) Somehow interested. ☐

c) Not interested at all. ☐

Explain why?

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Q13. Do you think assigning research projects can develop students' inquiry learning skills and improve their academic achievement?

Yes. ☐ No. ☐

Justify your answer, please.

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....

Q14 In your opinion, do you think research projects can promote students' inquiry-based learning?

Yes. ☐ No. ☐

Explain, please.

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Q15. Which of the following skills do you think they can be developed through the assignment of research projects and the implementation of students' inquiry-based learning?

You can tick more than one.

    a) Critical thinking and problem solving. ☐

    b) Communication and collaboration. ☐

    c) Creativity and innovation. ☐

    d) Digital literacy. ☐

    e) Self-direction and responsibility. ☐

    f) All of them. ☐

Q16. Is it important to implement inquiry-based learning approach?

    Yes. ☐   No. ☐

Explain why?

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Section Four: Opinionnaire

Q1. Is there any question in this questionnaire that is difficult to answer?

Yes. ☐   No. ☐

If yes, please mention it.

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Q2. Do you think that the layout of this questionnaire is attractive?

Yes. ☐   No. ☐

If no, what do you suggest to make it more attractive?

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Q3. Is there any ambiguous question?

Yes. ☐   No. ☐

If yes, please mention it.

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Q4. Is there any repeated question?

Yes. ☐   No. ☐

If yes, please mention it.

....

....

....

Thank you for your collaboration.

Appendix 2: Students' Questionnaire

Dear students,

This questionnaire attempts to collect data for the accomplishment of a Master dissertation about "The Role of Research Projects to Promote Students' Inquiry-based Learning". Therefore, we would be thankful if you provide us with precise, clear, and complete responses. Please tick (√) the appropriate answer(s) and write full statement(s) whenever it is necessary. Your answers will be anonymous and will be used only for research purposes.

Thank you for your collaboration.

Prepared by:

Djerou khadidja

Supervised by:

Dr. Rabehi Salima

Academic year 2019/2020

Section One: General Information

Q1. Did you find any difficulties at the university level?

Yes. ☐   No. ☐

If yes, what kind of difficulties?

....

....

....

Q2. Applying for the Master degree was:

a) Your personal decision. ☐

b) Your parents' decision. ☐

c) Someone's advice. ☐

If it was your personal decision, your aim was:

a) To improve your educational level. ☐

b) To get more job opportunities. ☐

c) To conduct research and develop your research skills. ☐

d) Others ☐

....

....

Q3. How do you find the learning experience at the Master level?

a) The same as it was in License level. ☐

b) Easier than it was in License level. ☐

c) More difficult than it was in License level. ☐

Justify your answer, please.

....

....

Section Two: Twenty-first Century Skills and Inquiry-based Learning Skills.

Q4. Do you know what are the 21st century skills?

Yes. ☐   No. ☐

Q5. As an EFL student, which of the following skills do you think are crucial in your learning progress?

a) Critical thinking and problem solving. ☐

b) Communication and collaboration. ☐

c) Creativity and innovation. ☐

d) Digital literacy. ☐

e) Self-direction and responsibility. ☐

f) All of them. ☐

Q6. Do you master some of the 21st century skills and inquiry skills?

Yes. ☐   No. ☐

Q7. Do you know what does inquiry-based learning approach mean?

Yes. ☐   No. ☐

Q8. To understand lessons and lectures, do you rely on memorization or making critical conclusions about what teachers present?

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Explain:

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Q9. How often do you search for answers of your questions?

Always ☐   Sometimes ☐   Rarely ☐   Never ☐

Explain why?

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Section Three: The Relationship between Research Projects and Students' Inquiry-based Learning.

Q10. How often do your teachers assign research projects?

Always ☐   Sometimes ☐   Rarely ☐   Never ☐

Q11. Are you interested in preparing research projects?

a) Very interested. ☐

b) Somehow interested. ☐

c) Not interested at all. ☐

Explain why?

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Q12. Do you think assigning research projects can develop students' inquiry learning skills and improve their academic achievement?

Yes. ☐   No. ☐

Justify your answer, please.

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Q13. In your opinion, do you think research projects can promote students' inquiry-based learning?

Yes. ☐   No. ☐

Explain, please.

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Q14. Which of the following skills do you think they can be developed through the assignment of research projects and the implementation of students' inquiry-based learning?

a) Critical thinking and problem solving. ☐
b) Communication and collaboration. ☐
c) Creativity and innovation. ☐
d) Digital literacy. ☐
e) Self-direction and responsibility. ☐
f) All of them. ☐

Q15. Is it important to implement inquiry-based learning approach?

Yes. ☐   No. ☐

Explain why?

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Thank you for your collaboration.

Appendix 3: Teachers' Questionnaire

Dear teacher,

This questionnaire attempts to collect data for the accomplishment of a Master dissertation about "The Role of Research Projects to Promote Students' Inquiry-based Learning". Therefore, we would be thankful if you provide us with precise, clear, and complete responses. Your answers will be anonymous and will be used only for research purposes.

Thank you for your collaboration.

Prepared by:

Djerou Khadidja.

Supervised by:

Dr. Rabehi Salima.

Academic year: 2019/2020.

Section One: General Information

Q1. What degree do you hold?

a) Master ☐

b) Magiter ☐

c) Doctorate ☐

Q2. For how many years have you been teaching?

a) 1-5 years. ☐

b) 6-9 years. ☐

c) More than 10 years. ☐

Section Two: Twenty-first Century Skills and Inquiry-based Learning Skills.

Q3. Are you familiar with the 21st century skills?

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Q4. Which of the following skills do you think are crucial in the EFL teaching and learning process?

a) Critical thinking and problem solving. ☐

b) Communication and collaboration. ☐

c) Creativity and innovation. ☐

d) Digital literacy. ☐

e) Self-direction and responsibility. ☐

f) All of them. ☐

Q5. Do your students master some of the 21st century skills?

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Q6. How can you define inquiry- based learning approach?

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Q7. Do you think implementing inquiry-based learning approach is important?

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Explain, please.

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Q8. What activities do you think you can use to promote students' inquiry-based learning? Why?

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Section Three: The Relationship between Research Projects and Students' Inquiry-based Learning.

Q9. How often do you assign research projects?

Always ☐   Sometimes ☐   Rarely ☐   Never ☐

Explain why?

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Q10. Do you think your students are interested in preparing research projects?

- Yes, they are interested   ☐
- Somehow, they are interested   ☐
- No, they are not interested   ☐

Explain why?

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Q11. Do you think assigning research projects can develop students' 21st century skills in general and inquiry skills in particular?

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 Explain, please.

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Q12. According to your experience as an EFL teacher, to what extent students' inquiry skills are important in EFL context?

    a) Very important. ☐

    b) Somehow important. ☐

    c) Not important at all. ☐

Explain, please.

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Q13. Do you think assigning research projects can promote students' inquiry-based learning?

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Explain, please.

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Section Four: Suggestions and Comments:

❖ If you would like to provide us with any suggestions, or comments, please feel free.

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Thank you for your collaboration.

الملخص

يتوقع من طلاب الجامعة إجراء بحث و تسليم مذكرة التخرج مع نهاية السنة الدراسية النهائية للحصول على شهادة الماستر. صرح طلاب اللغة الانجليزية كلغة أجنبية في جامعة بسكرة بمواجهتهم لمشاكل عديدة خلال عملية البحث. و من بين أهم أسباب هذه المشاكل هي عدم التمرن و التعود على البحث في مراحل تعلمهم المبكرة، بالإضافة إلى افتقارهم لمهارات القرن الواحد و العشرين و الاستفسار. يطالب العالم الحديث بتغييرات في النظام التعليمي و يتطلب تمكين الطلاب من خلال مهارات الإبداع و التفكير النقدي و التعاون و الاستفسار لحل المشكلات و إنشاء حلول مبتكرة. إن الهدف من هذه الدراسة البحثية هو التحقيق في دور مهام المشاريع البحثية لتعزيز التعلم القائم على الاستفسار لدى الطلاب. و منه قد افترضنا أن تعيين المشاريع البحثية في أقسام اللغة الإنجليزية كلغة أجنبية يمكن أن يغزز التعلم القائم على الاستفسار لدى الطلاب و يطور قدرتهم على التحليل و التوليف و تقييم المعلومات. من أجل اختبار صحة الفرضية، اخترنا منهج بحث مختلط و تصميم دراسة حالة. لجمع البيانات لدراستنا البحثية اخترنا الاستبيان كطريقة لجمع المعلومات. تمت إدارة الاستبيان لسبعة(7) أساتذة لغة انجليزية كلغة أجنبية واثنين و أربعون (42) طالب سنة أولى ماستر في علوم اللغة الإنجليزية بجامعة محمد خيضر بسكرة. لقد أثبتت نتائج البحث أن كلا من أساتذة و طلاب اللغة الإنجليزية كلغة أجنبية أكدوا دور مهام المشاريع البحثية لتعزيز التعلم القائم على الاستفسار لدى الطلاب لتوجيه تعليمهم و تحسين مهاراتهم البحثية و الاستفسارية. و في الأخير يوصى الأساتذة بإشراك الطلاب في أنشطة البحث و الاستفسار في المراحل المبكرة من تعليمهم و بشكل عام تنفيذ مناهج تركز على الطالب و بالأخص نهج التعلم القائم على الاستفسار في أقسام اللغة الإنجليزية كلغة أجنبية.