

Ain Shams University
Faculty of Education
Department of Curriculum and Instruction

Developing University English Instructors' Teaching Performance through Using the Inquiry Approach

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By
Abd Al Rahman Mohammed Wahdan
English teacher at Dubai National School

Supervised By

Dr. Asmaa Ghanim Ghith
Professor of Curriculum and
Instruction, Faculty of Education
Ain Shams University

Dr. Badr Abd El-Fattah El-Kafy
Lecturer of Curriculum and Instruction
Faculty of Education
Ain Shams University

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Researcher: *Abd Al Rahman Mohammed Wahdan, English teacher at Dubai National School*

Supervisors: *Dr. Asmaa Ghanim Ghith & Dr. Badr Abd El-Fattah El-Kafy,*

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ABSTRACT

This study aimed to develop Al-Azhar University English language instructors to investigate how a proposed program based on the inquiry approach affected their inquiry-based teaching performance. The study utilized a list of the inquiry-based teaching performance skills, based on which an observation checklist was developed to assess participants' inquiry-based teaching performance. Furthermore, the results of the quantitative analysis of the observation processes were obtained from semi-structured interviews. 16 university English language instructors at the Faculty of Education in Al-Azhar university participated in the study and were trained on the inquiry approach with its five Es model. The results of the study showed the positive effects of using the 5E model on the participants' inquiry-based teaching performance in terms of questioning, presentation, engagement, and assessment. The use of the inquiry approach improved the university English instructors' inquiry-based teaching performance as demonstrated by the qualitative analysis of the interviews and results of the observation checklist.

Keywords: University Staff, Teaching Assistants, Inquiry-based teaching performance, Inquiry-based Approach, 5E Model

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	i
ABSTRACT	II
TABLE OF CONTENTS	III
LIST OF TABLES	VI
LIST OF FIGURES	VII
list of appendices	VIII
CHAPTER ONE BACKGROUND OF THE STUDY	1
1.1 Introduction	2
1.2 Context of the Study	4
1.3 Statement of the Problem	6
1.4 Research Questions	6
1.5 Research Hypotheses	7
1.6 Research Purpose	7
1.7 Research Significance	7
1.8 Delimitations	8
1.9 Definition of Terms.....	9
1.10 Organization of the Remainder of the Thesis	10
CHAPTER TWO REVIEW OF THE LITERATURE AND RELATED STUDIES	12

2.1 Inquiry-Based Approach	13
2.1.1 The Theoretical Tenets of the Inquiry Approach	14
2.1.2 Stages of inquiry-based instruction.....	15
2.1.3 Levels of Autonomy in Inquiry-based Instruction.	16
2.1.4 The Teacher’s Role	17
2.1.5 Learners’ Roles	20
2.1.6 Benefits and Challenges of Inquiry-Based Approach	21
2.1.7. The 5 Es Model	26
2.1.8 The Theoretical Basis of 5Es Model.....	28
2.1.9. The Components of the 5 Es Model	29
2.1.10 The Significance of instructors Professional Development: ..	32
2.2 Inquiry-based Approach and University Instructors Performance: ...	35
2.3 Commentary	39
CHAPTER THREE METHOD OF THE STUDY	41
3.1. Design of the Study.....	42
3.2. Participants of the Study	42
3.3. Instruments of the Study	42
3.3.1. Semi-structured Interviews	43
3.3.2. A list of the inquiry-based instruction components.....	43
3.3.3. The observation checklist of university English instructors’ inquiry- based teaching performance.....	48
3.4. The Training Program.....	57
3.5. The treatment	67

CHAPTER FOUR RESULTS AND DISCUSSION	69
4.1. Quantitative Results Related to the Inquiry-based teaching performance Components.....	70
4.2. Qualitative Results Related to the Inquiry-based teaching performance Component	85
4.3. Discussion	87
 CHAPTER FIVE CONCLUSIONS AND RECOMMENDATIONS	93
5.1. Summary of the Study.....	94
5.2. Conclusions	96
5.3. Recommendations	98
5.4. Suggestions for further research	98
 REFERENCES	100
 APPENDICES	117

LIST OF TABLES

Table 3.1 Frequencies and percentages of the jury members' agreement on the relevancy of the list of inquiry-based instruction skills	44
Table 3.2: Internal consistency correlations of the inquiry-based teaching performance observation checklist	49
Table 3.3: The inter-rater reliability coefficients of the inquiry-based teaching performance observation checklist	53
Table 3.4.: Training modules design and administration phases	62
Table 3.5: Schedule of the training program	65
Table 4.1: Results of the related sample non-parametric Wilcoxon test on the university English instructors' questioning skills (df = 15)	73
Table 4.2: Results of the related sample non-parametric Wilcoxon test on the university English instructors' lesson presentation skills (df = 15)	76
Table 4.3: Results of the related sample non-parametric Wilcoxon test on the university English instructors' engagement of students' skills (df = 15)	79
Table 4.4: Results of the related sample non-parametric Wilcoxon test on the university English instructors' assessment procedures (df = 15)	81
Table 4.5: Results of the related sample non-parametric Wilcoxon test on the university English instructors' inquiry-based teaching performance (df = 15)	84

LIST OF FIGURES

Figure 2.1: The 5Es instructional Model	29
Figure 2.2: Model of inquiry process (Justice, et. al., 2002)	38
Figure 3.1: 5Es instructional Model.....	60
Figure 4.1: Raw means of the university English instructors’ questioning skills ...	72
Figure 4.2: Raw means of the university English instructors’ lesson presentation skills	75
Figure 4.3: Raw means of the university English instructors’ engagement of students’ skills.....	78
Figure 4.4: Raw means of the university English instructors’ assessment procedures	80
Figure 4.5: Raw means of the university English instructors’ inquiry-based teaching performance.....	83

LIST OF APPENDICES

Appendix A University Approval to Conduct the Study	118
Appendix B List of the Jury Members	120
Appendix C Semi-Structured Interview	122
Appendix D List of Inquiry-based Instruction Skills	124
Appendix E Observation Checklist of Instructors' Inquiry-based teaching performance	129
Appendix F The Training Program.....	143
Appendix G Samples of Participants' Interview Notes	360
Appendix H Samples of Participants' Observation	373
Appendix I Participants' List	383

CHAPTER ONE
BACKGROUND OF THE STUDY

CHAPTER ONE

BACKGROUND OF THE STUDY

1.1 Introduction

In a dynamic teaching and learning context where technology is rapidly developing, it has become essential for university English language instructors to continually improve their knowledge and skills and acquire new effective approaches to support their students' learning; in broader terms, developing instructors' performance would improve the quality of university education.

Moreover, the success of university education is closely related to its members' effective inquiry-based teaching performance. To this end, in-service training is essential to improve the effectiveness of the instructor's inquiry-based teaching performance, and generally includes new trends and knowledge intended to ultimately improve the quality of the students' learning (Jahangir et al., 2012). This training provides means to increase the ability of instructors to be more systematic and logical in their teaching style. In-service training, for example, may help instructors perform more effectively in relation to their teaching methods, subject knowledge, classroom management, and evaluation of students (Ekpoh et al., 2013). This indicates that in-service training positively correlates with the university instructors' efficient performance (Ekpoh et al., 2013; Jahangir et al., 2012).

The literature of English language teaching has called for the integration of inquiry processes to enhance inquiry-based teaching performance. Galileo Educational Network (2015) defines the word "inquiry" as "the dynamic process of being open to wonder and puzzlements and understand the world". This approach

focuses on the trainees' questions, ideas, and observations. In this process, learners come to understand that ideas can be improved upon and move from a position of merely wondering to a position of understanding and further questioning (Scardamalia & Bereiter, 2006).

Furthermore, learning through discovery instead of instruction is the primary basis of inquiry-based instruction (Levy et al., 2009). To facilitate this process, the educator might have a group of learners work together on a research task or aim and allow them to set the parameters of the investigation, which is likely to allow the application of this process on an individual basis. Meanwhile, the teacher is there to guide rather than to dictate learners what to do; learners in this sense are active participants, rather than passive recipients and the actual owners of the inquiry or investigation. In this sense, the literature has shown that the inquiry approach can be applied to most academic disciplines (Jenkins & Breen, 2003; Justice et al., 2007; Oliver, McConney, & Woods-McConney, 2019). Its proponents believe that it can help with the integration of teaching and research.

Many universities employ the inquiry-based approach in their teaching' an example is McMaster University in Canada. McMaster University's social sciences inquiry instructors have been awarded "The Alan Blizzard Award - a national level teaching award" (Justice et al., 2007) as a result of the success of their use of the inquiry-based approach. For more than twenty years, McMaster University has taught inquiry in elite programs and professional schools, and more recently it has offered this approach to first-year students, as well as follow-up courses in subsequent years (McMaster University, 2018). Other universities like Hampshire University, Amherst, Massachusetts dedicate an active inquiry institution to enhance and support inquiry-based investigations and projects. This may have increased pressure on other universities to prepare instructors who integrate inquiry-based

approach in their teaching. The current study focuses on developing English language instructors' inquiry-based teaching performance at the Faculty of Education, Al-Azhar University through the inquiry-based approach.

1.2 Context of the Study

According to the Council on Higher Education (2014), university instructors who teach at a higher education context may encounter some issues that hinder their effective teaching performance. Putting in use some experience and digging into literature, the inquiry approach-based training program was adopted for many reasons. Firstly, according to the Council for Higher Education, an effective training program should involve the university instructors in the planning and implementation of the training, which is facilitated by conducting the training at the university itself. The instructors' awareness of the need for self-improvement through evolving teaching abilities enhances the effectiveness of the training program and leads to improved inquiry-based teaching performance. Instructors are better prepared to face new challenges and changes in education when they are invested in continual improvement of performance (Council on Higher Education, 2014).

Secondly, this approach has been supported by an array of research and studies across literature. For instance, Jenkins et al. (2007) summarize several short cases studies in varied disciplines that highlight the effective roles that inquiry-based approach plays. A McMaster University symposium in 2004 on "Experiences with Inquiry Learning," edited by Christopher Knapp (2007), contributes an overview of the origins and scope of inquiry, as well as examples of implementation, evaluation and political and organizational issues. The book edited by Virginia Lee (2004) "Teaching and Learning Through Inquiry: A Guidebook for Institutions and

Instructors” comprises cases including disciplines such as history, foreign languages, psychology, microbiology, chemistry, engineering and design. These narrative accounts offer practical advice from instructors shifting their lecture format classes to the inquiry approach. The Proceedings of the 2003 Conference “Learning Based on the Process of Enquiry” aimed at building capacity for the inquiry approach in universities in the UK, Australia and the USA. These papers include cases from law, social sciences, history, languages, health sciences, zoology and engineering (Kahn & O’Rourke, 2005).

To investigate whether the English language instructors – currently conducting the MA studies – from the English Department at the Faculty of Education, Al-Azhar University are in need for such training, the researcher conducted a pilot study with them, using a semi-structured interview. *The findings revealed that:*

- Most English teaching assistants who are currently in the process of getting their master’s degrees at the Faculty of Education, Al-Azhar University need a training program to help them to be able to improve their inquiry-based teaching performance.
- They are also in need of developing and updating their classroom management strategies and improving their assessment techniques.
- Most of them are not familiar with the inquiry-based approach.
- They lack scientific practicing, applications and examples for using the inquiry-based approach for teaching English language.

As such, mainly since the inquiry approach is centered on the importance of learning opportunities that allow trainees to inquire, participate, demonstrate, practice, and even design the knowledge and skills they need to better perform in the

classroom, it is adopted for developing English language instructors' inquiry-based teaching performance.

1.3 Statement of the Problem

Some English language instructors at the Faculty of Education, Al-Azhar University lacked inquiry-based teaching performance in terms of questioning, presentation, engagement, and assessment. Hence, the current study proposes to employ the inquiry approach as represented in the 5E Model for developing university English language instructors' inquiry-based teaching performance.

1.4 Research Questions

The current study sought to answer the following main question:

What is the effect of using the 5E inquiry-based model on developing the inquiry-based teaching performance of the English language instructors at the Faculty of Education, Al-Azhar University?

The following sub-questions are answered:

- 1- What are the inquiry-based teaching performance skills necessary for the English language instructors at the Faculty of Education, Al-Azhar University?
- 2- What are the characteristics of an inquiry-based training program using the 5E inquiry-based model for developing English language instructors' inquiry-based teaching performance at the Faculty of Education, Al-Azhar University?

1.5 Research Hypotheses

To answer the study questions, the following hypotheses were tested:

- 1- There are statistically significant differences between the mean scores of the observation checklist pre-application and the mean scores of its post-application relating to the inquiry-based teaching performance skills (questioning, presentation, engagement, and assessment), favoring the post-application mean scores of the study participants.
- 2- The post-training comments in the responses to the semi-structured interviews may be in favor of the inquiry-based teaching performance skills and indicate the participants' satisfaction with the program.

1.6 Research Purpose

This study aimed to:

- Identify inquiry-based teaching performance skills that are critical for the English language instructors at the Faculty of Education, Al-Azhar University.
- Identify the characteristics of an inquiry-based training program for developing the Faculty of Education, Al-Azhar University instructors' inquiry-based teaching performance.
- Explore the effects of the proposed program on developing Al-Azhar University English language instructors' inquiry-based teaching performance.

1.7 Research Significance

This study might be significant for the following:

- It would help university English language instructors develop their inquiry-based teaching performance.
- It highlights the importance of training university English language instructors in developing their inquiry-based teaching performance.
- It provides instructors and curriculum designers with a program that could help them to develop and design new curricula based on inquiry approach.
- It may help instructors to overcome the difficulties they encounter while teaching.
- The program developed for this study could be used as a guide for new teachers, instructors and even students to develop their inquiry-based teaching performance.
- The instruments of the study might be helpful in monitoring and evaluating the inquiry-based teaching performance of university faculty based on the inquiry approach principles.

1.8 Delimitations

This study is delimited to the following:

- University English language instructors at the Faculty of Education, Al-Azhar University who teach English as a foreign language and appointed by the Faculty of Languages and Translation to teach this course. Al-Azhar University is based on the unity of the academic departments, so the department of English Language at the Faculty of Languages and Translation is responsible for teaching English as a foreign language at all the faculties of Al-Azhar University. The Faculty of Education was chosen as it was the faculty that welcomed conducting the program with the instructors and teaching assistants.

- Inquiry-based teaching performance skills (questioning, presentation, engagement, and assessment) are delimited to those components approved by specialists and the jury members.
- The training program is based on the five E's model of the inquiry approach. The 5Es model was chosen as it builds experiences gradually, allowing students to increase their understanding over time. The model uses mnemonic headings with the letter E: *Engage*, *Explore*, *Explain*, *Elaborate*, and *Evaluate*.

1.9 Definition of Terms

Inquiry Approach

“Inquiry” is defined as a quest “for truth, information, or knowledge...seeking information by questioning” (Exline, 2004, p. 31). According to Spronken-Smith et al. (2012), inquiry is “an umbrella term, encompassing a range of teaching approaches which involve stimulating learning with a question or issue and thereby engaging learners in constructing new knowledge and understandings” (p. 57).

Operationally, the inquiry approach is the exploration processes (namely questioning, presentation, engagement, and assessment) through which university English language instructors adopt new insights while receiving the training program for developing their inquiry-based teaching performance skills as oriented by the 5E Model.

The 5E Model

The 5E Model, developed in 1987, promotes collaborative, active learning in which students work together to solve problems and investigate new concepts by asking questions, observing, analyzing, and drawing conclusions.

This study adopts this model to systematically and methodically develop the English language teaching assistants' inquiry-based teaching performance.

Teaching Performance

According to the Faculty of Social Sciences in the University of Victoria (2019), teaching performance is those activities by the faculty member that directly contribute to student learning. These activities might include lectures, individual and group work, inquiry-based learning, discussion sessions, supervising projects, and collaborating with, mentoring, or tutoring students.

Operationally, inquiry-based teaching performance based on the inquiry approach is defined as the extent to which University English language instructors adopt the 5E model to effectively perform the skills included in the approved list of skills by the jury members that are assessed using an observation sheet.

1.10 Organization of the Remainder of the Thesis

The remainder of the thesis is organized as follows:

CHAPTER 2 contends with the theoretical framework of the study and reviews the relevant literature. By the end of Chapter 2, variables of the study are theoretically covered and supported with previous, related research. The chapter previews the theoretical tenets of the inquiry approach, the phases of the inquiry-based instruction, levels of autonomy, the role of instructors and learners in the inquiry-based instruction as well as the benefits of integrating the inquiry-based instruction in English language learning. The chapter further highlights the 5 Es model of inquiry as the most prominent model to be used in the current study. Its

theoretical base and components are explored in detail. The chapter concludes with the inquiry-based instruction and developing university instructors' inquiry-based teaching performance with a detailed report on the previous studies related to the study variables.

CHAPTER 3 is assigned to the description of the research method adopted in the study. It details the instruments used in the study and illustrates the procedure of developing and validating the instruments and building the training program. Final experimentation of the instruments and the program are also highlighted.

CHAPTER 4 is assigned to the presentation of the qualitative and quantitative results of the study, and their interpretation. It discusses the descriptive statistics and then the inferential statistics related to the dependent variables. The chapter highlights the extent to which the training program based on the inquiry approach had an impact on the participants' inquiry-based teaching performance with regard to the inquiry-based instruction skills as identified by the list and verified by the jury members. The chapter concludes with a discussion of the findings in light of those of the previous studies and the qualitative data analysis of the semi-structured interviews.

Finally, CHAPTER 5 summarizes the study. Conclusions are reported, recommendations are offered, and suggestions to extend this study in future research are made.

CHAPTER TWO
REVIEW OF THE LITERATURE AND
RELATED STUDIES

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The present chapter reviews the literature and previous studies on the inquiry-based approach and inquiry-based teaching performance. It highlights the inquiry-based instruction and its theoretical bases namely, constructivism. The chapter also delineates the 5 E's model as an inquiry-based approach considering its phases and theoretical foundations. Finally, the chapter overviews the utilization of the inquiry-based instruction in developing the university instructors' inquiry-based teaching performance.

2.1 Inquiry-Based Approach

The concept of inquiry-based instruction was introduced by Bruner and Schwab in the early 1960s. Instead of relying on traditional forms of instruction, Bruner (1961, as cited in Blessinger & Carfora, 2015) called for methods where the learner discovers new information and ideas. Definitions are varied and not very precise, and many different strategies and pedagogies have been associated with inquiry-based instruction, including problem-based learning, case method instruction, active learning, activity-based instruction, project-based learning, team-based learning, situated learning, anchored instruction, and discovery learning (Malone, 2008).

Inquiry-based instruction expects the learners to be active participants in uncovering ideas and developing new skills as a result of the structure (Malone, 2008). Kuhlthau et al. (2007) argue that using inquiry helps learners evaluate multiple sources. This results in an increased understanding of a problem. Inquiry also helps learners move beyond obvious answers and make connections between

the curriculum and the world around them. “[Inquiry] espouses investigation, exploration, search, quest, research, pursuit, and study” (p. 2).

2.1.1 The Theoretical Tenets of the Inquiry Approach

The philosophy of the inquiry approach has totally changed the role of the teacher; instead of providing and giving direct instructions and questions to learners, teachers and instructors help learners to create, develop, and test their own content-related questions. Support for inquiry-based instruction comes from constructivism, research on motivation, and intellectual development. Recently, inductive approaches such as inquiry-based instruction as a means of strengthening teaching-research links in universities have gained favor. (Aditomo, 2011).

At lower levels, inquiry-based instruction is introduced in a structured and guided activity; the teacher may pose the questions and provide help in how to solve a problem. At the highest levels, including independent research, learners generate the questions themselves and determine how to conduct the research. As Spronken-Smith et al. (2012) stress, inquiry-based instruction can occur at a range of scales within the curriculum.

Prince and Felder (2006) reviewed four inquiry-based instruction studies; the findings indicate that inquiry-based instruction is generally more effective than traditional teaching approaches. Findings have also shown that academic achievement, learner perceptions, process skills, analytic abilities, critical thinking and creativity are the main areas that have significantly improved (Rubin, 1996; Shymansky, 1990; Smith, 1996; all as cited in Prince & Felder, 2006).

2.1.2 Stages of inquiry-based instruction.

The Engage Stage

In this first stage of the process, teachers try to discover the students' previous knowledge about the topic and clear up any misconceptions that are identified (Marshall & Horton, 2011). They try to heighten the interest and build enthusiasm by using short and interesting activities. This excitement should be related to what learners already know and can do and should also familiarize them with the lesson learning goals (Piyayodilokchai, Panjaburee, Laosinchai, Ketpichainarong, & Ruenwongsa, 2013).

The Explore Stage

Learners begin to investigate and learn about the topic in this stage, without trying to reach any conclusions yet (Marshall & Horton, 2011). Students work in groups collaboratively, developing a common set of experiences designed to broaden their understanding and uncover misconceptions about the topic. As they develop new ideas, they might use manipulatives or a variety of other resources (Piyayodilokchai et al., 2013).

The Explain Stage

In this stage the instructor takes on a more active, direct role, acting as a guide to help the students solidify their concepts. Students are encouraged to explain the learning they have acquired, and the teacher provides answers or resources that help clear up any continuing misunderstandings. The instructor might focus also on topic specific vocabulary and language related to this topic. Learners may modify their concepts as a result of group discussions and instructor input (Piyayodilokchai et al., 2013).

The Extend Stage

In this stage, learners actively enhance their understanding of the content and apply their understanding to newly learned concepts. This stage is also known as the elaborate stage. The two previous stages of the inquiry-based approach prepare learners for this stage through collecting information in the former and analyzing this information in the latter to make sense of the collected data (Marshall & Horton, 2011). As (Piyayodilokchai et al., 2013), in this stage learners put their understanding into action by applying it into a new context, encouraging them to better and deeply understand the content.

2.1.3 Levels of Autonomy in Inquiry-based Instruction.

Inquiry-based instruction models vary in terms of scale, frame, and mode. According to Spronken-Smith, et. al. (2012), the scale of inquiry refers to the extent in which inquiry is employed in planning the course on a micro scale to planning lesson on a micro scale. Inquiry-based instruction is both discovery-oriented and information-oriented. Through the exposure to new inquiries and discoveries, learners better understand and apply the information in new contexts of learning (Spronken-Smith et al., 2013).

Most importantly, the mode of the inquiry-based instruction is based on the degree of independence provided to the learner. In this sense, it encompasses four modes: confirmatory, structured, guided, and open. They are arranged from the least autonomous in confirmatory inquiry, to most autonomous in open inquiry (Zion & Mendelovici, 2012).

In any inquiry-based activity, despite the existence of the five E's of the inquiry-based framework, the degree of autonomy granted to learners varies from

the least autonomous to the most autonomous. This will depend on the intended learning objectives, the level of learners, and the teacher's attitude. In an inquiry-based activity, learners are mainly responsible for developing the questions and completing the inquiry cycle (Spronken-Smith, et.al., 2012, p. 58).

2.1.4 The Teacher's Role

Successful implementation of an inquiry-based instructional model is dependent on the teacher's ability to facilitate learner exploration. A teacher must take on the role of facilitator, supporting learners by probing, questioning, and assisting in the process of combining pieces of learning cohesively (Marshall & Horton, 2011).

Capps and Crawford (2013) explored the mindsets and actions of a teacher who had successfully and consistently used an inquiry-based model. Crawford suggests that the roles of teacher and learner in an inquiry setting are complex and often change, creating multiple roles that each must play throughout the lesson. Capps and Crawford (2013) identified 10 roles that were essential for the teacher to take on while utilizing an inquiry-based model, as follows:

- Motivator
- Diagnostician
- Guide
- Innovator
- Experimenter
- Researcher

- Modeler
- Mentor
- Collaborator
- Learner

These roles push beyond identifying the teacher as the guide in the classroom. I believe it is the responsibility of the teacher in an inquiry-based lesson, and in all lessons, to effectively model overcoming challenges and share a belief in learners potential to do the same. This will help ensure that learners are better set up for success in future lessons, and support learners in developing the habits, skills, and mindsets of strong life-long learners (Tseng, Tuan, & Chin, 2012).

Marshall and Horton (2011) describe the role of the teacher as the facilitator of discussions and explorations that support learners in analyzing information and formulating new ideas, rather than simply recalling or listing facts. While a learner-centered classroom places most of the power in the hands of learners, a teacher who can effectively engage learners in this process is vital to the success of inquiry in any classroom. Estes (2004) highlights this requirement by suggesting that teaching inquiry can only be successful if a teacher has the knowledge and skills required to initiate and sustain conversations about learners' experiences and learning. She continues by writing, "Most experiential educators...have been socialized and educated in traditional teacher-centered venues. Thus, we are comfortable with learners looking to teachers for information, answers, guidance, affirmation, and permission to speak" (p. 153).

As previously mentioned, inquiry must be an active process in which learners are engaged in the material and working to construct a meaning of the content in a way

that is relevant to their lives. Inquiry-based instruction, then, requires a strong culture that is centered on the ability to make mistakes and learn from the collective effort of the group. A teacher's role is to share important information, but also to shape the culture of the classroom so that multiple ideas and perspectives are valued and shared (Cole & Wasburn-Moses, 2010). As is true in any classroom, culture and a sense of security are essential to the success of all learners in mathematics. In the same note, learners must be willing to make mistakes and support one another in the search for understanding. The teacher's role is to serve as a guide, pushing learners to rely on one another and their understanding of the essential information. Thus, an effective inquiry-based classroom is extremely dependent on the effectiveness of the teacher (Tseng, Tuan, & Chin, 2012).

Creating a safe space for learning and taking risks is only one component of the teacher's role. Additionally, the teachers must be aware of the cognitive abilities of his/her learners in order to effectively guide learners to ask and explore challenging questions (Zion & Mendelovici, 2012). The teacher aims to guide learners through the developments of critical thinking and problem-solving skills while pushing them to engage in higher-level thinking, along with building motivation for learning. This can only be possible if a teacher has a strong understanding of her learners' abilities, as well as how learners construct new knowledge (Tseng, Tuan, & Chin, 2012). Learners' current understandings and experiences brought into the lesson serve as a starting place for the teachers questioning. Their theories and understandings may be incorrect or incomplete, and a teacher's questioning must begin challenging discrepancies to build a learning environment that is relevant and beneficial to learners (Kotulakova, 2013).

2.1.5 Learners' Roles

As a learner-centered model, inquiry creates a space where much of the power in the classroom belongs to learners (Estes, 2004). While this definition describes all learner-centered models, it adequately describes inquiry-based approach, as learners must learn the skills of questioning and finding answers using evidence (Deskins, 2012). Thus, an inquiry model provides learners with more power, requiring each learner to claim ownership of his or her learning through the pursuit of knowledge. By watching a teacher model through lecture, learners are not able to generate a personal understanding of the content and, instead, mimic strategies and procedures (Johnson & Norris, 2006). Learners must work with their peers and hear how others comprehend content, as well as how other learners' problem solve in various scenarios. While learners may have mirrored understandings or tendencies in problem solving, learners must also recognize that each understanding is personal and valid, as it is constructed in a way that complements the learner (Johnson & Norris, 2006).

Learners must be taught how to use the skills associated with inquiry-based instruction and must challenge themselves to implement inquiry-aligned strategies throughout the learning process. Armed with knowledge of what skills are available, learners can begin to decipher when it is appropriate and effective to use them (Deskins, 2012). Specific skills must be utilized in an inquiry-based model. Learners must pursue questions, ensuring that they do not know the answer to the question before they begin. They must make predictions rooted in their own ideas and must take part in planning and executing the process for investigating the prediction. Learners must keep notes during their work and discuss their methods and findings in terms of their initial predictions. Finally, learners must draw conclusions and compare their findings to the conclusions of their peers (Harlen, 2013).

2.1.6 Benefits and Challenges of Inquiry-Based Approach

The benefits of inquiry-based instruction are mostly rooted in the skills and mindsets that learners develop throughout the process of learning, as well as the ability for learners to apply learnings to the real world. The challenges of inquiry-based instruction will be discussed and often result from teacher and learner unfamiliarity with the structures of this framework. This unfamiliarity can result from learner discomfort with a change in expectations, and can be rooted in teacher preparation or understanding of power dynamics in the classroom (Tseng, Tuan, & Chin, 2012).

2.1.6.1. Benefits of Inquiry-based Instruction

Many of the benefits that result from an inquiry-based instructional model are rooted in the development of skills and mindsets in learners, supporting them in becoming better life-long learners and, thus, better citizens. Some examples of these benefits are learner motivation and investment, a deepened understanding of content, and the development of critical thinking skills (Laursen, Hassi, Kogan & Weston, 2014).

The benefits of inquiry-based instruction are often generated in comparison to that of the traditional classroom setting. In this case, the traditional classroom setting refers to a lecture-based, teacher-centered classroom where the teacher serves as the keeper of information and works to share this information with learners. Additionally, learners are asked to explore and create their own solutions, communicating their thinking in oral and written forms. This distinction between the two frameworks for teaching illuminates the many benefits of the inquiry-based model (Kitson, et. al., 2008).

Inquiry-based instruction, in comparison with traditional, didactic instructional strategies, has been shown to more likely promote acquisition, retention, and the transfer of knowledge. As traditional instruction focuses on the development of inert knowledge, it is not oriented towards the development of critical thinking and problem solving. Furthermore, this orientation can negatively impact a learner's motivation for learning new information (Kitson, et. al., 2008).

Inquiry-based instruction moves beyond the basic knowledge of content, into the qualitative aspects of the learning process. Kitson (2008) identifies the following benefits of the inquiry-based model:

- Increased self-awareness
- Ownership and motivation
- Personal responsibility
- Promotion of critical thinking
- Integration of existing perceptions with experience
- Acquisition, retention, and transfer of knowledge
- Support of an orientation toward learning and mastery

Learning through an inquiry-based framework can serve the interests of individual learners, as it supports them in developing the knowledge and skills to build connections between the content they learn in class and the world around them. Developing connections between the real world and the classroom drive learners' desire to explore and understand more about the world. Harlen (2013) suggests this benefit balances satisfaction and inquisitiveness about the world around learners. As

material becomes more relevant, learners discover that work is not “busy work,” and is instead relevant and essential to the learning process and success in the classroom (Laursen, Hassi, Kogan & Weston, 2014). Harlen (2013) relates inquiry-based activities to learner investment because learners often feel joy and satisfaction in the act of discovering new, interesting knowledge on their own. Successful inquiry-based frameworks create space for learners to be involved in the thinking and exploring, impacting learner motivation through ownership of process and learning (Fitzgerald & Byers, 2002).

An additional benefit of using an inquiry-based framework is the promotion of significant learning, Marshall & Horton (2011) suggest that an inquiry-based framework moves away from rote learning and places importance on the development of deep conceptual understanding. Much of this depth can be attributed to the processes learners go through during an inquiry-based lesson. Gonzalez (2013) suggests that learners produce stronger work as a result of developing stronger research, reasoning, writing, and presentation skills. This growth in learner work and, in turn, the growth in learner learning is rooted in the challenging process of interrogation.

2.1.6.2. Challenges of Inquiry-based Instruction

Many of the challenges that arise when implementing an inquiry-based model are rooted in the transition for learners and teachers. As both parties’ experiences with education most often align with the traditional models of a classroom, as teachers and learners learn to be successful in an inquiry-based model, challenges may arise. Some of the difficulties that arise while implementing an inquiry-based model are teacher preparedness, teachers’ fear of losing control of classrooms, and learner frustration (Bunterm et al., 2014).

The challenges that may arise for teachers are rooted in a lack of understanding or training in how to successfully implement an inquiry-based model. Donnelly, McGarr & O'Reilly (2014) suggest that this unawareness is rooted in a lack of understanding of the roles teachers and learners play in a traditional setting and the implications for learning in that environment as a result of this power dynamic. In not fully understanding the impact of the traditional setting, teachers may then struggle with the transition to a new, different model of teaching and learning.

Furtak, et. al. (2012) explains that a guided inquiry structure can be one of the most challenging settings when teachers are ill-equipped to support learners in the learning process. As teaching settings often require the identification of a specific answer, teachers have not received the support necessary to learn the skills of properly supporting learners in finding their own answer. Zion and Mendelovici (2012) suggest teacher confidence is one of the most critical components of successful implementation of an inquiry-based framework because of the importance of a teacher's role in learner learning. If a teacher lacks confidence, a space for productive inquiry may not be produced.

More generally, studies have shown that teachers struggle to maintain an atmosphere that engages and encourages learners to participate in learner-directed inquiry, especially within a guided inquiry model (Sadeh & Zion, 2009). This struggle can potentially be rooted in the teachers struggle to release control to learners as they build their independence. Teachers may become fearful and anxious as a result of teaching inquiry. These reactions may stem from the transition to a learner-centered approach from a teacher-centered approach, as teachers may not be used to releasing control to learners (Spronken- Smith et al., 2011).

Challenges may also be learner-facing, as learners may also struggle with the transition to an inquiry-based instruction model. As the structure of the classroom moves towards a community model, teachers must support learners in the process of knowledge construction, something that is often challenging to do (McDonald & Songer, 2008).

Similarly, to the tendencies of teachers, learners, especially younger learners, do not automatically use the skills and processes associated with inquiry, as many of them are used to the didactic, traditional model (Harlen, 2013). This is especially true for learners who are asked to work in groups for the first time. Learners may be unsure of the new expectations in the inquiry-based model as they are asked to become more responsible for their own learning. Learners experiences can be related to that of the teacher, as learners can also experience components of the 'grief curve', especially when they are faced with challenges and are forced to make decisions about processes and procedures (Spronken-Smith et al., 2011).

According to Ketpichainarong et al. (2009) inquiry teaching and learning methods affect learner performances, for example in solving problems, reflecting on their work, drawing conclusions, and generating prediction. These qualities are necessary for a high-achieving graduate. Considerable research has been conducted on inquiry-based instruction. For example, Marshall and Horton (2011) found that in both math and science classrooms, when teachers had learners both explore concepts before explanations and contribute to the explanations, a higher percent of time was spent on exploration and learners were more frequently involved at a higher cognitive level. Further, Marshall and Horton found a high positive correlation between the percent of time spent exploring concepts and the cognitive level of the learners, and a negative correlation between the percent of time spent explaining concepts and the cognitive level. Powell-Mpmen and Brown-Schild (2011)

investigated the impact of a two-year professional development program on teacher self-efficacy for inquiry-based instruction, and suggested increases in self-efficacy for inquiry-based instruction and greater focus by the teachers on the depth of content after completing the program.

In addition, Gormally, Brickman, Hallar, and Armstrong (2011) described their experience of developing and implementing an inquiry-based biology laboratory curriculum and believed that instructors new to inquiry-based instruction can anticipate changes to teacher and learner roles, a shift that may be supported with instructor training and awareness of common learner reactions. Olde, Jong, and Gijlers (2013) compared learning from designing instruction in the context of simulation-based inquiry learning with learning from expository teaching. The result of this study showed that, in one class, learners who learned by designing assignments performed significantly better on test items measuring conceptual knowledge than learners who learned from traditional instruction.

2.1.7. The 5 Es Model

Inquiry-based instructional learning is a learner-centered and teacher guided instructional approach that requires learners to find out things for themselves. Taking into account that the constructivist theory may be applied to many different teaching models, one of which is the 5Es. Based on the constructivist approach, Roger Bybee developed the instructional model of learning called the “Five Es” in 1997. It depends on providing a way for learners to construct an accurate understanding of a new concept based on existing knowledge, because instruction may not be effective when teachers explain a new concept without connecting it to learners’ prior knowledge. The 5Es model promotes experiential learning by motivating and encouraging learners to learn new information by depending on their existing

experience. It is an instructional model for designing a series of experientially rich lessons that are conceptually linked and developmentally sequenced to support the ongoing, progressive refinement in learner understanding as it develops over time (Bybee, 2002).

In the 5Es learning model by (Bybee, et.al. 2006) each step with “E” refers to help learners’ learning by the experience of linking prior knowledge to new concepts. It is seen that 5Es learning model is especially effective in the elimination of alternative conceptions (misconceptions) (Ultay, & Calik, 2016). This is because; constructivist learning theory claims that learning is an interaction between new knowledge and preexisting knowledge (Bybee, et.al. 2006) and people construct their own knowledge by using their existing knowledge.

The 5Es instructional model evolves from the constructivist approach, which allows learners to actively participate in the learning process as it encourages learners to explore, experience, and discover various subjects, and as a result, it can be considered an effective method for teaching (Yadigaroglu & Demircioglu, 2012). In studies conducted using the 5Es instructional strategy, evidence suggested that the strategy increases the success of learners, elevates their conceptual understandings, and positively changes their attitudes (Kor, 2006; Saglam, 2006). The 5Es instructional strategy arouses learners' interest (Clark, 2003), motivates them, and enhances their cognitive development (Wilder & Shuttleworth, 2004). According to Dogru-Atay and Tekkaya (2008), the 5Es instructional strategy has an impact on learners' understanding of cognition, helps them take responsibility and actively participate in lessons, helps them have fun during lessons, and increases their academic achievement (Evans, 2004). Also, it increases interest in lessons and achievement, especially for learners with low grades (Demircioglu, Ozmen, & Demircioglu, 2009).

2.1.8 The Theoretical Basis of 5Es Model

Developed in the 1980s, the 5Es instructional strategy was designed to provide an instructional strategy that encourages a constructivist approach to education while introducing aspects of behaviorism and cognitivism (Jobrack, 2010). The strategy has been widely employed by educators and is useful in many subject areas. The origins of the strategy can be traced to the work of Johann Herbart, John Dewey, and Jean Piaget. The rationale behind the strategy is to commence with learners' current knowledge, make connections between current knowledge and new knowledge, make available direct instruction of ideas the learners would not be able to learn on their own, and provide opportunities to demonstrate understanding (Bybee & McCrae, 2006).

Constructivism is a learning theory that explains how knowledge is constructed in the learner when information encounters existing knowledge that had been developed by experiences. It is an instructional approach that lays emphasis on the ways knowledge is acquired in order to adapt to the world. It is an active contextualized process of constructing knowledge rather than acquiring it (Ezugwu, 2019). According to Ezugwu (2019), knowledge is constructed based on personal experiences and hypotheses through social negotiation. Each learner has a different interpretation and construction of knowledge. The learner is not a blank slate (*tabula rasa*) but brings part of experiences and cultural factors to a situation.

When learners encounter something new, they have to reconcile it with their previous ideas and experience, may be changing what they believe or discarding the new information as irrelevant. In many cases, they are active creators of their own knowledge. To do this, learners must ask questions, explore and assess what they know. The teacher makes sure he understands the learners' pre-existing conceptions

and guides the activity to address them and then build on them (Bybee & McCrae, 2006).

2.1.9. The Components of the 5 Es Model

The 5Es instructional model focuses on dealing with the learning process as a collection of experiences, explorations, explanations, and evaluations. This learning model consists of five phases: engagement, exploration, explanation, elaboration, and evaluation (Bybee & McCrae, 2006).

Figure 2.1: The 5Es instructional Model



(1) Engagement: It refers to drawing learners' interest to target construct (s), revealing their prior knowledge, and making them aware of their own knowledge about the construct (s). In this phase, learners are exposed to new concepts, and it is expected for them to connect these concepts with existing experiences to have a deep understanding (Bybee, McCrae, & Laurie, 2009). According to İşcan, Ersari, and Naktiyok (2014), in this phase, the learners should be given activities that would arouse their curiosity, exhibit their prior knowledge, and reveal their interest in the

new concept, since the primary purpose of this phase is to capture learners' imagination (Swanage & Lane, 1999).

(2) Exploration: Learners are very active in this stage. They apply their own knowledge by making observations and gaining experiences about the concepts. At this stage, teacher guides learners to study in videos, computers, and so on to solve problems. This phase focuses on acquiring an accurate understanding of the concept to avoid misconception and to generate new ideas and results (Bybee, 2009). Exploring comes immediately after the Engagement phase, which supports a mental focus on the concept, the Exploration phase provides learners with a common, concrete learning experience. This learner-centered phase integrates active exploration. Learners are motivated to apply process skills such as observing, questioning, investigating, testing predictions, hypothesizing, and communicating with other peers (Duran & Duran, 2004).

(3) Explanation: At this stage, teacher is the most active. Learners share and discuss their own experiences with each other. Learners are encouraged to compare their prior knowledge with the new knowledge and explain the relationship between the two concepts. Teacher (s) could benefit from different methods such as animations, educational card, simulations, analogies, discussions, and videos. At this stage, learners are supposed to critically explain their ideas and understanding to others after exploring new ideas and engaging them with the prior experience (Bybee, 2009). The teacher may provide an explanation of the new concept to direct the learners to a deeper understanding (İşcan, Ersari, & Naktiyok, 2014). Essentially, learners are involved in a learning environment that motivates them to explain their concepts and understandings (Tanner, 2010).

(4) Elaboration: Learners are encouraged to adapt and associate the new knowledge with their daily life. Work sheets, model preparation and activities, drawing, and problem situations can be used to improve learners' thinking skills. Questions are used to reinforce the relationship between the concept and the daily life. The teacher's role in this phase is to concentrate on elaborating on learners' understanding and skills (İşcan, Ersari, & Naktiyok, 2014). Thus, learners have the opportunity to extend their existing knowledge of concepts to other contexts in different situations (Jobrack, 2010).

(5) Evaluation: Learners examine and make an inference about new knowledge of concept (s) learned during the previous four stages. Eventually, they check out their own improvement (O'Brien, 2010). Learners, in this phase, have the opportunity to evaluate their understanding and participate with their teachers to assess their achievement and development (Bybee, 2009), providing a clear picture of how learners understood and enhanced their prior experience and knowledge. Bybee (2014) reported that in the evaluation phase, the teacher should involve learners in experiences that are understandable and in lieu of those of prior phases and matching the explanations.

Since Rodger Bybee put forward the 5Es model in 1997, many have investigated the application of this model. The 5Es model has been widely applied in diverse fields. Moseley and Reinke (2002) applied the 5Es in their lessons through activities in which learners had to develop cartoons and stickers to change people's attitudes towards the environment and its problems. Alorabi and Abdullah (2003) designed a constructivist learning medium based on the 5Es model and applied it to high school classes. Results showed that the model was appropriate structure for the application.

In the English learning context, Cazibe Yiğit (2011) conducted a study on 70 learners studying English at Trakya University in Turkey to investigate the effect of the 5Es model on learners' achievement and motivation towards writing. Results indicated that the applied program had a positive effect on learners' achievement and motivation towards writing.

2.1.10 The Significance of instructors Professional Development:

There can be no “one size fits all” approach to effective teacher professional development. “Differences in communities of school administrators, teachers, and learners uniquely affect professional development processes and can strongly influence the characteristics that contribute to professional development’s effectiveness” (Guskey, 2003, p. 47).

Human resources are the backbone of any university, college, or specialized institution. Qualified and dedicated staff are key to ensuring that higher education institutions fulfill their mission of teaching/learning, research, and service to society (Haskins & Shaffer, 2011). To ensure that academic and management staff are prepared for the evolving challenges facing higher education today and are continually expanding their knowledge and skills sets, it is important that professional development opportunities are available. This accessibility is central to ensuring and improving the quality of higher education (Crawford, 2008).

The recent trends in educational professional development encompass structured activities or courses in the workplace to enhance professional skills of educators, keep the educators up-to-date or to support change in the organization (Dall’Alba & Sandberg, 2006). Higher standards for teachers accompany the push for higher standards for learners and greater accountability for learner learning, and

professional development is a critical link among new policies, school reform, and improved educational practice (Knapp, 2003).

Anness (2000), interviewing 66 teachers in three high schools, identified teacher inquiry about learner learning and learner work as a powerful tool for changing teacher practice and ultimately changing school structure. Placier (2001), in a study of middle school teachers in six schools participating together in inquiry groups to implement changes in reading instruction, found that such groups go through stages of development (introductory, breakthrough, empowerment), and that a trained facilitator can help to guide such groups through initial stages.

The Michigan English Language Framework (MELAF) was a federally-funded, statewide reform project to develop a standards-based curriculum, instruction and assessment framework. Teachers in this project reported changes in their personal literacy practices, as well as in their teaching. Many came “to use reading and writing as reflective tools for learning from their classroom practices”. MELAF gave teachers the opportunity to articulate and refine their philosophies of teaching and learning, and provided support to more purposefully apply these philosophies in their classrooms (Dutro, Fisk, Koch, Roop, & Wixson, 2002, p. 795).

According to research literature, professional development can increase teachers’ effectiveness and can positively influence learner learning outcomes. As a result, some universities propose professional development activities in the hope of offering up-to-date and effective educational services. As reported in current literature, professional development enabled teachers to increase their sense of self-efficacy (Avalos, 2011; Shaha et al., 2015; Vescio et al., 2008).

The professional literature documented various environmental changes that had created a demand for teachers’ lifelong learning. These changes include

technology (eLearning, online simulation, gamification), pedagogy, curriculum, and the increasing diversity of learner needs in higher education (Burns & Lawrie, 2015; McLean, Cilliers, & Van Wyk, 2008; Organisation for Economic Co-operation and Development [OECD], 2014).

The link between faculty professional development and learner learning outcomes has been investigated by scholarly and professional literature (Gulamhussein, 2013; NCCTQ, 2011). Learners can actually benefit from faculty professional development if their teachers effectively change their practices and/or attitudes (Desimone, 2011; NCCTQ, 2011); as a consequence, professional development programs should include opportunities for experiential learning, reflections, and follow-up discussions among the faculty to sustain instructional changes (DeMonte, 2013; NCCTQ, 2011).

Professional development (PD): Formal and informal activities for in-service teachers that lead to professional learning and growth (Mizell, 2010; Steinert, 2010). To enhance learner learning outcomes in this international context, it was of the utmost importance to understand the challenges faced by teachers and to provide appropriate support. Providing teachers with instructional techniques validated by research could increase learner outcomes (NCCTQ, 2011). Peer mentoring can help novice teachers learn from their mentors, but mentors can also benefit from a co-construction of knowledge by participating in their mentees' inquiry process (Van Ginkel, Verloop, & Denessen, 2015).

In another study by Cole (2014), it implemented a document analysis process using a TEKS Objective Analysis Rubric designed by the researcher, which analyzed the TEKS for inquiry-based science instruction adaptability. The rubric was supported with high-quality professional development materials, which trains

teachers on rubric implementation, science content, and inquiry-based science instruction. The outcomes identify that the majority of the TEKS can be adapted for inquiry-based science; professional developers must understand teacher knowledge in science before content is presented; and effective instructional strategies, recommendations for lesson changes, and examples of effective teaching in science for students with learning disabilities can be provided. The study also includes an action plan that assists teachers in inclusive elementary classrooms to adapt inquiry-based science lessons for students with learning disabilities.

However, the researcher could not find a study of a research paper that incorporated the inquiry-approach to develop university English instructors, as well as the studies in the university context professional development training regarding the inquiry approach was rare, to his best knowledge. As such, this study adopted the inquiry-based 5Es model to develop a training program for developing university English instructors' inquiry-based teaching performance. The next chapter is dedicated to the method of the study and the development of the study instruments and the training program highlighting the three phases of the experimentation.

2.2 Inquiry-based Approach and University Instructors

Performance:

Giving an overview of the examples of inquiry-based instruction in higher education is the focus of this section of the review. This section aims to give the reader an appreciation for the extent and type of inquiry-based instruction activities that are being employed in curricula around the world (Oliver 2006).

Although problem-based instruction is seen as a subset of inquiry-based instruction, examples of problem-based instruction are not given here. There are

several recent volumes that discuss the approach and provide a range of examples (Justice et al., 2002). Jenkins et al. (2007) provide a series of short cases and links to fuller reports in their Higher Education Academy paper “Linking Teaching and Research in Disciplines and Departments.” The proceedings of a symposium at McMaster University in 2004 on “Experiences with Inquiry Instruction”, edited by Christopher Knapp (2007), provides a very useful overview of the origins and scope of inquiry, as well as examples of implementation, evaluation and political and organizational issues.

Many studies also undertake some form of evaluation to elicit feedback from learners and/or teachers. However, often this feedback is anecdotal, rather than a systematic attempt to triangulate evidence regarding the success or otherwise, of the approach. Contrary to the commonly held belief that inquiry-based instruction courses are best suited to more advanced learners (once they have mastered some fundamental knowledge in the subject area (Plowright & Watkins, 2004; Zoller, 1999) as well as others who use the approach for introductory courses at a higher level (Yarger, et. al., 2000). Those teachers who advocate the use of inquiry-based instruction at first year or freshman levels, strongly believe that it is important to enculturate learners to a learner-centered learning environment as soon as they enter university, so that they can continue to use the range of skills developed throughout their university study. While many case studies are apparent for a range of courses; the literature is lacking in studies that discuss how to progressively develop inquiry skills throughout a degree program (Oliver, 2006).

A few institutions are largely organized around inquiry-based instruction. For example, at Hampshire College, Amherst, Massachusetts there is a whole institution focus on active inquiry, while at Roskilde University, Denmark, 50 per cent of the curriculum is based around group projects (Jenkins et al., 2003). More commonly

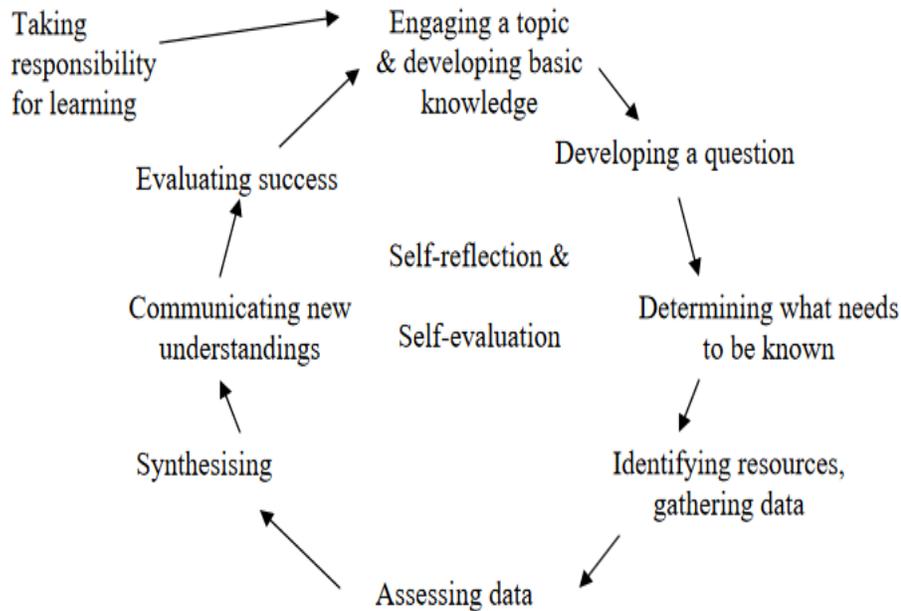
elements of inquiry-based instruction are integrated into programs, such as through the undergraduate research movement in the United States (Kinhead 2003). Specific discipline examples include, geography at Salford University, where the ‘Project’ took a third of contact hours in years one and two (Hindle, 1993); and Arts of Citizenship at the University of Michigan, which develops courses in which learners combine learning and research with practical projects that enhance community life (Arts of Citizenship 2004).

McMaster University in Canada has been teaching inquiry for over 20 years. They define inquiry as a form of self-directed learning in which learners take more responsibility for:

- Determining what they need to learn
- Identifying resources and how best to learn from them
- Using resources and reporting their learning
- Assessing their progress in learning (McMaster University, 2007).

A group of McMaster teachers (Justice et al., 2002) involved in inquiry-based instruction developed a model of the inquiry process (Figure 2.2). This model clearly shows a cycle in which learners become engaged with a topic, develop a question to explore, determine what information needs to be found, gather data, synthesize findings, communicate findings and then evaluate the success. Further the process is seen as circular since the inquiry leads to new interests and more questions. Core to the process is an attitude of self-reflection and evaluation, which are seen as “both a product of the inquiry process and an enabler of success at every stage” (Justice et al, 2002:19).

Figure 2.2: Model of inquiry process (Justice, et. al., 2002)



Robertson and Bond (2005) suggest that higher education consists of “multiple intersecting communities of inquiry”. Differences between communities are to be expected where they are organized around disciplines for the reasons discussed earlier. Academics also vary as to when they perceive it is an appropriate time for learners to be engaged in their disciplinary community.

Those teachers who advocate the use of inquiry-based instruction at first year or freshman levels, strongly believe that it is important to enculturate learners to a learner-centered learning environment as soon as they enter university, so that they can continue to use the range of skills developed throughout their university study. While many case studies are apparent for a range of courses; the literature is lacking in studies that discuss how to progressively develop inquiry skills throughout a degree program (Richardson, & Liang, 2008).

2.3 Commentary

- Inquiry-based approach is rooted in the self-construction of learning through active engagement with the environment, and it is often related to various strategies, including problem-based learning, case method instruction, active learning, activity-based instruction, project-based learning, team-based learning, situated learning, anchored instruction, and discovery learning.
- The approach has its roots in constructivism and is in line with research on motivation, intellectual development.
- The main target of the inquiry-based approach is to develop valuable teaching, learning, and research skills, and be prepared for life-long learning.
- The inquiry-based instruction is generally more effective than traditional teaching for achieving a variety of learner learning outcomes such as academic achievement, learner perceptions, process skills, analytic abilities, critical thinking and creativity.
- Successful implementation of an inquiry-based instructional model is dependent on the ability for a teacher to facilitate learner's exploration.
- The inquiry model provides learners with more power, requiring each learner to claim ownership of his or her learning through the pursuit of knowledge.
- Benefits of inquiry-based instruction are mostly rooted in the skills and mindsets that learners develop throughout the process of learning, as well as the ability for learners to apply learnings to the real world.

- The inquiry-based approach allows learners to draw connections between academic content and their own lives, which can be particularly important for culturally and linguistically diverse learners.
- The “Five Es” depends on providing a way for learners to construct an accurate understanding of a new concept based on existing knowledge and promotes experiential learning by motivating and encouraging learners to learn new information by depending on their existing experience.
- The “Five Es” helps university instructors to clearly show a cycle in which learners become engaged with a topic, develop a question to explore, determine what information needs to be found, gather data, synthesize findings, communicate findings and then evaluate the success.
- Professional development can increase teachers’ effectiveness and can positively influence learner learning outcomes.
- The researcher found out the need for a research paper that incorporated the inquiry-approach to develop university English instructors, as well as the studies in the university context professional development training regarding the inquiry approach are not sufficient, to his best knowledge. As such, this study adopted the inquiry-based 5Es model to design a training program for developing university English instructors’ inquiry-based teaching performance.

CHAPTER THREE
METHOD OF THE STUDY

CHAPTER THREE

METHOD OF THE STUDY

This chapter presents the method used by the researcher, including the design, participants, and the instruments of the study. The chapter concludes with the treatment procedures carried out.

3.1. Design of the Study

This study employed a quasi-experimental design, Pretest-Posttest One Group design.

3.2. Participants of the Study

The participants of the study were sixteen teaching assistants at the Faculty of Education, Al-Azhar University in Cairo, Egypt ([Appendix I](#)). These instructors were in the process of getting their master's degrees in teaching English as a foreign language. They were non-randomly chosen by means of criteria sampling, a purposeful sampling method. Of the sixteen instructors, thirteen teaching assistants were teaching English majors university students' English courses, including "Microteaching", "Instructional Aids," and "Computer for Education". The other three English instructors were teaching English as a Foreign Language to other majors in the university.

3.3. Instruments of the Study

To fulfill the purpose of the study, a semi-structured interview and an observation checklist of inquiry-based teaching performance were designed. The

following sections provide a description of the instruments' design, analysis, validity, and reliability measures.

3.3.1. Semi-structured Interviews

To describe university English instructors' inquiry-based teaching performance, semi-structured interviews conducted with the English language instructors (see Appendix C). The aim of the interviews before the treatment was to gain a greater understanding of the nature of their inquiry-based teaching performance in relation to the inquiry approach.

Interviews were conducted with each instructor individually by a faculty member at the university of Al-Azhar who recorded the interviewees' responses. The faculty's study room was used to conduct the interviews as he was working with the participants at the same place. Interviews were carried out by personal invitations from the interviewer to each of the participants according to their availability.

The questions of the interviews were designed by the researcher and validated by the jury. The interviewer was trained by the researcher to focus on the main aspects targeted by the present study. The interviews were carried out through a working week hours before and after the treatment. All notes taken during the interviews were analyzed by the researcher to get a deeper understanding of the participants' inquiry-based teaching performance and to substantiate data obtained from the observation sessions.

3.3.2. A list of the Inquiry-based Teaching Performance Skills

To assess the participants' inquiry-based teaching performance related to the inquiry approach, a list of the inquiry-based teaching performance skills was adapted

from Llewellyn (2013): “Rubric for Becoming an Inquiry Based Teacher”. The original list was adapted to match the purpose of the study. The adapted list (see Appendix D) comprised four main sections: Questioning; Presentation; Engagement; and Assessment. The list was submitted to the jury members (see Appendix B) to verify its content validity for the purpose of the study and if it was enough for assessing the university English instructors’ inquiry-based teaching performance regarding the integration of the inquiry approach. The following table shows the percentages of the jury members agreement on the sub-skills of the list.

Table 3.1

Frequencies and percentages of the jury members’ agreement on the relevancy of the list of inquiry-based instruction skills

Inquiry-based Teaching Skills	Unnecess ary		Necessary		Very Necessary		Relative weight
	F	%	F	%	F	%	
Questioning Skills							
1. Teacher uses all levels of questioning and adjusts level to individual students.	0	0.0	1	14.3	6	85.7	2.86
2. Teacher uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.	0	0.0	0	0.0	7	100	3
3. Teacher consistently uses probing, prompting and redirecting techniques.	0	0.0	0	0.0	7	100	3

Inquiry-based Teaching Skills	Unnecess ary		Necessary		Very Necessary		Relative weight
	F	%	F	%	F	%	
4. Teacher consistently poses open-ended questions.	0	0.0	0	0.0	7	100	3
5. Teacher consistently and effectively uses wait time strategies.	1	14.3	1	14.3	5	71.4	2.57
6. Teacher consistently and effectively uses prompts and rephrasing techniques when students cannot answer questions.	1	14.3	1	14.3	5	71.4	2.57
Presentation							
1. Teacher consistently acts as effective facilitator and coach.	0	0.0	0	0.0	7	100	3
2. Teacher occasionally lectures and uses investigations so students can demonstrate understanding.	0	0.0	1	14.3	6	85.7	2.86
3. Teacher uses an inquiry process approach and consistently provides teacher-initiated and student-initiated inquiries.	0	0.0	0	0.0	7	100	3

Inquiry-based Teaching Skills	Unnecess ary		Necessary		Very Necessary		Relative weight
	F	%	F	%	F	%	
4. Teacher effectively plans for whole group instruction as needed and frequently uses cooperative learning groups.	1	14.3	1	14.3	5	71.4	2.57
5. Teacher accepts and anticipates unexpected results.	1	14.3	1	14.3	5	71.4	2.57
Engagement							
1. Teacher engages students through open-ended discussions, investigations, and reflections.	0	0.0	0	0.0	7	100	3
2. Students are consistently active; teacher use hands-on and minds-on activities that encourage open-ended, student-initiated investigations and explorations.	0	0.0	1	14.3	6	85.7	2.86
3. Teacher frequently and effectively solicits information from the students.	0	0.0	0	0.0	7	100	3

Inquiry-based Teaching Skills	Unnecessary		Necessary		Very Necessary		Relative weight
	F	%	F	%	F	%	
Assessment							
1. Teacher seldom uses worksheets to assess learning; students record on student designed sheets and/or journal with complete success.	1	14.3	1	14.3	5	71.4	2.57
2. Teacher consistently and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.	0	0.0	0	0.0	7	100	3
3. Teacher assesses students based on concepts, knowledge, attitudes, transdisciplinary skills, and action taken because of new learning.	0	0.0	0	0.0	7	100	3
4. Teacher works in collaboration with others in study group sessions to share units, articles, and success stories.	0	0.0	0	0.0	7	100	3
Total	0.28	3.97	0.33	4.77	6.3	91.26	2.87
					9		

As shown above, the jury members agreed upon all the components of inquiry-based instruction components with a relative weight ranged from 2.57 to 3 which is very high. As such, all subskills were submitted as the final inquiry-based instruction skills utilized in this study.

3.3.3. The observation checklist of university English instructors' inquiry-based teaching performance

Based on the approved list of inquiry-based instruction skills, an observation checklist was designed by the researcher in the light of the rubric of Llewellyn (2013). The checklist was designed with the aim of assessing the inquiry-based teaching practices carried out by the study participants while they are teaching. The checklist was graded into four levels, namely, poor/week performance, acceptable performance, good performance, and outstanding performance. The observer was a faculty member in the Faculty of Education in Al-Azhar University, who was trained by the researcher on the checklist before administration to be fulfilled in numbers. As such, the degrees will range from 1 for poor or week performance to 4 for outstanding performance. The following sections describe the psychometric characteristics of the checklist in terms of its validity and reliability.

3.3.3.1. Internal validity of the observation checklist

The correlations between observation checklist subskills, main skills, and the total score of the observation checklist were calculated to measure the internal consistency of the inquiry-based teaching performance observation checklist. To meet this end, the observation checklist was administered to a pilot sample of 6 university English instructors at the Faculty of Education, Al-Azhar University. The researcher observed them and recorded his assessment according to the rubric above

and data were statistically analyzed using Spearman's rho correlation coefficient as shown in the table below.

Table 3.2:

Internal consistency correlations of the inquiry-based teaching performance observation checklist

Item	Correlation with the main skill		Correlation with the total score	
	R value	Sig. (2tailed)	R value	Sig. (2tailed)
Questioning				
Teacher uses all levels of questioning and adjusts level to individual students.	.525**	0.000	.399**	0.000
Teacher uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.	.527**	0.000	.291**	0.000
Teacher consistently uses probing, prompting and redirecting techniques.	.436**	0.000	.282**	0.000
Teacher consistently poses open-ended questions.	.564**	0.000	.466**	0.000
Teacher consistently and effectively uses wait time strategies.	.500**	0.000	.415**	0.000

Item	Correlation with the main skill		Correlation with the total score	
	R value	Sig. (2tailed)	R value	Sig. (2tailed)
Teacher consistently and effectively uses prompts and rephrasing techniques when students cannot answer questions.	.510**	0.000	.506**	0.000
Total			.767**	0.000
Presentation				
Teacher consistently acts as effective facilitator and coach.	.483**	0.000	.338**	0.000
Teacher occasionally lectures and uses investigations so students can demonstrate understanding.	.576**	0.000	.419**	0.000
Teacher uses an inquiry process approach and consistently provides teacher-initiated and student-initiated inquiries.	.546**	0.000	.410**	0.000
Teacher effectively plans for whole group instruction as needed and frequently uses cooperative learning groups.	.523**	0.000	.419**	0.000
Teacher accepts and anticipates unexpected results.	.449**	0.000	.422**	0.000

Item	Correlation with the main skill		Correlation with the total score	
	R value	Sig. (2tailed)	R value	Sig. (2tailed)

Total			.483**	0.000
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Engagement

Teacher engages students through open-ended discussions, investigations, and reflections.	.573**	0.000	.510**	0.000
Students are consistently active; teacher use hands-on and minds-on activities that encourage open-ended, student-initiated investigations and explorations.	.382**	0.000	.249**	0.000
Teacher frequently and effectively solicits information from the students.	.453**	0.000	.301**	0.000
Total			.500**	0.000

Assessment

Teacher seldom uses worksheets to assess learning; students record on student designed sheets and/or journal with complete success.	.520**	0.000	.354**	0.000
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Item	Correlation with the main skill		Correlation with the total score	
	R value	Sig. (2tailed)	R value	Sig. (2tailed)
Teacher consistently and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.	.483**	0.000	.338**	0.000
Teacher assesses students based on concepts, knowledge, attitudes, transdisciplinary skills, and action taken because of new learning.	.546**	0.000	.410**	0.000
Teacher works in collaboration with others in study group sessions to share units, articles, and success stories.	.523**	0.000	.419**	0.000
Total			.775**	0.000

Table 3.2 above shows that all observation checklist subskills were statistically positively correlated with their main skills and the total score of the observation checklist at 0.01 level which indicated that the observation checklist items had high internal consistency and valid to measure the university English instructors' inquiry-based teaching performance.

3.3.3.2. *Reliability of the Observation checklist*

The observation checklist reliability coefficient was estimated using inter-rater reliability. Its rating depends on the score given by the raters based on the prescribed rubric. Ratings given by different raters can also vary as a function of inconsistencies in the criteria used to rate and in the way in which these criteria are applied. A source of inconsistency could be that some raters focus on grammatical accuracy while others might focus on vocabulary (Bachman, 2003). Hence, the researcher computed the inter-rater reliability and correlation between two different raters as shown in the following Table 3.3.

The inter-rater reliability of the inquiry-based teaching performance observation checklist was calculated by Spearman's rho Correlation coefficients. During the pilot sessions, the researcher asked the faculty member who administered the training program to take part in observation simultaneously with the researcher in the same sessions and times of observation, so that their ratings can be compared.

Table 3.3:

The inter-rater reliability coefficients of the inquiry-based teaching performance observation checklist

Inquiry-based teaching performance Components	Pearson Correlation	Sig. (2-tailed)
Questioning		
Teacher uses all levels of questioning and adjusts level to individual students.	.924**	.000

Inquiry-based teaching performance Components	Pearson Correlation	Sig. (2-tailed)
Teacher uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.	.801**	.000
Teacher consistently uses probing, prompting and redirecting techniques.	.676**	.000
Teacher consistently poses open-ended questions.	.978**	.000
Teacher consistently and effectively uses wait time strategies.	.942**	.000
Teacher consistently and effectively uses prompts and rephrasing techniques when students cannot answer questions.	.756**	.000
Total	.801**	.000
Presentation		
Teacher consistently acts as effective facilitator and coach.	.399**	0.000
Teacher occasionally lectures and uses investigations so students can demonstrate understanding.	.291**	0.000

Inquiry-based teaching performance Components	Pearson Correlation	Sig. (2-tailed)
Teacher uses an inquiry process approach and consistently provides teacher-initiated and student-initiated inquiries.	.282**	0.000
Teacher effectively plans for whole group instruction as needed and frequently uses cooperative learning groups.	.466**	0.000
Teacher accepts and anticipates unexpected results.	.415**	0.000
Total	.506**	0.000
Engagement		
Teacher engages students through open-ended discussions, investigations, and reflections.	.338**	0.000
Students are consistently active; teacher use hands-on and minds-on activities that encourage open-ended, student-initiated investigations and explorations.	.419**	0.000
Teacher frequently and effectively solicits information from the students.	.410**	0.000

Inquiry-based teaching performance Components	Pearson Correlation	Sig. (2-tailed)
Total	.287**	0.000
Assessment		
Teacher seldom uses worksheets to assess learning; students record on student designed sheets and/or journal with complete success.	.448**	0.000
Teacher consistently and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.	.450**	0.000
Teacher assesses students based on concepts, knowledge, attitudes, transdisciplinary skills, and action taken because of new learning.	.503**	0.000
Teacher works in collaboration with others in study group sessions to share units, articles, and success stories.	.775**	0.000
Total	.767**	0.000
Total score of the checklist	.978**	.000

The Spearman's rho Correlation (2-tailed) of all the inquiry-based teaching performance skills as well as the total score were statistically significant at 0.01 level. These values indicate that the observation checklist was of acceptable reliability making it ready for administration in the final experimentation.

3.4. The Training Program

This training program is designed to enhance university English language instructors' inquiry-based teaching performance through using the inquiry approach. This program is designed in two main delivery modes, namely, face-to-face training sessions (totaling 30 hours) and online assignments and research (10 hours) with a total of 40 hours. The 3-hour training sessions were designed based on the inquiry approach principles, and the assessment criteria is included in a rubric that is to be used to assess English language instructors' inquiry-based teaching performance before, during and after the training. The training manual contains the activities, worksheets, and the online assignments to be done during the training program. The manual is divided into 10 modules as follows:

1. The inquiry-based approach: an introduction
2. Integrating inquiry into the classroom.
3. Levels of questioning
4. Probing, prompting and redirecting techniques.
5. Questioning strategies.
6. Individual and group questioning techniques.
7. Students engagement through questions.
8. Inquiry-based assessment.
9. Inquiry-based activity design.
10. Web tools and apps that support inquiry-based learning.

3.4.1. Aim of the Program

This training program aims to develop university English language instructors' inquiry-based teaching performance by utilizing the inquiry approach adopting the 5E model.

3.4.2. Performance Objectives

By the end of this training program, university English language instructors should be able to:

- Identify the concept of inquiry.
- Differentiate between inquiry-based learning and traditional approaches.
- Integrate the inquiry approach in their teaching practices.
- Identify probing, prompting and redirecting techniques
- Practice probing, prompting and redirecting techniques in their classrooms.
- Identify questioning strategies.
- Practice questioning strategies in their classrooms.
- Identify individual and group questioning techniques.
- Practice individual and group questioning techniques.
- Discuss student's engagement techniques through questions.
- Assess students using the inquiry approach.
- Design teaching activities based on the inquiry approach.
- Utilize web tools that support inquiry-based learning.

3.4.3. Training Materials

The following training materials were employed to fulfill the objectives of the training programs:

- PowerPoint Presentations
- Worksheets
- Online websites
- Teaching presentations.
- Projects.
- Lesson plans.

3.4.4. Steps in Inquiry based Training

An inquiry-based training focuses on learners' asking questions to build their own knowledge. Departing from drills and rote memorization adopted by traditional approaches, the inquiry approach is in essence a learner-centered, pedagogic approach. Filled with curiosity and both intrinsic and extrinsic motivation, learners are encouraged to ask themselves three main questions that both constitute the main stages of inquiry-based learning and can be integrated in the curriculum: prior knowledge, required knowledge, and gained knowledge; the three main questions that learners ask can be organized in a KWL Chart: a chart that has three columns: *Know, want to learn, and Learnt*. This graphic organizer helps trainees organize their thoughts and trace their analytic and critical thinking skills. One specific model that highlights the scheme of the inquiry-based approach is the 5E model which was adopted in the current study.

3.4.5. *The 5E Instructional Model*

As shown in Figure 3.1, employed for its sequential pattern of learning, the 5E grants learners to gradually forge their understanding and knowledge. Comprising five stages, each of which leads into the other, these stages are Engage, Explore, Explain, Elaborate, and Evaluate the model is called the five E's because each phase begins with the letter E. this acronym makes it easier to remember each stage of the model.

Figure 3.1: 5Es instructional Model



All the training modules are designed in the light of the 5E instructional model which includes the progressive stages *Engage*, *Explore*, *Explain*, *Elaborate*, and *Evaluate* (Figure 3.1 above).

Rooted in the constructivist view to learning that entails that learners through scaffolding envision new ideas based on background and prior knowledge, the 5 E's Model is effective for learners of different ages including adults. Not only does it enable learners to construct their knowledge and ideas based on earlier ones: either solidify or refute them, but also assess their understanding of the interrelated

concepts of learning. Description and analysis of each of the five E's is provided in the following:

- **The first E for Engagement:**

The cycle begins with the engagement phase, in which learners create links between previous and current learning interactions. Besides, it helps anticipate learning events center the attention of the students on discovering results from current practices. Students get emotionally interested in the idea, method or learned skills.

- **The second E for Exploration:**

In this phase of the model, a common base of experience is provided for the students. They define and establish principles, gain methods, and acquire competencies. Students deliberately investigate their surroundings and exploit materials during this stage.

- **The third E for Explanation:**

This phase of the model allows students to clarify and explain the ideas they have learned. They for example have chances to verbalize their interpretation of the definitions or and show different interpretations. This phase also offers teachers the opportunity to introduce terms formally and provide definitions and explanations for concepts, processes, abilities, and behaviors.

- **The fourth E for Elaboration:**

In this stage, learners expand their intellectual knowledge develop competencies and skills. They hence acquire deeper and wider understanding of the core concepts through different interactions, obtain more knowledge regarding the topic and improve their abilities and skills.

- **The final E for Evaluation:**

The last stage of the model is vital for both instructors and learners. Its purpose is two-fold: on the one hand, learners are encouraged to self-assess their knowledge and understanding of the topic; on the other hand, teachers evaluate their students' command of knowledge and development of their skills.

As such, each module would be designed and administered according to the following table in which learning, and teaching behaviors are meticulously elaborated.

Table 3.4.:

Training modules design and administration phases

Stages of the module	During this stage the trainer could be:	During this stage the trainees could be:
ENGAGE	<ul style="list-style-type: none"> “ Generating curiosity about the topic “ Asking open ended questions “ Listening to students to find out what they already know “ Encouraging students to explain their thinking “ Connecting to lives/ interests of students 	<ul style="list-style-type: none"> “ Asking questions “ Showing interest in the topic “ Sharing their thoughts/ideas “ Talking to one another

Stages of the module	During this stage the trainer could be:	During this stage the trainees could be:
EXPLORE	<ul style="list-style-type: none"> “ Giving students time to work together to explore a topic/problem “ Walking around and asking questions about what they are doing “ Listening to student’s ideas as they talk to each other “ Supporting students as needed (without giving answers) 	<ul style="list-style-type: none"> “ Working with each other and sharing ideas “ Trying out their ideas and thinking of alternatives “ Recording their thoughts and observations “ Asking questions
EXPLAIN	<ul style="list-style-type: none"> “ Encouraging students to explain concepts in their own words “ Highlighting important ideas that the students provide “ Asking questions that help students be specific in their explanations 	<ul style="list-style-type: none"> “ Explaining ideas, concepts, or possible solutions to others “ Using recorded information from their exploration to help them explain “ Listening to other ideas and building on them or asking questions

Stages of the module	During this stage the trainer could be:	During this stage the trainees could be:
ELABORATE	<ul style="list-style-type: none"> “ Introducing vocabulary, formal labels, or definitions as needed “ Asking the students to apply content in a new situation or test additional ideas “ Encouraging students to extend the lesson concepts “ Asking students to use the new vocabulary appropriately “ Incorporating real world connections 	<ul style="list-style-type: none"> “ Using new information to explore additional ideas “ Using new terms/ concepts to revise explanations “ Collaborating to refine ideas “ Drawing conclusions from evidence
EVALUATE (throughout)	<ul style="list-style-type: none"> “ Asking questions that provide insight into student progress “ Distributing questions so that all students are accountable and have the opportunity to share 	<ul style="list-style-type: none"> “ Answering questions that explain or show their thinking “ Demonstrating their understanding of the topic as they complete activities

Stages of the module	During this stage the trainer could be:	During this stage the trainees could be:
	“ Observing students as they create products and looking for evidence of understanding	“ Demonstrating applicable skills

3.4.6. Training program schedule:

The schedule for the training program is flexible for the convenience of the trainees as they are teaching assistants at the university and they might have emergencies. The planned schedule is as follows:

Table 3.5:

Schedule of the training program

Module	Title	Time allocated	Weeks
	Pretesting inquiry-based teaching performance		Week 1
1	The inquiry approach: an introduction	3 hours	Week 2
2	Integrating inquiry into the classroom.	3 hours	
3	Levels of questioning skills	3 hours	Week 3
4	Probing, prompting and redirecting techniques.	3 hours	
5	Questioning strategies.	3 hours	Week 4
6	Individual and group questioning techniques.	3 hours	

Module	Title	Time allocated	Weeks
7	Students engagement through questions.	3 hours	Week 5
8	Inquiry-based assessment.	3 hours	
9	Inquiry-based activity design.	3 hours	Week 6
10	Web tools and apps that support inquiry-based learning.	3 hours	
	Post testing inquiry-based teaching performance		Week 7

The table above shows that the training program will last for 5 weeks in addition to two weeks for pretesting and post testing university English language instructors' inquiry-based teaching performance in their actual classrooms. Each module is followed by an hour assignment to be administered online with the help of the web tools for inquiry-based learning. The assessment of university English language instructors' inquiry-based teaching performance during the programs is administered to make sure that they apply the inquiry approach and to evaluate the training progress.

3.4.7. Validity of the program

The program was handed to a jury of EFL teaching experts to gauge its a) clarity of objectives, b) appropriateness for the participants of the study, c) content quality, d) consistency of the procedures and tasks, and e) overall appropriateness. Recommendations and modifications were mainly about the content of the tasks and organization; hence, the content and organization were modified accordingly. They were taking into consideration when the final form of the program was implemented.

3.5. The treatment

The program was implemented first semester of the academic year 2019 – 2020. After administering the pretest, the researcher made the intervention, and finally administered the posttest. The three stages are illustrated in much detail below:

3.5.1. The pretest

After designing the training program and piloting the observation checklist, the researcher with the help of a faculty member at the faculty of education conducted the interviews and the observation sessions for the study participants. All data obtained were recorded to be analyzed after getting the data from the Posttesting stage.

3.5.2. The intervention

After conducting the semi-structured interviews with the study participants and assessing their inquiry-based teaching performance using the observation checklist, the faculty member started the training of the university English instructors to fulfill the purposes of the training program. The treatment lasted for four weeks in 30 hour-face-to-face training sessions and online assignments and research (10 hours) with a total of 40 hours. For some occasional considerations to the participants of the study, some of them were unable to attend some sessions, but the faculty member was able to contact with them to explain anything they find difficult and provided online support throughout the treatment period.

3.5.3. The posttest

After administering the training program to the study participants, the researcher with the help of a faculty member at the faculty of education conducted

the interviews and the observation sessions for the study participants. All data obtained were recorded to be analyzed and compared with the pretest stage data. The following chapter introduces the qualitative and quantitative results obtained from these data analyses and provides answers to the research questions.

CHAPTER FOUR
RESULTS AND DISCUSSION

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter reports the qualitative and quantitative analyses of the data obtained from the pretest and posttest of the semi-structured interviews and the observation checklist of the university English language instructors' inquiry-based teaching performance. The chapter highlights the extent to which the training program based on the inquiry approach had an impact on the participants' inquiry-based teaching performance with regard to the inquiry-based instruction skills as identified by the list and verified by the jury members. The chapter concludes with a discussion of the obtained results in the light of the results of the previous studies and the qualitative data analysis of the semi-structured interviews.

4.1. Quantitative Results Related to the Inquiry-based teaching performance Components

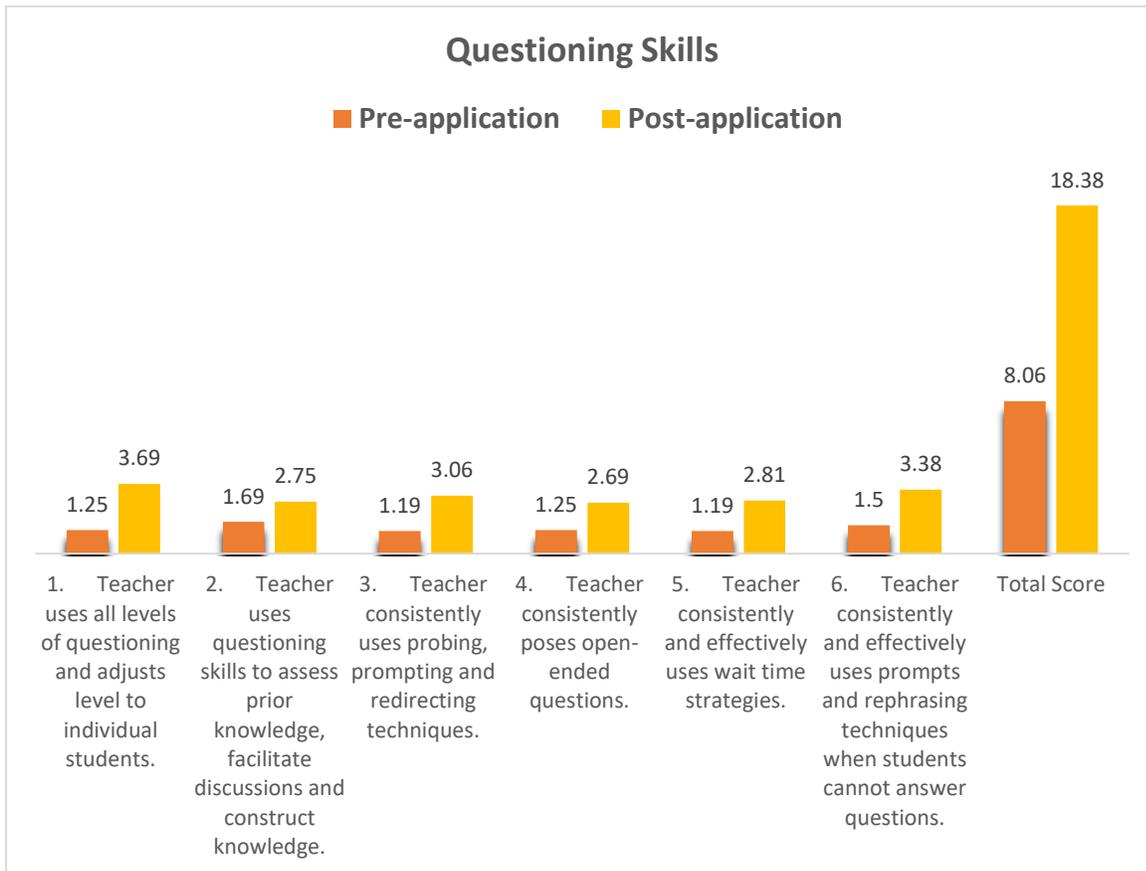
To answer the research question of the study stating, “What is the effect of the proposed program based on the inquiry approach on developing Al-Azhar University English instructors' inquiry-based teaching performance?”, the researcher applied the observation checklist to the study participants before and after the treatment (**See Appendix G for sample**). The results obtained for the observation processes were analyzed to test the study hypothesis stating “There is a statistically significant difference between the mean ranks of the pre-application and the mean ranks of the post-application of the observation checklist concerned with inquiry-based instruction skills among the study participants, favoring the post- application mean ranks”.

To test the first hypothesis of the study, the mean obtained from both the pre-application and post-application of the observation checklist were compared descriptively and inferentially. Mean scores, standard deviation and Wilcoxon test, which is a non-parametric test, were conducted to compare the university English instructors' inquiry-based teaching performance skills on the pre-application and the post application of the observation checklist.

4.1.1. Quantitative results related to questioning components

The first section of the observation checklist focused on the usage of questioning components by the participants. The following Figure shows descriptively the mean scores of the study participants on the items of this section as well as the total score of the section to show the amount of development on their inquiry-based teaching performance related to the questioning skills.

Figure 4.1: Raw means of the university English instructors' questioning skills



In the figure above, a significantly statistical difference can be observed between the mean ranks of the pre-application and the mean ranks of the post-application of the observation checklist concerned with questioning skills among the study participants, favoring the post- application mean ranks. The related sample non-parametric Wilcoxon test was used to find out if these differences are statistically significant as shown in Table 4.1 below.

Table 4.1:

Results of the related sample non-parametric Wilcoxon test on the university English instructors' questioning skills (df = 15)

Questioning	Mean Ranks	Sum of Ranks	Z	Sig.
<ul style="list-style-type: none"> Teacher uses all levels of questioning and adjusts level to individual students. 	8.50	136.00	3.602	0.000
<ul style="list-style-type: none"> Teacher uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge. 	5.50	55.00	2.850	0.004
<ul style="list-style-type: none"> Teacher consistently uses probing, prompting and redirecting techniques. 	8.50	136.00	3.426	0.000
<ul style="list-style-type: none"> Teacher consistently poses open-ended questions. 	8.00	120.00	3.502	0.000
<ul style="list-style-type: none"> Teacher consistently and effectively uses wait time strategies. 	8.50	136.00	3.598	0.000

Questioning	Mean Ranks	Sum of Ranks	Z	Sig.
<ul style="list-style-type: none"> • Teacher consistently and effectively uses prompts and rephrasing techniques when students cannot answer questions. 	8.00	120.00	3.461	0.001
Total Score	8.50	136.00	3.524	0.000

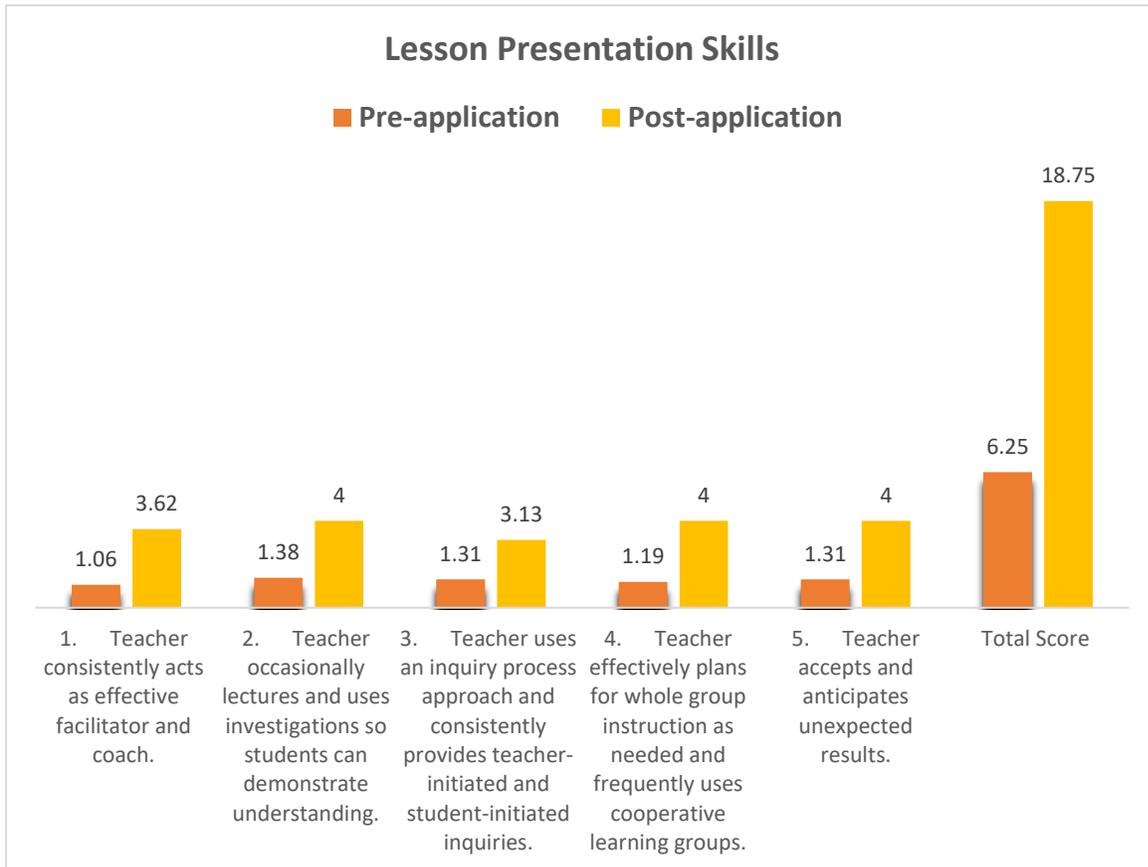
Table 4.1 present significant statistical difference between the pre- and post-test regarding the observation checklist concerning the questioning skills favoring the post-application mean ranks for all items as well as the total score of the questioning skills sections. Z scores showed that there were statistically significant differences between the mean ranks of the pre- and post-tests of the observation checklist concerning the questioning skills at 0.01 level as it ranged between 2.85 to 3.60 for the items whereas the Z score of the total score of the section counted 3.53, which are statistically significant at 0.01 level. This means that the training program has positively affected the development of the university English instructors' inquiry-based teaching performance regarding the questioning skills.

4.1.2. Quantitative results related to lesson presentation skills

The second section of the observation checklist focused in the lesson presentation skills of the university English instructors. The following Figure shows descriptively the mean scores of the study participants on the items of this section as

well as the total score of the section to show the amount of development on their inquiry-based teaching performance related to the lesson presentation skills.

Figure 4.2: Raw means of the university English instructors' lesson presentation skills



The figure above shows a statistically significant difference between the mean ranks of the pre- and post-administration of the checklist concerned with lesson presentation skills among the study participants, favoring the post-administration mean ranks. The related sample non-parametric Wilcoxon test was used to find out if these differences are statistically significant as shown in Table 4.2 below.

Table 4.2:

Results of the related sample non-parametric Wilcoxon test on the university English instructors' lesson presentation skills (df = 15)

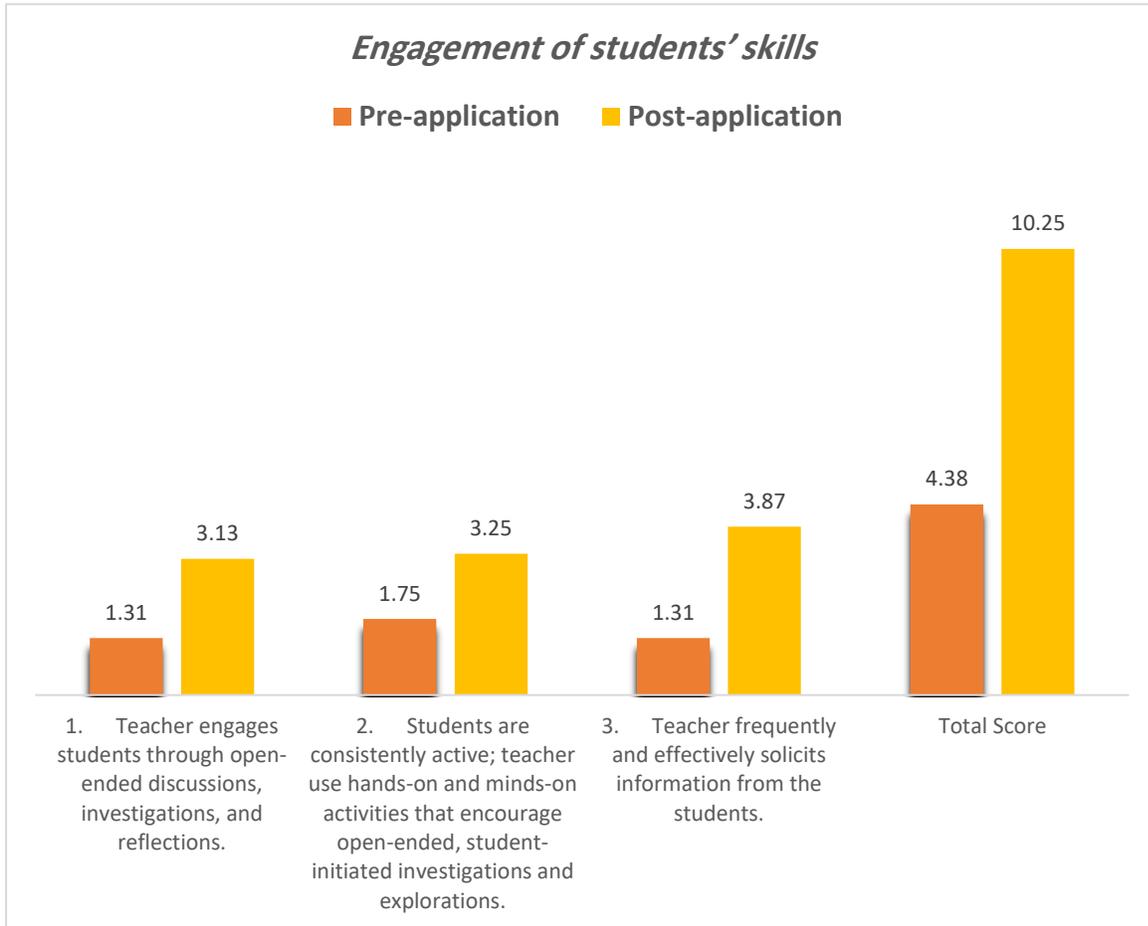
Presentation	Mean Ranks	Sum of Ranks	Z	Sig.
1. Teacher consistently acts as effective facilitator and coach.	8.50	136.00	3.630	0.000
2. Teacher occasionally lectures and uses investigations so students can demonstrate understanding.	8.50	136.00	3.640	0.000
3. Teacher uses an inquiry process approach and consistently provides teacher-initiated and student-initiated inquiries.	8.50	136.00	3.568	0.000
4. Teacher effectively plans for whole group instruction as needed and frequently uses cooperative learning groups.	8.50	136.00	3.755	0.000
5. Teacher accepts and anticipates unexpected results.	8.50	136.00	3.666	0.000
Total Score	8.50	136.00	3.553	0.000

Table 4.2 shows that there were statistically significant differences between the mean ranks of the pre-application and post-application of the observation checklist concerning the lesson presentation skills favoring the post-application mean ranks for all items as well as the total score of the lesson presentation skills sections. Z scores showed that there were statistically significant differences between the mean ranks of the pre-application and post-application of the observation checklist concerning the lesson presentation skills at 0.01 level as it ranged between 3.57 to 3.76 for the items whereas the Z score of the total score of the section counted 3.55, which are statistically significant at 0.01 level. This means that the training program has positively affected the development of the university English instructors' inquiry-based teaching performance with regard to the lesson presentation skills.

4.1.3. Quantitative results related engagement of students' skills

The third section of the observation checklist focused in the engagement of students' skills of the university English instructors. The following Figure shows descriptively the mean scores of the study participants on the items of this section as well as the total score of the section to show the amount of development on their inquiry-based teaching performance related to the engagement of students' skills.

Figure 4.3: Raw means of the university English instructors' engagement of students' skills



The figure above shows that there is an observable difference between the mean ranks of the pre-application and the mean ranks of the post-application of the observation checklist concerned with engagement of students' skills among the study participants, favoring the post-application mean ranks. The related sample non-parametric Wilcoxon test was used to find out if these differences are statistically significant as shown in Table 4.3 below.

Table 4.3:

Results of the related sample non-parametric Wilcoxon test on the university English instructors' engagement of students' skills (df = 15)

Engagement	Mean Ranks	Sum of Ranks	Z	Sig.
1. Teacher engages students through open-ended discussions, investigations, and reflections.	8.50	136.00	3.568	0.000
2. Students are consistently active; teacher use hands-on and minds-on activities that encourage open-ended, student-initiated investigations and explorations.	6.50	78.00	3.166	0.002
3. Teacher frequently and effectively solicits information from the students.	8.50	136.00	3.630	0.000
Total Score	8.50	136.00	3.536	0.000

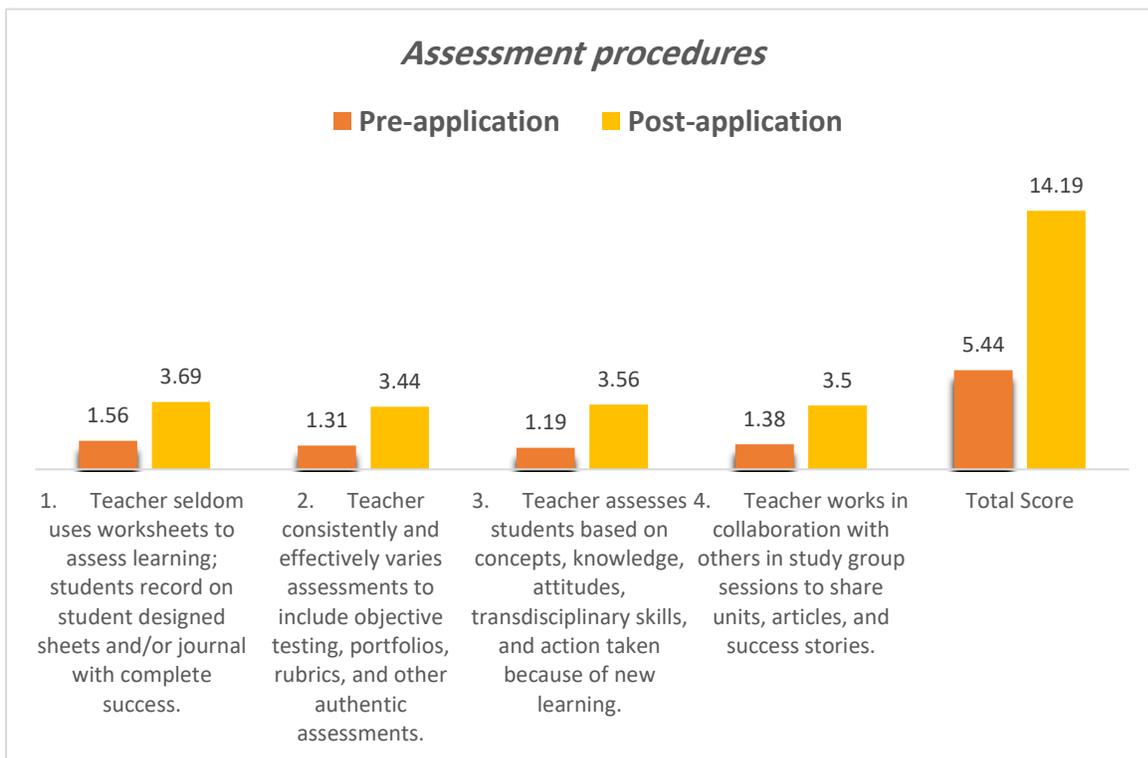
Table 4.3 shows that there were statistically significant differences between the mean ranks of the pre-application and post-application of the observation checklist concerning the engagement of students' skills favoring the post-application mean ranks for all items as well as the total score of the lesson presentation skills sections. Z scores showed that there were statistically significant differences between the mean ranks of the pre-application and post-application of the

observation checklist concerning the engagement of students' skills at 0.01 level as it ranged between 3.16 to 3.63 for the items whereas the Z score of the total score of the section counted 3.54, which are statistically significant at 0.01 level. This means that the training program has positively affected the development of the university English instructors' inquiry-based teaching performance with regard to the engagement of students' skills.

4.1.4. Quantitative results related to assessment

The fourth and last section of the observation checklist focused in the assessment procedures of the university English instructors. The following Figure shows descriptively the mean scores of the study participants on the items of this section as well as the total score of the section to show the amount of development on their inquiry-based teaching performance related to the assessment procedures.

Figure 4.4: Raw means of the university English instructors' assessment procedures



The figure above shows that there is an observable difference between the mean ranks of the pre-application and the mean ranks of the post-application of the observation checklist concerned with assessment procedures among the study participants, favoring the post- application mean ranks. The related sample non-parametric Wilcoxon test was used to find out if these differences are statistically significant as shown in Table 4.4 next page.

Table 4.4:

Results of the related sample non-parametric Wilcoxon test on the university English instructors' assessment procedures (df = 15)

Assessment	Mean Ranks	Sum of Ranks	Z	Sig.
1. Teacher seldom uses worksheets to assess learning; students record on student designed sheets and/or journal with complete success.	8.00	120.00	3.473	0.001
2. Teacher consistently and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.	8.50	136.00	3.568	0.000

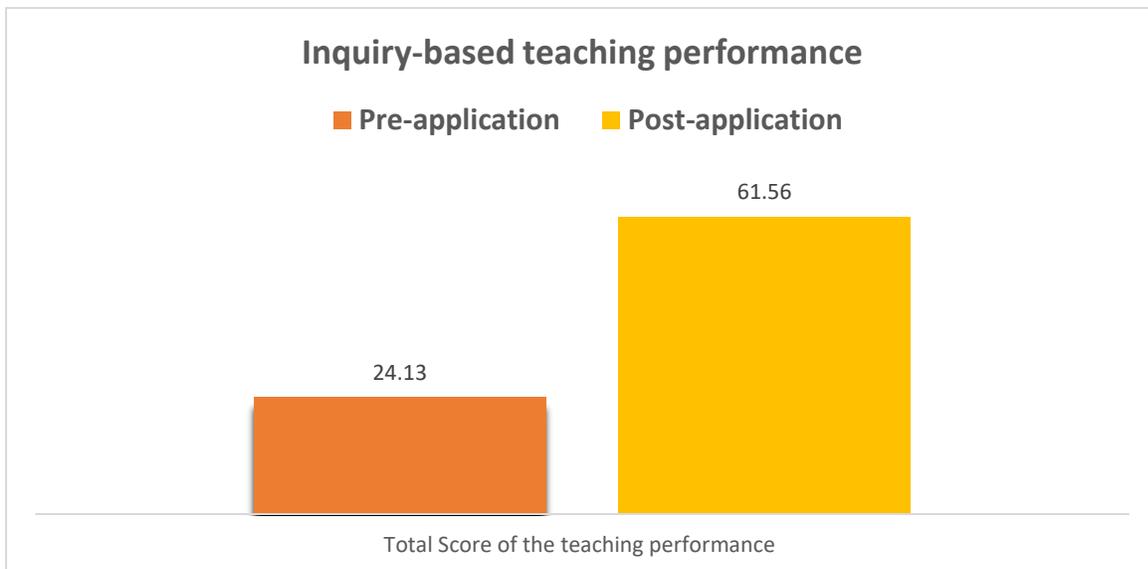
Assessment	Mean Ranks	Sum of Ranks	Z	Sig.
3. Teacher assesses students based on concepts, knowledge, attitudes, transdisciplinary skills, and action taken because of new learning.	8.50	136.00	3.601	0.000
4. Teacher works in collaboration with others in study group sessions to share units, articles, and success stories.	8.50	136.00	3.568	0.000
Total Score	8.50	136.00	3.526	0.000

Table 4.4 shows that there were statistically significant differences between the mean ranks of the pre-application and post-application of the observation checklist concerning the assessment procedures favoring the post-application mean ranks for all items as well as the total score of the lesson presentation skills sections. Z scores showed that there were statistically significant differences between the mean ranks of the pre-application and post-application of the observation checklist concerning the assessment procedures at 0.01 level as it ranged between 3.47 to 3.60 for the items whereas the Z score of the total score of the section counted 3.53, which are statistically significant at 0.01 level. This means that the training program has positively affected the development of the university English instructors' inquiry-based teaching performance with regard to the assessment procedures.

4.1.5. Quantitative results related to total score of the participants' inquiry-based teaching performance

As shown above, the sections of the observation checklist revealed that the training program had a positive effect on developing questioning skills, lesson presentation skills, engagement of students skills and assessment procedures related to the inquiry-based instruction among university English instructors. As such, the total mean scores and mean ranks were compared to test the first study hypothesis stating that “There is a statistically significant difference between the mean ranks of the pre-application and the mean ranks of the post-application of the observation checklist concerned with inquiry-based instruction skills among the study participants, favoring the post- application mean ranks”. The following Figure shows descriptively the mean scores of the study participants on the total score of the observation checklist to show the amount of development on their total inquiry-based teaching performance.

Figure 4.5: Raw means of the university English instructors' inquiry-based teaching performance



The figure above shows that there is a significant difference between the mean ranks of the pre-application and the mean ranks of the post-application of the total score of the observation checklist among the study participants, favoring the post-application mean ranks. The related sample non-parametric Wilcoxon test was used to find out if these differences are statistically significant as shown in Table 4.5 below.

Table 4.5:

Results of the related sample non-parametric Wilcoxon test on the university English instructors' inquiry-based teaching performance (df = 15)

<i>Inquiry-based teaching performance</i>	Mean Ranks	Sum of Ranks	Z	Sig.
Total Score	8.50	136.00	3.325	0.000

Table 4.5 shows that there was a statistically significant difference between the mean ranks of the pre-application and post-application of the whole observation checklist favoring the post-application mean ranks. Z scores showed that there was a statistically significant difference between the mean ranks of the pre-application and post-application of the observation checklist at 0.01 level as it counted 3.33 which is statistically significant at 0.01 level. This means that the training program has positively affected the development of the university English instructors' inquiry-based teaching performance.

4.2. Qualitative Results Related to the Inquiry-based teaching performance Component

To substantiate the results revealed by the observation checklist, semi-structured interviews were conducted with the study participants and analyzed. According to Mills and Gay (2019), interviewers have three basic choices for collecting their data: taking notes during the interview, writing notes after the interview, and recording the interview. The current interviews were collected by taking notes during the interviews to get insights on the use of the university English instructors' inquiry-based teaching performance regarding the inquiry-based instruction skills. The interviews were conducted before and after the treatment to support the data collected from the observation checklist ([See Appendix H for Samples](#)).

All warm-up questions revealed that the study participants are teaching English to university English majors at the faculty of education with different aims. Three of the participants are teaching English for Islamic purposes to many of the faculty students. The other were also teaching English but for educational purposes, for example on how to teach English and how to develop students' language skills as well as translation through utilization of recent teaching methods and strategies. They revealed that they use English as a medium of speaking in the class, although they can teach in Arabic, to develop their students' abilities to speak in English while teaching.

4.2.1. Pre-application of the semi-structured interviews

In the pre-application of the interviews all participants showed that they had not been trained on how to use the inquiry-approach, except one of them who highlighted that he has read about the use of questioning skills while teaching

English. They revealed that inquiry for them is “*a means of questioning*”, “*posing questions*”, “*asking students to investigate information*”, and “*to investigate*”. However, when they were asked about the form of the inquiry-based instruction training, they revealed that they would like to be trained on how to “*fully engage students*”, “*how to ask effective questions*”, “*how to convert the session into a discussion board*”, and “*how could I develop questions based on the content I am going to teach*”.

Reflecting on their actual practices of the inquiry-based instruction in the classroom, they revealed that they only use questions to “*raise the students’ awareness of the topic to be discussed*”, “*to get informed if they understood*”, “*to evaluate their understanding at the end of the sessions*”, and “*to wake them up if they felt bored during the sessions*”. They did not mention any other skills of the inquiry approach and confined their responses to the questioning and evaluation skills with limited range of the time allowed to such skills in the teaching sessions.

Regarding the students’ engagement in the inquiry-based processes, they were asked if they give their students opportunities to generate their own questions to investigate. Most of them revealed that there is no time in the practical sessions to allow such practices, especially with the large number of students in the classroom. Only three of them highlighted that they “*allow students to pose some questions on the material they were taught and form a questions bank for the session material*”, or “*they redirect students’ questions during the sessions to other students and he himself generate other questions to be answered by students when they go home and study the content materials*”.

These findings support the data obtained by the pre-application of the observation checklist of their inquiry-based teaching performance as they reveal low

performance of the skills related to the inquiry-based instruction. They also revealed the need for conducting the training program on the use of the inquiry-based approach among university English instructors. They revealed their willingness to participate in the training and their available times were recorded to be arranged for the training program.

4.2.2. Post-application of the semi-structured interviews

Directly after the observation sessions with the participants, they were interviewed again to substantiate the data obtained from the observation checklist. All participants revealed their appreciation to the training they attended, the new knowledge they gleaned, and skills they could develop during and after the training.

Regarding the questioning skills, they revealed that they can now generate questions for their content materials using the questioning strategies they applied during the sessions according to the students' levels. They also revealed that they could develop individual and group questions using different techniques. They also reported their ability to actively engage students through the five steps of the 5Es model and assess them using the assessment procedures of the inquiry approach. All of the study participants revealed that the online tasks they received during the training have changed their minds regarding the inquiry approach and were able to develop their assessment to be guided by online investigation and the use of videos and online social media websites.

4.3. Discussion

The current study aimed mainly to examine the effect of the inquiry approach-based program on developing Al-Azhar University English instructors' inquiry-

based teaching performance. To fulfill this end, three questions were raised from the main question.

To answer the first question, stating that “What are the inquiry-based teaching performance skills needed for Al-Azhar University English instructors?”, a list of inquiry-based teaching performance skills was developed for reviewing the literature and verified by the jury members. The results of the validation process revealed 18 inquiry-based teaching performance skills in main four sections, namely, questioning skills, lesson presentation skills, engagement of students and assessment procedures.

This list was essential in developing the observation checklist of inquiry-based teaching performance based in the inquiry approach in addition to the development of the training program that were used to answer the main research question, stating that “What is the effect of the proposed program based on the inquiry approach on developing Al-Azhar University English instructors’ inquiry-based teaching performance?”.

To answer the second research question stating “What are the characteristics of a training program based on the inquiry approach to develop Al-Azhar University English instructors’ inquiry-based teaching performance?”, the literature was reviewed in terms of the theoretical bases of the inquiry-based instruction and the role of both teachers and students as well as the different models for incorporating the inquiry-based instruction among the study participants.

This training program was designed to enhance university English language instructors’ inquiry-based teaching performance through using the inquiry approach. This program is designed in two main delivery modes, namely, face-to-face training sessions (totaling 30 hours) and online assignments and research (10 hours) with a

total of 40 hours. The 3-hour training session was designed based on the inquiry approach principles, and the assessment criteria are included in a rubric that is to be used to assess English language instructors' inquiry-based teaching performance before, during and after the training. The training manual contains the activities, worksheets and the online assignments to be done during the course of the training program. The manual is divided into 10 modules as follows:

- The inquiry approach: an introduction
- Integrating inquiry into the classroom.
- Levels of questioning
- Probing, prompting and redirecting techniques.
- Questioning strategies.
- Individual and group questioning techniques.
- Students engagement through questions.
- Inquiry-based assessment.
- Inquiry-based activity design.
- Web tools and apps that support inquiry-based learning.

To answer the main question of the study stating, “What is the effect of the proposed program based on the inquiry approach on developing Al-Azhar University English instructors' inquiry-based teaching performance?”, two hypotheses were posed.

The results of the first hypothesis and data analysis of the results of the observation checklist revealed a statistically significant difference between the mean scores of pre-application of the observation checklist and the mean scores of post-application of the observation checklist concerned with inquiry-based instruction skills among the study participants, favoring the post- application mean scores”. As such, the fist hypothesis was accepted, and the results of its data analysis revealed

that the training program had developed university English instructors' inquiry-based teaching performance with regard to the inquiry-based instruction skills as reported by the list and the observation checklist.

The results of the second hypothesis and data analysis of the results of the semi-structured interviews revealed that the study participants reported different comments on their use of the inquiry-based instruction skills after they received the training program as noted in the semi-structured interviews before and after the treatment. They showed that their inquiry-based teaching performance was positively affected by the training program and supported the results of the observation checklist.

These results supported the results of the previous study of Oliver, McConney, and Woods-McConney (2019) that showed the professional development training of university instructors could develop their use of questioning strategies and assessment techniques based on the inquiry-based instruction principles. Although the studies related the context of the university were too rare, the results of the data analysis of both the observation checklist and the semi structured interviews revealed that the professional development training on the inquiry approach help develop university English instructors' inquiry-based teaching performance in all the targeted dimensions of the study.

The results of the study revealed that when the instructors began their training program and engaged in inquiry-based activities and strategies, they became more detriment, learning with the students changed the discourse and dynamics of their classroom. It helped foster an environment of excitement and engagement. It helped to change the way they looked at themselves as instructors.

Shor and Freire (1987) stated, "Liberatory education is fundamentally a situation where the teacher and the students both have to be learners, both have to be cognitive subjects, in spite of being different". My inquiry-based research influenced the instructors' teaching processes. By walking into the unknown, they were encouraged to do the same. By conducting the treatment, they share ways of gathering data that went beyond text-based teaching. They created questions and conducted online investigations. They saw their thoughts validated or challenged. They all pushed to find answers. This level of engagement can be tied to their students

This helped to foster the intrinsic motivation that instructors witnessed in the students. The more engaged the students became, the more time teachers had to observe them and to assess their learning. They could design mini-lessons based on principles of the inquiry approach. They were able to talk one-on-one with students, answering their questions and posing questions that would guide them in their research.

In short, this approach freed instructors to teach and to reflect. It helped to change the way they saw themselves as university instructors and how the students saw themselves. The students, who had become accustomed to passive learning, became active learners. The opportunity to explore their cultures and communities helped them to see themselves, each other, and community members as authorities. Inquiry-based instruction has helped university English instructors to let go, to invite student input in curricular decisions. Although seemingly small, the change has been revolutionary.

The next chapter is dedicated to the summary of the study. Conclusions are reported. Recommendation as well as suggestions to extend this study in future research are also highlighted.

CHAPTER FIVE
CONCLUSIONS AND
RECOMMENDATIONS

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

This chapter briefly reviews the focus and contribution of the study including a synthesis of the main findings. It sketches the questions, hypotheses, and main results of the study. It then presents conclusions and recommendations. Future research directions arising from this work are highlighted.

5.1. Summary of the Study

The purpose of this study was to develop university English instructors' inquiry-based teaching performance through the use of the inquiry approach. As such, the study investigated the effect of a proposed program based on the inquiry approach on developing Al-Azhar University English instructors' inquiry-based teaching performance.

5.1.1. Statement of the Problem

Some English language instructors at the Faculty of Education, Al-Azhar University did not receive enough teacher training to develop their inquiry-based teaching performance in terms of inquiry design and assessment. Hence, the current study proposes to employ the inquiry approach for developing university English language instructors' inquiry-based teaching performance. It attempted to provide an answer for the following main question:

What is the effect of using the inquiry approach on developing the Faculty of Education, Al-Azhar University English language instructors' inquiry-based teaching performance?

The following sub-questions are answered:

- 1- What inquiry-based teaching performance components are necessary for the Faculty of Education, Al-Azhar University English language instructors?
- 2- The post-training comments in the responses to the semi-structured interviews may be in favor of the inquiry-based approach and show participants' satisfaction with the program.

5.1.2. Hypotheses of the Study

The current study postulated these hypotheses:

1. The difference between the mean scores of pre-applications of the observation checklist and the mean scores of post-applications of the observation checklist concerned with inquiry-based instruction skills among the study participants is statistically different in favor of the post- application mean scores.
2. The study participants reported different comments on their use of the inquiry-based instruction skills after they received the training program as noted in the semi-structured interviews before and after the treatment.

5.1.3. Method of the Study

This study employed a quasi-experimental design, Pretest-Posttest Control Group design. Participants were interviewed before and after the treatment as well as they were observed using the observation checklist before and after receiving the training program based on the inquiry approach. Observation of their inquiry-based teaching performance was undertaken by a university lecturer who was able to get in touch with the study participants according to the regularities of the Faculty of Education

(Appendix A). The treatment also was facilitated by him as it was officially difficult for the researcher to train them as declared by the administration of the Faculty of Education. However, the researcher was able to participate in some sessions and some observation sessions of their inquiry-based teaching performance to make sure that the main objectives of the study were accomplished. Data were collected and statistically analyzed to be discussed later.

5.1.4. Major Findings of the Study

The study resulted in the following:

1. The difference between the mean scores of pre-application of the observation checklist and the mean scores of post-application of the observation checklist concerned with inquiry-based instruction skills among the study participants, was statistically significant favoring the post- application mean scores.
2. The study participants reported positive comments on their use of the inquiry-based instruction skills after they received the training program as noted in the semi-structured interviews after the treatment.
3. The study participants' inquiry-based teaching performance was positively developed through their use of the inquiry approach while teaching in the actual classes as revealed by the observation processes and their comments in the semi-structured interviews.

5.2. Conclusions

Based on the results reached, the following conclusions are drawn:

- The inquiry approach had a great effect on university English instructors' inquiry-based teaching performance in terms of questioning skills, lesson presentation, engagement of students and assessment procedures.
- Qualitative analysis of the semi-structured interviews supported the quantitative results of the observation checklist that revealed that the use of the inquiry approach has developed university English instructors' inquiry-based teaching performance.
- The participants in the group enjoyed the highest motivation in performing inquiry-based activities during the session period. Therefore, it may be concluded that involving instructors and students in such activities can still be introduced as one of the most popular recourses and a useful teaching tool in the foreign language teaching and learning.
- Based on the results of the study, the design of activities based on the 5Es model help teachers and students to get more engagement in the course of English learning.
- Engaging participants in inquiry-based activities help to foster the intrinsic motivation that instructors need in the students. The more engaged the students became, the more time teachers had to observe them and to assess their learning.
- The results if the study also revealed that the more activities you engage your students in the more outcomes you will get from them.
- Online inquiry activities help instructors open new avenues in their teaching practices and helped them to construct activities based on such investigations.

5.3. Recommendations

The current study proposes the following pedagogical applications: ·

- It is highly necessary for university English instructors to be trained on how to use the inquiry approach to develop their inquiry-based teaching performance, especially those instructors of English who did not receive educational training such as the graduates of the faculties of Al-Asun, Arts and languages and translation.
- Continuous professional development of university English instructors is highly recommended for fostering their inquiry-based teaching performance and strategies, especially on skills needed for teaching online.
- Due to the delimitations of this study, it is recommended to replicate the study with university English instructors outside the faculty of education to find out if there are differences concerning the major variable.
- The training program designed in this study is recommended to be used in developing the inquiry-based teaching performance of English teachers at the pre-university stage with focusing on activities related to the context of their students.
- The tools developed in this study might be used by other researchers, instructors, and university administration to assess the inquiry-based teaching performance of the university staff related to the inquiry-based approach.

5.4. Suggestions for further research

Based on the results and conclusions of the current study, the following suggestions are proposed:

- The effectiveness of the inquiry-based instruction on developing the inquiry-based teaching performance of EFL teachers and instructors of English for specific purposes.
- The effectiveness of a proposed program based on the inquiry 5Es model in developing other EFL majors teaching skills.
- The relationship between university English instructors' major and the development of their inquiry-based teaching performance related to the inquiry approach.
- The role of the inquiry-based instruction adopted by university English instructors in developing their students' conversation skills.
- Developing dialogic teaching practices of the university English instructors through using the inquiry approach.

REFERENCES

References

- Aditomo, A., Goodyear, P., Bliuc, A., & Ellis, R. (2011). Inquiry-based learning in higher education: Principal forms, educational objectives, and disciplinary variations. *Studies in Higher Education - STUD HIGH EDUC*, 38, 1–20. [10.1080/03075079.2011.616584](https://doi.org/10.1080/03075079.2011.616584).
- Ahmad, N., Shaheen, N., & Gohar, S. (2018). 5E Instructional Model: Enhancing Students Academic Achievement in the Subject of General Science at Primary Level. *Sir Syed Journal of Education & Social Research (SJESR)*.1(1). 91-100.
- Alorabi, O., & Abdullah, S. (2019). The Effect of the 5Es Model on EFL Female Students' Motivation and Achievement at Taif University. *Arab World English Journal (April 2019) Theses ID*, 231.
- Amaral, O. M., Garrison, L., & Klentschy, M. (2002). Helping English learners increase achievement through inquiry-based science instruction. *Bilingual Research Journal*, 26(2), 213–240. <http://dx.doi.org/10.1080/15235882.2002.10668709>
- Ancess, J. (2000). The reciprocal influence of teacher learning, teaching practice, school restructuring and student learning outcomes. *Teachers College Record*, 102, 590–619.
- Arauz, P. E. (2013). Inquiry-based learning in an English as a foreign language class: A proposal. *Revista De Linguas Modernas*, (19), 479-485.
- Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education*, 27(1), 10–20. <http://doi.org/10.1016/j.tate.2010.08.007>
- Blessinger, P., & Carfora, J. M. (2015). *Inquiry-based learning for the science, technology, engineering, and math (STEM) programs: A conceptual and practical resource for educators*. Emerald.

- Boddy, N., Watson, K., & Aubusson, P. (2003). A trial of the five Es: A referent model for constructivist teaching and learning. *Research in Science Education*, 33(1), 27-42.
- Bruner, J. S. (1961). The act of discovery. *Harvard educational review*.
- Bunterm, T., Lee, K., Ng Lan Kong, J., Srikoon, S., Vangpoomyai, P., Rattanaavongsa, J., & Rachahoon, G. (2014). Do different levels of inquiry lead to different learning outcomes? A comparison between guided and structured inquiry. *International Journal of Science Education*, 36(12), 1937-1959.
- Burns, M., & Lawrie, J. (2015). Where it's needed most: Quality professional development for all teachers. Retrieved from Inter-Agency Network for Education in Emergencies (INEE) website: <http://www.ineesite.org/en/>
- Bybee, R. (2002). Enhancing Science Teaching and Students Learning: A BSCS Perspective. Paper Presented at the ACER Research Conference, Canberra, ACT.
- Bybee, R. W. (1997). A strategy for standards-based reform of science and mathematics education. *Unpublished manuscript*.
- Bybee, R. W., Carlson-Powell, J., & Trowbridge, L. W. (2014). *Teaching secondary school science: Strategies for developing scientific literacy*. Pearson Education Limited.
- Bybee, R., & McCrae, B. (2006). (2011)," Scientific literacy and student attitudes.
- Bybee, R., McCrae, B., & Laurie, R. (2009). PISA 2006: An assessment of scientific literacy. *Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching*, 46(8), 865-883.
- Bybee, W. R., Joseph, A. T., April, G., Pamela, V. S., Janet C. P., Anne W. & Nancy, L. (2006). "The BSCS 5E Instructional Model: Origins, Effectiveness, and Applications." Colorado Springs, CO: BSCS.

- Byers, A., & Fitzgerald, M. A. (2002). Networking for leadership, inquiry, and systemic thinking: A new approach to inquiry-based learning. *Journal of Science Education and Technology*, 11(1), 81-91.
- Capps, D. K., & Crawford, B. A. (2013). Inquiry-based instruction and teaching about nature of science: Are they happening?. *Journal of Science Teacher Education*, 24(3), 497-526.
- Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education*, 47(1), 1–32. <http://doi.org/10.1007/s11162-005-8150-9>
- Carr, J., & Pauwels, A. (2005). *Boys and foreign language learning: Real boys don't do languages*. Springer.
- The Council on Higher Education. (2014). *Distance higher education programmes in a digital age: Programme accreditation criteria*. [https://www.saide.org.za/documents/CHE -
Distance Higher Education.pdf](https://www.saide.org.za/documents/CHE_-_Distance_Higher_Education.pdf)
- Cole, J. B. (2014). *Professional Development in Curriculum Adaptation Related to Inquiry-based Science Instruction for Elementary School Teachers of Students with Learning Disabilities* (Doctoral dissertation). Available online.
- Cole, J. E., & Wasburn-Moses, L. H. (2010). Going beyond “The Math Wars” A Special Educator's Guide to Understanding and Assisting with Inquiry-Based Teaching in Mathematics. *Teaching Exceptional Children*, 42(4), 14-20.
- Colley, K.E. (2006) Understanding ecology content knowledge and acquiring science process skills through project-based science instruction. *Sci. Activit.*, 43,26-33.

- Collins, A., & Halverson, R. (2010). The second educational revolution: Rethinking education in the age of technology. *Journal of Computer Assisted Learning*, 26(1), 18–27. <http://doi.org/10.1111/j.1365-2729.2009.00339.x>
- Crawford, K. (2008). Continuing professional development in higher education: The academic perspective in international. *Journal for Academic Development*, 13(2), 141-146.
- Cuevas, P., Lee, O., Hart, J. & Deaktor, R. (2005). Improving science inquiry with elementary students of diverse backgrounds.. *Research in Science Teaching*, 42, 337-357.
- Dall'Alba, G., & Sandberg, J. (2006). Unveiling professional development: A critical review of stage models. *Review of Educational Research*, 76(3), 383-412.
- Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). Professional learning in the learning profession: A status report on teacher development in the United States and abroad. Retrieved from National Staff Development Council website: <http://learningforward.org/>
- DeMonte, J. (2013). High-quality professional development for teachers. Retrieved from Center for American Progress website: <https://www.americanprogress.org/>
- Desimone, L. M. (2011). A primer on effective professional development. *Phi Delta Kappan*, 92(6), 68–71. Retrieved from <http://pdk.sagepub.com/content/92/6/68.short>
- Deskins, L. (2012). Inquiry studies: Needed skills. *School library monthly*, 28(5), 20-23.
- Dogru-Atay, P., & Tekkaya, C. (2008). Promoting students' learning in genetics with the learning cycle. *The Journal of Experimental Education*, 76(3), 259-280.

- Donnelly, D. F., McGarr, O., & O'Reilly, J. (2014). 'Just Be Quiet and Listen to Exactly What He's Saying': Conceptualising power relations in inquiry-oriented classrooms. *International Journal of Science Education*, 36(12), 2029-2054.
- Duran, L. B., & Duran, E. (2004). The 5E Instructional Model: A Learning Cycle Approach for Inquiry-Based Science Teaching. *Science Education Review*, 3(2), 49-58.
- Dutro, E., Fisk, M. C., Koch, R., Roop, L. J., & Wixson, K. (2002) When state policies meet local district contexts: Standards-based professional development as a means to individual agency and collective ownership. *Teachers College Record*. 104(4), 787-811.
- Ekpoh, V. I., Oswald, A., & Victoria, I. (2013) Staff development programmes and secondary school teachers' job performance in Uyo Metropolis, Nigeria, *Journal of Education & Practice*, 14(12), 2017–222.
- Evans, L. D. (2004). Academic achievement of students in foster care: Impeded or improved?. *Psychology in the Schools*, 41(5), 527-535.
- Exline, J. (2004). Concept to classroom. Inquiry-based learning (atas talian) <http://www.thirteen.org/edonline/concept2class/inquiry/credit>
- Ezugwu, E. N. (2019, April). Comparative analysis of 5es constructivist instructional and lecture methods on ss1 students' achievement in biology. in *ice 2019 conference proceedings* (p. 10).
- Faculty of Social Sciences in the University of Victoria (2019). *faculty evaluation policy and procedures*. <https://www.uvic.ca/socialsciences/assets/docs/policies/fep-february-6-2019.pdf>

- Furtak, E. M., Seidel, T., Iverson, H., & Briggs, D. C. (2012). Experimental and quasi-experimental studies of inquiry-based science teaching: A meta-analysis. *Review of educational research*, 82(3), 300-329.
- Galileo Educational Network. (2015) What is inquiry? Retrieved from <https://galileo.org/blog/what-is-inquiry/>
- Gay, G. (2010). *Culturally responsive teaching: Theory, research, and practice* (2nd ed.). New York, NY: Teachers College Press
- Genesee, F. (1994). *Integrating language and content: Lessons from immersion*. Center for Research on Education, Diversity and Excellence. <http://escholarship.org/uc/item/61c8k7kh>.
- Gonzalez, J. J. (2013). My Journey With Inquiry-Based Learning. *Journal on Excellence in College Teaching*, 24(2).
- Gormally, C., Brickman, P., Hallar, B., & Armstrong, N. (2011). Lessons Learned About Implementing an Inquiry-Based Curriculum in a College Biology Laboratory Classroom. *Journal of College Science Teaching*, 40(3).
- Gulamhussein, A. (2013). Teaching the teachers: Effective professional development in an era of high stakes accountability. Retrieved from Center for Public Education website: <http://www.centerforpubliceducation.org/teachingtheteachers>
- Guskey, T. R. (2003) Analyzing lists of the characteristics of effective professional development to promote visionary leadership. *NASP Bulletin*. 87(637), 38-54.
- Harlen, W. (2013). *Assessment & Inquiry-Based Science Education: Issues in Policy and Practice*, Published by the Global Network of Science Academies (IAP) Science Education Programme (SEP).
- Haskins, M., & Shaffer, G. (2011). Assessing professional development program impact. *Strategic HR Review*, 10(1), 15-20.

- Healey, M., Kneale, P., Bradbeer, J. with other members of the INLT Learning Styles and Concepts Group (2005) Learning styles among geography undergraduates: An international comparison, *Area*, 36(1) (forthcoming).
- Hindle, B. P. (1993) The 'Project': putting student-controlled, small-group work and transferable skills at the core of a geography course, *Journal of Geography in Higher Education*, 17(1): 11-20.
- Hulstijn, J. H. (2005). Theoretical and empirical issues in the study of implicit and explicit second-language learning. *Studies in Second Language Acquisition*, 27(2), 129–140. doi: 10.1017/S0272263105050082
- İşcan, Ö. F., Ersarı, G., & Naktiyok, A. (2014). Effect of leadership style on perceived organizational performance and innovation: The role of transformational leadership beyond the impact of transactional leadership—An application among Turkish SME's. *Procedia-Social and Behavioral Sciences*, 150(1), 881-889.
- Jahangir, S, Saheen, N., & Kazmi, S. (2012). In service training: A contributory factor influencing teachers' performance. *International Journal of Academic Research in Progressive Education and Development*. 1. 31–38.
- Jenkins, A., & Breen, R. (2003). *Re-shaping teaching in higher education: Linking teaching with research*. Routledge.
- Jenkins, A., Healey, M. and Zetter, R. (2007). *Linking Teaching and Research in Disciplines and Departments*. York: The Higher Education Academy.
- Jenkins, A., Healey, M., & Zetter, R. (2007). Linking teaching and research in departments. *The Higher Education Academy*.
https://www.researchgate.net/publication/237238177_Linking_Teaching_and_Research_in_Departments

- Jobrack, B. (2010). The 5E instructional model. In *A White Paper presented at Science, Technology, Engineering and Maths (STEM) Conference*.
- Jõgi, L., Karu, K., & Krabi, K. (2015). Rethinking teaching and teaching practice at university in a lifelong learning context. *International Review of Education*, 61(1), 61–77. <http://doi.org/10.1007/s11159-015-9467-z>
- Johnson, L., & Morris, P. (2010). Towards a framework for critical citizenship education. *The Curriculum Journal*, 21(1), 77-96.
- Justice, C., Rice, J., Warry, W., Inglis, S., Miller, S. & Ammon, S. (2007). Inquiry in higher education: Reflections and directions on course design and teaching methods. *Innovative Higher Education*. 31. 201-214.
10.1007/s10755-006-9021-9
- Justice, C., Warry, W., Cuneo, C., Inglis, S., Miller, S., Rice, J., and Sammon, S. (2002). A grammar for inquiry: Linking goals and methods in a collaboratively taught social sciences inquiry course. *The Alan Blizzard Award Paper: The Award Winning Papers*, Windsor: Special Publication of the Society for Teaching and Learning in Higher Education and McGraw-Hill Ryerson.
- Kahn, P., & O'Rourke, K. (2005). Understanding enquiry-based learning. In T. Barret, I. Mac Labhrainn, & H. Fallon (Eds.), *Handbook of enquiry & problem-based learning*. CELT.
- Kelly, G. J. (2014). Inquiry teaching and learning: Philosophical considerations. In *International handbook of research in history, philosophy and science teaching* (pp. 1363-1380). Springer, Dordrecht.
- Ketpichainarong, W., Ruenwongsa, P., & Panijpan, B. (2009). Enhancing Student Conceptualization of Enzyme Activity Using a Cellulose Digesting Enzyme: An Inquiry-Based Approach. *International Journal of Learning*, 16(2).

- Kinkead, J. (ed.) (2003) *Valuing and Supporting Undergraduate Research: New Directions for Teaching and Learning* 93, San Francisco: Jossey Bass.
- Kitson, A. L., Rycroft-Malone, J., Harvey, G., McCormack, B., Seers, K., & Titchen, A. (2008). Evaluating the successful implementation of evidence into practice using the PARIHS framework: theoretical and practical challenges. *Implementation science*, 3(1), 1.
- Knapp, C. (2007). Experiences with inquiry learning, Proceedings of a Symposium at McMaster University, Canada, October 1-3, 2004.
- Knapp, M. (2003). Professional development as a policy pathway. *Review of Research in Education*, 27, 109–157.
- Kolb D. A. (1984) *Experiential Learning: Experience as a Source of Learning and Development*. New York: Prentice Hall.
- Kuhlthau, C. C. (2010). Guided inquiry: School libraries in the 21st century. *School Libraries Worldwide*, 16(1), 1–12.
<http://wp.comminfo.rutgers.edu/ckuhlthau2/wpcontent/uploads/sites/185/2016/02/GI-School-Librarians-in-the-21-Century.pdf>
- Kuhlthau, C. C., Caspari, A. K., & Maniotes, L. K. (2007). *Guided inquiry: Learning in the 21st century*. Libraries Unlimited.
- Laursen, S. L., Hassi, M. L., Kogan, M., & Weston, T. J. (2014). Benefits for women and men of inquiry-based learning in college mathematics: A multi-institution study. *Journal for Research in Mathematics Education*, 45(4), 406-418.
- Lee, A., Poch, R., Shaw, M., & Williams, R. D. (2012). Engaging diversity in undergraduate classrooms: A pedagogy for developing intercultural competence (ASHE Higher Education Report). Retrieved from The Association for the Study of Higher Education website:
<http://www.ashe.ws/?page=176>

- Lee, V. S. (2004). *Teaching and learning through inquiry: A guidebook for institutions and instructors*. Stylus Pub.
- Lee, V. S., Greene, D.B., Odom, J., Schechter, E., and Slatta, R.W. (2004). What is inquiry-guided learning? In V. S. Lee (Ed.) *Teaching and Learning Through Inquiry: A Guidebook for Institutions and Instructors*. Sterling, Virginia: Stylus, pp.3-16.
- Levy, P., Aiyegbayo, O., & Little, S. (2009). Designing for inquiry-based learning with the learning activity management system. *Journal of Computer Assisted Learning*, 25(3), 238–251. <https://doi.org/10.1111/j.1365-2729.2008.00309.x>.
- Malone, D. M. (2008). Inquiry-based early childhood teacher preparation: The personal learning plan method. *Early Childhood Education Journal*, 35(6), 531–542.
- Marshall, J. C., & Horton, R. M. (2011). The relationship of teacher-facilitated, inquiry-based instruction to student higher-order thinking. *School Science and Mathematics*, 111(3), 93-101.
- Matsubayaski, M., Drake, E., Shaw, A., & DeZure, D. (2009). Needs assessment survey results: Faculty. Retrieved from Office of Faculty and Organizational Development (F&OD) website: <http://fod.msu.edu/>
- McDonald, S., & Songer, N. B. (2008). Enacting classroom inquiry: Theorizing teachers' conceptions of science teaching. *Science Education*, 92(6), 973-993.
- McLean, M., Cilliers, F., & Van Wyk, J. M. (2008). Faculty development: Yesterday, today and tomorrow. *Medical Teacher*, 30(6), 555–584.
- McMaster University. (2018). 2018-19 courses. Retrieved from <https://artsci.mcmaster.ca/courses-faculty/2018-19-courses/>

- Meyer, J. P., Becker, T. E., & Vandenberghe, C. (2004). Employee commitment and motivation: a conceptual analysis and integrative model. *Journal of applied psychology, 89*(6), 991.
- Mills, G. E., & Gay, L. R. (2019). *Educational research: Competencies for analysis and applications*. Pearson. One Lake Street, Upper Saddle River, New Jersey 07458.
- Miranda, R. J., & Hermann, R. S. (2012). An integrated instructional approach to facilitate inquiry in the classroom. *Science Scope, 35*(8), 66.
- Mizell, H. (2010). Why professional development matters. Oxford, OH: Learning Forward. Retrieved from <http://learningforward.org/>
- Moseley, C., Reinke, K., & Bookout, V. (2002). The effect of teaching outdoor environmental education on preservice teachers' attitudes toward self-efficacy and outcome expectancy. *The Journal of Environmental Education, 34*(1), 9-15.
- O'Brien, T. (2010). Brain-Powered Science. Teaching and Learning with Discrepant Events. Arlington, VA: NSTA Press.
- OECD (1999). *Measuring student knowledge and skills: A new framework for assessment*, OECD Publishing, Paris.
- Oliver, M., Mcconney, A., & Woods-Mcconney, A. (2019). The efficacy of inquiry-based instruction in science: A comparative analysis of six countries using PISA 2015. *Research in Science Education*. doi:10.1007/s11165-019-09901-0
- Özmen, H., Demircioğlu, H., & Demircioğlu, G. (2009). The effects of conceptual change texts accompanied with animations on overcoming 11th grade students' alternative conceptions of chemical bonding. *Computers & Education, 52*(3), 681-695.

- Parr, G. B. (2007). *Inquiry-based professional learning of English-literature teachers: Negotiating dialogic potential* (Doctoral dissertation). Available online
- Pilitsis, V., & Duncan, R. G. (2012). Changes in belief orientations of preservice teachers and their relation to inquiry activities. *Journal of Science Teacher Education, 23*(8), 909-936.
- Piyayodilokchai, H., Panjaburee, P., Laosinchai, P., Ketpichainarong, W., & Ruenwongsa, P. (2013). A 5E learning cycle approach–based, multimedia-supplemented instructional unit for structured query language. *Journal of Educational Technology & Society, 16*(4), 146-159.
- Prince, M. J., & Felder, R. M. (2006). Inductive teaching and learning methods: Definitions, comparisons, and research bases. *Journal of engineering education, 95*(2), 123 –138.
- Richardson, G. M., & Liang, L. L. (2008). The use of inquiry in the development of preservice teacher efficacy in mathematics and science. *Journal of Elementary Science Education, 20*(1), 1-16.
- Richardson, V., & Placier, P. (2001). Teacher change. In V. Richardson (Ed.), *Handbook of research on teaching* (4th ed.). Washington, DC: American Educational Research Association.
- Robertson, J., & Bond, C. (2005). The research/teaching relation: A view from the edge. *Higher Education, 50*(3), 509-535.
- Sadeh, I., & Zion, M. (2009). The development of dynamic inquiry performances within an open inquiry setting: A comparison to guided inquiry setting. *Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching, 46*(10), 1137-1160.

- Santangelo, T., & Tomlinson, C. A. (2009). The application of differentiated instruction in postsecondary environments: Benefits, challenges, and future directions. *International Journal of Teaching and Learning in Higher Education*, 20(3), 307–323. Retrieved from <http://www.isetl.org/ijtlhe/>
- Scardamalia, M., & Bereiter, C. (2006). Knowledge building: Theory, pedagogy, and technology. In K. Sawyer (Ed.), *Cambridge Handbook of the Learning Sciences* (pp. 97-118). Cambridge University Press.
- Schwab, J. J. (1960). What do scientists do?. *Behavioral Science*, 5(1), 1-27.
- Shaha, S. H., Glassett, K. F., & Copas, A. (2015). The Impact of teacher observations with coordinated professional development on student performance: A 27-State program evaluation. *Journal of College Teaching & Learning (TLC)*, 12(1), 55–64. Retrieved from <http://www.cluteinstitute.com/journals/journal-of-collegeteaching-learning-tlc/>
- Shor, I., & Freire, P. (1987). *A pedagogy for liberation: Dialogues on transforming education*. Greenwood Publishing Group.
- Spronken-Smith, R., Angelo, T., Matthews, H., O’Steen, B., & Robertson, J. (2007). How effective is inquiry-based learning in linking teaching and research? Paper prepared for *An International Colloquium on International Policies and Practices for Academic Enquiry*, Marwell, Winchester, UK, 19-21 April, 2007. Retrieved June 1 2007 from: http://portallive.solent.ac.uk/university/rtconference/colloquium_papers.aspx
- Spronken-Smith, R., Walker, R., Batchelor, J., O’Steen, B., & Angelo, T. (2012). Evaluating student perceptions of learning processes and intended

learning outcomes under inquiry approaches. *Assessment & Evaluation in Higher Education*, 37(1), 57–72.

Steinert, Y. (2010). Faculty development: From workshops to communities of practice (AMEE Guide no. 33). *Medical Teacher*, 32(5), 425–428. <http://doi.org/10.3109/01421591003677897>

Stenhouse, L. (1975) *An Introduction to Curriculum Research and Design* London: Heinemann.

Swanage, M., & Lane, N. (1999). Primary investigations. *Retrieved April*.

Tanner, K. D. (2010). Order matters: using the 5E model to align teaching with how people learn. *CBE—Life Sciences Education*, 9(3), 159-164.

Taylor, B. M., Pearson, P. D., Peterson, D. S., & Rodriguez, M. C. (2005). The CIERA School Change Framework: An evidence-based approach to professional development and school reading improvement. *Reading Research Quarterly*, 40, 40–68.

Toth, K. E., & McKey, C. A. (2010). Differences in faculty development needs: Implications for educational peer review program design. *Canadian Journal of Higher Education*, 40(1), 53–68. Retrieved from <http://ojs.library.ubc.ca/index.php/cjhe>

Towns, R., & Sweetland, J. (2008). Inspired issue brief: Inquiry-based teaching. *Center for Inspired Teaching*. Retrieved from <http://www.inspiredteaching.org/wp-content/uploads/impact-researchbriefs-inquiry-based-teaching.Pdf>

Tseng, C. H., Tuan, H. L., & Chin, C. C. (2013). How to help teachers develop inquiry teaching: Perspectives from experienced science teachers. *Research in Science Education*, 43(2), 809-825.

- Ültay, N., & Calik, M. (2015). A comparison of different teaching designs of ‘acids and bases’ subject. *Eurasia Journal of Mathematics, Science and Technology Education*, 12(1), 57-86.
- University of Sheffield. (2007). Modelling the process of research within the student learning experience. Retrieved June 1 2007 from: <http://www.shef.ac.uk/cilass/>
- Van Ginkel, G., Verloop, N., & Denessen, E. (2015). Why mentor? Linking mentor teachers’ motivations to their mentoring conceptions. *Teachers and Teaching*, 1–16. <http://doi.org/10.1080/13540602.2015.1023031>
- Vescio, V., Ross, D., & Adams, A. (2008). A review of research on the impact of professional learning communities on teaching practice and student learning. *Teaching and Teacher Education*, 24(1), 80–91. <http://doi.org/10.1016/j.tate.2007.01.004>
- Vreman-de Olde, C., de Jong, T., & Gijlers, H. (2013). Learning by Designing Instruction in the Context of Simulation-based Inquiry Learning. *Journal of Educational Technology & Society*, 16(4).
- Wang, L., Ertmer, P. A., & Newby, T. J. (2004). Increasing preservice teachers’ self-efficacy beliefs for technology integration. *Journal of research on technology in education*, 36(3), 231-250.
- Wang, P. H., Wu, P. L., Wu, H. J., & Tseng, S. F. (2015). Qualitative research on the implementation of inquiry-based instruction. *J. Mod. Educ. Rev*, 4(2), 112-118.
- Whitworth, B. A., Maeng, J. L., & Bell, R. L. (2013). Differentiating inquiry. *Science Scope*, 37(2), 10.
- Wilder, M. Shuttleworth. P.(2004). Cell inquiry: A 5E learning cycle lesson. *Science Activities*, 41(1), 25-31.

- Yadigaroglu, M., & Demircioglu, G. (2012). The effect of activities based on 5e model on grade 10 students' understanding of the gas concept. *Procedia-Social and Behavioral Sciences*, 47, 634-637.
- Yiğit, C. A. Z. İ. B. E. (2011). *The effect of the 5E model in writing on achievement and motivation* (Doctoral dissertation, Yüksek lisans tezi. Edirne: Trakya Üniversitesi Sosyal Bilimler Enstitüsü).
- Zion, M., & Mendelovici, R. (2012). Moving from structured to open inquiry: Challenges and limits. *Science Education International*, 23(4), 383-399.

APPENDICES

Appendix A
University Approval to Conduct the Study

Appendix A

University Approval to Conduct the Study

السيد الاستاذ الدكتور محمد محمد كلية التربية . جامعة الأزهر
تحية طيبة وبعد ،،،،
برجاء التكرم بالموافقة على تسهيل مهمة الطالب / عبد الرحمن محمد مصيلحي
المسجل بدرجة الماجستير في التربية بقسم / المناهج وطرق التدريس.
تخصص (اللغة الإنجليزية)
في جمع البيانات الخاصة بالبحث وأستكمال وتطبيق أدوات البحث .
وتفضلوا بقبول فائق الاحترام ،،

المختص
رئيس القسم
مدير الإدارة
مدير عام الكلية

يسمح للطالب بإجراء المقابلة
على الهيئة المعاونة برفقه د. محمد
مدير المناهج وطرق تدريس اللغة الإنجليزية
ع. ا. م. م.




Appendix B
List of the Jury Members

Appendix B

List of the Jury Members

Dr. Attia Abdel kader Elanany	Professor of Curriculum of EFL Instruction, Faculty of Education, Al-Azhar University.
Dr. Abdelrehim Saad Elhilaly	Professor of Curriculum of EFL Instruction, Faculty of Education, Al-Azhar University.
Dr. Ali Abdulsamie Qoura	Assistant Professor of Curriculum of EFL Instruction, Faculty of Education, Mansoura University.
Dr. Adel Abdul Halim El Sheikh	Assistant Professor of Curriculum and Instruction (TEFL), Faculty of Education, Mansoura University
Dr. Marwa Naem	Assistant Professor of Curriculum and Instruction (TEFL), Faculty of Education, Kafr Elshiekh University

Appendix C
Semi-Structured Interview of the Pilot Study

Appendix C

Semi-Structured Interview of the Pilot Study

- What are the courses you are teaching in English?
- Why did you choose to teach such courses in English while you are allowed to teach in Arabic?
- How comfortable do you feel with teaching subjects like microteaching and educational technology? Do you have any major concerns?
- Have you had any training or instructional material on using the inquiry approach in teaching? If yes, describe it. What did you learn? Has it influenced your teaching in any way? How?
- Describe a typical session you have just finished with your students.
- Do you think you used inquiry? If so, what are the main aspects of the session that make it inquiry-based instruction?
- In your opinion, what are the main procedures you might follow to teach your session session?
- Do your students ever generate their own questions to investigate? If not, do you ever give students questions to investigate?
- Do you prefer having a training on developing your inquiry-based teaching performance skills?
- Do you mind having online assignments to fulfill the purpose of the training?

Appendix D
List of Inquiry-based Instruction Skills

Appendix D

List of Inquiry-based Instruction Skills

Dear jury member,

The researcher is conducting an MA study entitled “**Developing University English Instructors’ Inquiry-based teaching performance through Using the Inquiry Approach**”. To fulfill the purpose of the study, the following list of inquiry-based instruction skills was designed as a part of the study. Data collected via this checklist will help developing a rubric for measuring university English instructors’ inquiry-based teaching performance based on an observation checklist that would be developed based on this list.

The list of inquiry-based instruction skills was adapted from Llewellyn (2013): “Rubric for Becoming an Inquiry Based Teacher”. The original list was adapted to match the purpose of the study. The adapted list consisted of four main sections: Questioning Skills; Lesson Presentation; Engagement of Students; and Assessment Procedures.

You are kindly asked to determine the extent to which these skills are necessary (i.e. if most necessary, necessary, unnecessary) for university English instructors to arrive at the final form of the checklist.

Your cooperation is greatly appreciated.

Main Skills	Practicing Inquiry	Very Necessary	Necessary	Unnecessary
Questioning Skills	1. Teacher uses all levels of questioning and adjusts level to individual students.			
	2. Teacher uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.			
	3. Teacher consistently uses probing, prompting and redirecting techniques.			
	4. Teacher consistently poses open-ended questions.			
	5. Teacher consistently and effectively uses wait time strategies.			
	6. Teacher consistently and effectively uses prompts and rephrasing techniques when students cannot answer questions.			
	1. Teacher consistently acts as effective facilitator and coach.			

Main Skills	Practicing Inquiry	Very Necessary	Necessary	Unnecessary
Lesson Presentation	2. Teacher occasionally lectures and uses investigations so students can demonstrate understanding.			
	3. Teacher uses an inquiry process approach and consistently provides teacher-initiated and student-initiated inquiries.			
	4. Teacher effectively plans for whole group instruction as needed and frequently uses cooperative learning groups.			
	5. Teacher accepts and anticipates unexpected results.			
Engagement of Students	1. Teacher engages students through open-ended discussions, investigations, and reflections.			
	2. Students are consistently active; teacher use hands-on and minds-on activities that encourage open-ended, student-initiated investigations and explorations.			

Main Skills	Practicing Inquiry	Very Necessary	Necessary	Unnecessary
	3. Teacher frequently and effectively solicits information from the students.			
Assessment Procedures	1. Teacher seldom uses worksheets to assess learning; students record on student designed sheets and/or journal with complete success.			
	2. Teacher consistently and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.			
	3. Teacher assesses students based on concepts, knowledge, attitudes, transdisciplinary skills, and action taken because of new learning.			
	4. Teacher works in collaboration with others in study group sessions to share units, articles, and success stories.			

Appendix E
**Observation Checklist of Instructors' Inquiry-based
teaching performance**

Appendix E

Observation Checklist of Instructors' Inquiry-based teaching performance

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
Questioning Skills	1. Teacher uses all levels of questioning and adjusts level to individual students.	Teacher scarcely ever uses different levels of questioning and adjusts level to individual students.	Teacher intermittently uses different levels of questioning and adjusts level to individual students.	Teacher habitually uses different levels of questioning and adjusts level to individual students.	Teacher frequently uses all levels of questioning and adjusts level to individual students.

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
	2. Teacher uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.	Teacher does not use questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.	Teacher often uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.	Teacher frequently uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.	Teacher always uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.
	3. Teacher consistently uses probing, prompting and	Teacher hardly ever uses probing, prompting and	Teacher occasionally uses probing, prompting and	Teacher intermittently uses probing, prompting and	Teacher consistently uses probing, prompting and

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
	redirecting techniques.	redirecting techniques.	redirecting techniques.	redirecting techniques when needed.	redirecting techniques.
	4. Teacher consistently poses open-ended questions.	Teacher never poses open-ended questions.	Teacher every so often poses open-ended questions.	Teacher usually poses open-ended questions.	Teacher always poses open-ended questions.
	5. Teacher consistently and effectively uses wait time strategies.	Teacher does not use wait time strategies.	Teacher sometimes uses wait time strategies.	Teacher consistently uses wait time strategies.	Teacher consistently and effectively uses wait time strategies.

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
	6. Teacher consistently and effectively uses prompts and rephrasing techniques when students cannot answer questions.	Teacher provides the answers when students cannot answer questions.	Teacher intermittently uses prompts and rephrasing techniques when students cannot answer questions.	Teacher uses prompts and rephrasing techniques when students cannot answer questions.	Teacher regularly and effectively uses prompts and rephrasing techniques when students cannot answer questions.
Lesson Presentation	1. Teacher consistently acts as effective facilitator and coach.	Teacher acts as a knowledge provider; rarely as	Teacher erratically acts as effective facilitator and coach	Teacher sometimes acts as effective facilitator and coach	Teacher consistently acts as effective

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
		facilitator and coach			facilitator and coach
	2. Teacher occasionally lectures and uses investigations so students can demonstrate understanding.	Teacher mostly lectures and uses investigations so students can demonstrate understanding.	Teacher sometimes lectures and uses investigations so students can demonstrate understanding.	Teacher fitfully lectures and uses investigations so students can demonstrate understanding.	Teacher rarely lectures and uses investigations so students can demonstrate understanding.
	3. Teacher uses an inquiry process approach and	Teacher hardly uses any inquiry process approach and	Teacher from time to time uses an inquiry process	Teacher inevitably uses an inquiry process	Teacher at all times uses an inquiry process approach and

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
	consistently provides teacher-initiated and student-initiated inquiries.	almost never provides teacher-initiated and student-initiated inquiries.	approach and periodically provides teacher-initiated and student-initiated inquiries.	approach and consistently provides teacher-initiated and student-initiated inquiries.	consistently provides teacher-initiated and student-initiated inquiries.
	4. Teacher effectively plans for whole group instruction as needed and frequently	Teacher hardly ever plans for whole group instruction and on rare occasions uses cooperative	Teacher effectively plans for whole group instruction as needed and frequently uses	Teacher effectively plans for whole group instruction as needed and frequently uses	Teacher effectively plans for whole group instruction as needed and frequently uses

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
	uses cooperative learning groups.	learning groups.	cooperative learning groups.	cooperative learning groups.	cooperative learning groups.
	5. Teacher accepts and anticipates unexpected results.	Teacher does not accept nor anticipates unexpected results	Teacher not very often accepts and anticipates unexpected results	Teacher every now and then accepts and anticipates unexpected results	Teacher always accepts and anticipates unexpected results
Engagement of Students	1. Teacher engages students through open-ended	Teacher takes over discussions,	Teacher on rare occasions engages students through open-	Teacher from time to time engages students through open-	Teacher on all occasions engages students through open-

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
	discussions, investigations, and reflections.	investigations, and reflections.	ended discussions, investigations, and reflections.	ended discussions, investigations, and reflections.	ended discussions, investigations, and reflections.
	2. Students are consistently active; teacher use hands-on and minds-on activities that encourage open-ended, student-initiated investigations	Students are not regularly active; teacher not often use hands-on and minds-on activities that encourage open-ended, student initiated	Students are discontinuously active; teacher erratically use hands-on and minds-on activities that encourage open-ended, student	Students are frequently active; teacher inevitably use hands-on and minds-on activities that encourage open-ended, student initiated	Students are habitually active; teacher consistently use hands-on and minds-on activities that encourage open-ended, student initiated

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
	and explorations.	investigations and explorations.	initiated investigations and explorations.	investigations and explorations.	investigations and explorations.
	3. Teacher frequently and effectively solicits information from the students.	Teacher on rare occasions solicits information from the students.	Teacher intermittently and mostly effectively solicits information from the students.	Teacher ordinarily and effectively solicits information from the students.	Teacher frequently and effectively solicits information from the students.
	1. Teacher seldom uses	Teacher usually uses	Teacher sometimes	Teacher only occasionally	Teacher rarely uses

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
Assessment Procedures	worksheets to assess learning; students rarely record on student designed sheets and/or journal with complete success.	worksheets to assess learning; students rarely record on student designed sheets and/or journal with complete success.	uses worksheets to assess learning; students from time to time record on student designed sheets and/or journal with complete success.	uses worksheets to assess learning; students usually record on student designed sheets and/or journal with complete success.	worksheets to assess learning; students always record on student designed sheets and/or journal with complete success.
	2. Teacher consistently	Teacher scarcely ever	Teacher from time to time	Teacher recurrently and	Teacher consistently

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
	and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.	varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.	varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.	effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.	and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.
	3. Teacher assesses students based on concepts, knowledge,	Teacher once in a while assesses students based on concepts,	Teacher sporadically assesses students based on concepts,	Teacher generally assesses students based on concepts,	Teacher all the time assesses students based on concepts, knowledge,

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
	attitudes, transdisciplinary skills, and action taken because of new learning.	knowledge, attitudes, transdisciplinary skills and action taken because of new learning.	knowledge, attitudes, transdisciplinary skills and action taken because of new learning.	knowledge, attitudes, transdisciplinary skills and action taken because of new learning.	attitudes, transdisciplinary skills and action taken because of new learning.
	4. Teacher works in collaboration with others in study group sessions to share units, articles, and	Teacher on rare occasions works in collaboration with others in study group sessions to share units,	Teacher spasmodically works in collaboration with others in study group sessions to share units,	Teacher recurrently works in collaboration with others in study group sessions to share units,	Teacher habitually works in collaboration with others in study group sessions to share units,

Main Skills	Practicing Inquiry	Poor/weak (1)	Acceptable (2)	Good (3)	Outstanding (4)
	success stories.	articles, and success stories.	articles and success stories.	articles and success stories.	articles and success stories.

Appendix F
The Training Program

Appendix F

The Training Program

Introduction

This training program is designed to enhance university English language instructors' inquiry-based teaching performance through using the inquiry approach. This program is designed in two main delivery modes, namely, face-to-face training sessions (totaling 30 hours) and online assignments and research (10 hours) with a total of 40 hours. The 3-hour training session was designed based on the inquiry approach principles, and the assessment criteria are included in a rubric that is to be used to assess English language instructors' inquiry-based teaching performance before, during and after the training. The training manual contains the activities, worksheets and the online assignments to be done during the course of the training program. The manual is divided into 10 modules as follows:

1. The inquiry approach: an introduction
2. Integrating inquiry into the classroom.
3. Levels of questioning
4. Probing, prompting and redirecting techniques.
5. Questioning strategies.
6. Individual and group questioning techniques.
7. Students engagement through questions.
8. Inquiry-based assessment.
9. Inquiry-based activity design.
10. Web tools and apps that support inquiry-based learning.

Aim of the Program

This training program aims to develop university English language instructors' inquiry-based teaching performance by utilizing the inquiry approach adopting the 5E model.

Performance Objectives

By the end of this training program, university English language instructors should be able to:

- Identify the concept of inquiry.
- Differentiate between inquiry-based learning and traditional approaches.
- Integrate the inquiry approach in their teaching practices.
- Identify probing, prompting and redirecting techniques
- Practice probing, prompting and redirecting techniques in their classrooms.
- Identify questioning strategies.
- Practice questioning strategies in their classrooms.
- Identify individual and group questioning techniques.
- Practice individual and group questioning techniques.
- Discuss student's engagement techniques through questions.
- Assess students using the inquiry approach.
- Design teaching activities based on the inquiry approach.
- Utilize web tools that support inquiry-based learning.

Training Materials

The following training materials are used to fulfill the objectives of the training programs:

- PowerPoint Presentations

- Worksheets
- Online websites
- Teaching presentations.
- Projects.
- Lesson plans.

Steps in Inquiry based Training

Inquiry is all about trainees constructing their own understanding and knowledge through asking questions. Unlike traditional methods that focus primarily on drills, memorization and rote learning, inquiry approach is essentially trainee centered. Curiosity and motivation lie at the heart of inquiry-based education. It starts with posing to ask more questions and explore different learning paths. Inquiry-based learning follows a three-step process that you can incorporate into many curricula. Trainees ask themselves three questions about any new subject being introduced:

1. What do I already know about the subject?
2. What do I want to know about the subject?
3. What have I learned about the subject?

(A KWL chart; What I know, what I want to know, what I have learned) is often used during these three steps to follow trainees' progress.

The 5E Instructional Model

The 5E model was chosen as it sequences learning experiences so that students have the opportunity to construct their understanding of a concept over time. The model leads students through five phases of learning that are easily described using words that begin with the letter E: Engage, Explore, Explain, Elaborate, and Evaluate.

All the training modules are designed in the light of the 5E instructional model which includes the progressive stages *Engage*, *Explore*, *Explain*, *Elaborate*, and *Evaluate* (Figure 1 below).

Figure 1: 5E instructional Model



The 5 E's is an instructional model based on the constructivist approach to learning, which says that learners build or construct new ideas on top of their old ideas. The 5 E's can be used with students of all ages, including adults.

Each of the 5 E's describes a phase of learning, and each phase begins with the letter "E": Engage, Explore, Explain, Elaborate, and Evaluate. The 5 E's allows students and teachers to experience common activities, to use and build on prior knowledge and experience, to construct meaning, and to continually assess their understanding of a concept.

Engage: This phase of the 5 E's starts the process. An "engage" activity should do the following:

1. Make connections between past and present learning experiences
2. Anticipate activities and focus students' thinking on the learning outcomes of current activities. Students should become mentally engaged in the concept, process, or skill to be learned.

Explore: This phase of the 5 E's provides students with a common base of experiences. They identify and develop concepts, processes, and skills. During this phase, students actively explore their environment or manipulate materials.

Explain: This phase of the 5 E's helps students explain the concepts they have been exploring. They have opportunities to verbalize their conceptual understanding or to demonstrate new skills or behaviors. This phase also provides opportunities for teachers to introduce formal terms, definitions, and explanations for concepts, processes, skills, or behaviors.

Elaborate: This phase of the 5 E's extends students' conceptual understanding and allows them to practice skills and behaviors. Through new experiences, the learners develop deeper and broader understanding of major concepts, obtain more information about areas of interest, and refine their skills.

Evaluate: This phase of the 5 E's encourages learners to assess their understanding and abilities and lets teachers evaluate students' understanding of key concepts and skill development.

As such, each module would be designed and administered according to the following table:

Stages of the module	During this stage the trainer could be:	During this stage the trainees could be:
ENGAGE	<ul style="list-style-type: none"> <input type="checkbox"/> Generating curiosity about the topic <input type="checkbox"/> Asking open ended questions <input type="checkbox"/> Listening to students to find out what they already know <input type="checkbox"/> Encouraging students to explain their thinking <input type="checkbox"/> Connecting to lives/ interests of students 	<ul style="list-style-type: none"> <input type="checkbox"/> Asking questions <input type="checkbox"/> Showing interest in the topic <input type="checkbox"/> Sharing their thoughts/ideas <input type="checkbox"/> Talking to one another
EXPLORE	<ul style="list-style-type: none"> <input type="checkbox"/> Giving students time to work together to explore a topic/problem <input type="checkbox"/> Walking around and asking questions about what they are doing <input type="checkbox"/> Listening to student ideas as they talk to each other <input type="checkbox"/> Supporting students as needed (without giving answers) 	<ul style="list-style-type: none"> <input type="checkbox"/> Working with each other and sharing ideas <input type="checkbox"/> Trying out their ideas and thinking of alternatives <input type="checkbox"/> Recording their thoughts and observations <input type="checkbox"/> Asking questions

Stages of the module	During this stage the trainer could be:	During this stage the trainees could be:
EXPLAIN	<ul style="list-style-type: none"> <input type="checkbox"/> Encouraging students to explain concepts in their own words <input type="checkbox"/> Highlighting important ideas that the students provide <input type="checkbox"/> Asking questions that help students be specific in their explanations <input type="checkbox"/> Introducing vocabulary, formal labels, or definitions as needed 	<ul style="list-style-type: none"> <input type="checkbox"/> Explaining ideas, concepts, or possible solutions to others <input type="checkbox"/> Using recorded information from their exploration to help them explain <input type="checkbox"/> Listening to others ideas and building on them or asking questions
ELABORATE	<ul style="list-style-type: none"> <input type="checkbox"/> Asking the students to apply content in a new situation or test additional ideas <input type="checkbox"/> Encouraging students to extend the lesson concepts <input type="checkbox"/> Asking students to use the new vocabulary appropriately <input type="checkbox"/> Incorporating real world connections 	<ul style="list-style-type: none"> <input type="checkbox"/> Using new information to explore additional ideas <input type="checkbox"/> Using new terms/ concepts to revise explanations <input type="checkbox"/> Collaborating to refine ideas <input type="checkbox"/> Drawing conclusions from evidence

Stages of the module	During this stage the trainer could be:	During this stage the trainees could be:
EVALUATE (throughout)	<input type="checkbox"/> Asking questions that provide insight into student progress <input type="checkbox"/> Distributing questions so that all students are accountable and have the opportunity to share <input type="checkbox"/> Observing students as they create products and looking for evidence of understanding	<input type="checkbox"/> Answering questions that explain or show their thinking <input type="checkbox"/> Demonstrating their understanding of the topic as they complete activities <input type="checkbox"/> Demonstrating applicable skills

Training program schedule:

The schedule for the training program is flexible for the convenience of the trainees as they are teaching assistants at the university and they might have emergencies. The planned schedule is as follows:

Table 1

Schedule of the training program

Module	Title	Time allocated	Weeks
Pretesting inquiry-based teaching performance			Week 1
1	The inquiry approach: an introduction	3 hours	Week 2

Module	Title	Time allocated	Weeks
2	Integrating inquiry into the classroom.	3 hours	
3	Levels of questioning skills	3 hours	Week 3
4	Probing, prompting and redirecting techniques.	3 hours	
5	Questioning strategies.	3 hours	Week 4
6	Individual and group questioning techniques.	3 hours	
7	Students engagement through questions.	3 hours	Week 5
8	Inquiry-based assessment.	3 hours	
9	Inquiry-based activity design.	3 hours	Week 6
10	Web tools and apps that support inquiry-based learning.	3 hours	
Post testing inquiry-based teaching performance			Week 7

The table above shows that the training program will last for 5 weeks in addition to two weeks for pretesting and post testing university English language instructors' inquiry-based teaching performance in their actual classrooms. Each module is followed by an hour assignment to be administered online with the help of the web tools for inquiry-based learning. The assessment of university English language instructors' inquiry-based teaching performance during the programs is administered to make sure that they apply the inquiry approach and to evaluate the training progress.

**MODULE ONE:
THE INQUIRY APPROACH
AN INTRODUCTION**

Module Outline

Intended Learning Outcomes:

By the end of this module, university English language instructors will be able to:

- Define the term inquiry.
- Discuss the theoretical background of the inquiry approach.
- Identify the principles of the inquiry approach.
- Differentiate between the traditional approach and the inquiry-based one.
- Discover the benefits of inquiry-based instruction for students.
- Explore the areas where they can adopt the inquiry approach.
- Adopt the inquiry approach in their discussions.
- Appreciate the role of the inquiry approach in constructing knowledge and skills.

Teaching/Learning Strategies:

University English Language instructors will adopt the 5Es Model strategies

Materials and Teaching Aids

- PowerPoint Presentations
- Worksheets
- Online websites

Time Allocated: 3 hours in-class + an hour online



The Inquiry Approach

Phase 1: Engagement

Time: 20 m

- What do you know about the term “inquiry”?
- Did you use inquiry while teaching?
- Fill in the following chart based on your current knowledge the first two columns and save the “L” column for the end of each activity:

Worksheet 1

K.W.L. Chart

Topic: _____

K	W	L
What I Already Know	What I Want to Know	What I Have Learned

- In peers, discuss your answers and find out similarities and differences.
- Ask your group members for additional information to be added to your W column.
- Summarize your answers in one table to be discussed with the instructor.

Phase 2 & 3: Explore and Explain

Time: 120 m

After discussing the relevant background knowledge about the inquiry approach, let's explore more ideas about the main concepts and tasks to be involved in a lesson adopting the inquiry approach. More specifically, we will explore the answers to the following questions:

- What is inquiry?
- What is the theoretical background of the inquiry approach?
- What are the principles of the inquiry approach?
- What is the difference between the traditional approach and the inquiry-based one?
- What are the benefits of inquiry-based instruction for students?
- What are the areas where teachers can adopt the inquiry approach?
- How do teachers adopt the inquiry approach in their discussions?

Activity 1: Explore the definition of the term inquiry

20 m

- Discuss with your group the definition of the term inquiry.
- Ask the instructor about the main concepts that would help you provide a good definition of the term.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you:
 - a seeking or request for truth, information, or knowledge.
 - an investigation, as into an incident:
 - the act of inquiring or of seeking information by questioning; interrogation.
 - a question; query.

- Now provide a definition that represent the thoughts and ideas of the whole group using the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:
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Conclusion:
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Activity 2: Explore the principles of the inquiry approach

20 m

- Navigate the internet to find out the principle of the inquiry approach.
- Discuss with your group the principles you have got.
- Ask the instructor about some links and hints that might help get these principles.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you:

The inquiry approach is adapted from Helen Timperley's cycle of teacher inquiry and knowledge building .



The inquiry approach requires instructors to:

- select a class or group of students, and assess the level of learning and factors affecting learning
- determine what they already know and curriculum expectations to expand learning
- develop a question for inquiry
- deepen professional knowledge and refine skills to respond to the identified area of inquiry
- use this knowledge to establish and implement an action plan to improve student learning
- assess the learning of students
- reflect on the effectiveness of practice on the learning of the students and the implications for future practice and professional learning.

- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:

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Conclusion:

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Activity 3: Explore the difference between the traditional approach and the inquiry-based one

20 m

- Given the previous knowledge, discuss with your group the difference between the traditional approach and the inquiry-based one.
- Ask the instructor about the main items to be included in the comparison.
- Share your ideas with the group and summarize your thoughts.
- The following table might help you:

	Inquiry-Based	Traditional
Principle Learning Theory	Constructivism	Behaviorism

	Inquiry-Based	Traditional
Student Participation	Active	Passive
Student Involvement in Outcomes	Increased responsibility	Decreased responsibility
Student Role	Problem solver	Direction follower
Curriculum Goals	Process oriented	Product oriented
Teacher's Role	Guide/facilitator	Director/transmitter

- Now fill out the following template:

<p>Worksheet 2</p> <p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p> <p>.....</p> <p>.....</p>

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Conclusion:
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Activity 4: Explore the benefits of inquiry-based instruction for students

20 m

- Given the previous knowledge, discuss with your group the difference between the benefits of inquiry-based instruction for students.
- Ask the instructor about any more explanation.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you:
 - o Through the inquiry approach, students can do the following:
 - Asking questions
 - Showing interest in the topic
 - Sharing their thoughts/ideas
 - Talking to one another
 - Working with each other and sharing ideas
 - Trying out their ideas and thinking of alternatives
 - Recording their thoughts and observations

- Asking questions
 - Explaining ideas, concepts, or possible solutions to others
 - Using recorded information from their exploration to help them explain
 - Listening to other ideas and building on them or asking questions
 - Using new information to explore additional ideas
 - Using new terms/ concepts to revise explanations
 - Collaborating to refine ideas
 - Drawing conclusions from evidence
 - Answering questions that explain or show their thinking
 - Demonstrating their understanding of the topic as they complete activities
 - Demonstrating applicable skills
- Now fill out the following template:

Worksheet 2
<p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p>

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Questions raised from discussions:

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Conclusion:

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Activity 5: Explore the areas where teachers can adopt the inquiry approach

20 m

As a university instructor, discuss the areas and subjects where you can adopt the inquiry approach.

- Ask the instructor about any more explanation and expansion.
- Join those who have the same curriculum area as yours and discuss your ideas of incorporating the inquiry approach while teaching.
- Share your ideas with the group and summarize your thoughts.
- Now fill out the following template:

Worksheet 2

Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 6: Explore how could you use the inquiry approach to plan your lesson

20 m

- Orchestrating the knowledge you have got from the previous activities, work in groups to design a primary lesson plan that uses the inquiry approach.

- Ask the instructor about any more explanation and expansion.
- Join those who have the same curriculum area as yours and discuss your ideas of incorporating the inquiry approach while teaching.
- Share your ideas with the group and summarize your thoughts.
- You can use the following template to design your lesson or any other available template:

Teacher:
Date:
Subject / grade level:
Materials:
Lesson objective(s):
Differentiation strategies to meet diverse learner needs:
ENGAGEMENT

- Describe how the teacher will capture students' interest.
- What kind of questions should the students ask themselves after the engagement?

EXPLORATION

- Describe what hands-on/minds-on activities students will be doing.
- List "big idea" conceptual questions the teacher will use to encourage and/or focus students' exploration

EXPLANATION

- Student explanations should precede introduction of terms or explanations by the teacher. What questions or techniques will the teacher use to help students connect their exploration to the concept under examination?
- List higher order thinking questions which teachers will use to solicit *student* explanations and help them to justify their explanations.

ELABORATION

- Describe how students will develop a more sophisticated understanding of the concept.
- What vocabulary will be introduced and how will it connect to students' observations?
- How is this knowledge applied in our daily lives?

EVALUATION

- How will students demonstrate that they have achieved the lesson objective?
- This should be embedded throughout the lesson as well as at the end of the lesson

Phase 4: Elaborate

Time: 20 m

- Utilizing the lesson plan template in Activity 5 above, discuss with your group the main concepts and ideas related to incorporating the inquiry approach in your lessons.
- Use the generated ideas and thoughts to be applied to other lessons or subject areas of your specialization.
- Use the internet to extend your knowledge about the inquiry approach and the 5Es model (**THIS PART WILL BE LEFT FOR HOME AS AN EXTRA HOUR EXPANSION OF THIS SESSION**, so no need to do further efforts now). The following links might help you:
 - <https://courses.edx.org/courses/course-v1:UTAustinX+UT.IITL.11.02x+2T2019/85fe07a74a104c9e9112243ff574a74d/>
 - <https://www.edutopia.org/article/embracing-inquiry-based-instruction>
 - <https://www.k12academics.com/pedagogy/inquiry-based-instruction>
 - <https://www.edx.org/course/classroom-strategies-for-inquiry-based-learning-2>
 - <https://www.academicapproach.com/incorporating-and-adapting-to-inquiry-based-instruction/>
- Collaborate with your group to refine the ideas you have got from the session.

- Fill out the following form:

Worksheet 3
Elaborate
I can use the inquiry approach to teach:
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The new concepts I need to explore more about are:
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The real world connections that I might use the inquiry approach are:
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The refined ideas about the inquiry approach are:

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Conclusions

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Phase 5: Evaluate

Time: 20 m

- In addition to the evaluation throughout the session, this final evaluation of the module aimed to:

- Answering questions that explain or show your thinking.
- Demonstrating your understanding of the topic as you complete activities.
- Demonstrating applicable skills.

- As such, work in groups to provide answers to the following questions:

- What is inquiry?

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- What is the theoretical background of the inquiry approach?

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- What are the principles of the inquiry approach?

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- What is the difference between the traditional approach and the inquiry-based one?

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- What are the benefits of inquiry-based instruction for students?

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- What are the areas where teachers can adopt the inquiry approach?

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- How do teachers adopt the inquiry approach in their discussions?

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- To demonstrate your understanding of the topic, write a lesson plan adopting the inquiry approach utilizing the provided template as discussed in the Elaborate phase.
- Use the acquired knowledge of the inquiry approach to teach a session to your students and find out the difference in terms of engagement and motivation.
- Use the provided links to expand your knowledge and ask more questions in the next session on how to apply the inquiry approach in your class.

**MODULE TWO:
INTEGRATING INQUIRY INTO THE CLASSROOM**

Module Outline

Intended Learning Outcomes:

By the end of this module, university English language instructors will be able to:

- Identify procedures of integrating the inquiry approach into their classroom.
- Recognize ways of beginning an inquiry.
- Practice strategies for progressing with an inquiry.
- Interpret the results of an inquiry.
- Communicate conclusions and reflections about using an inquiry.
- Teach a lesson that incorporates the inquiry approach.

Teaching/Learning Strategies:

University English Language instructors will adopt the 5Es Model strategies

Materials and Teaching Aids

- PowerPoint Presentations
- Worksheets
- Online websites
- Lesson plans

Time Allocated: 3 hours in-class + an hour online



Integrating Inquiry into The Classroom

Phase 1: Engagement

Time: 20 m

- Discuss with your group the lesson plans you have designed in the former module in terms of the format design and the applicability of each lesson plan in the actual classroom.
- Fill in the following chart based on your current knowledge about the procedures of administering the inquiry approach in the classroom. The first two columns and save the “L” column for the end of each activity:

Worksheet 1

K.W.L. Chart

Topic: _____

K What I Already Know	W What I Want to Know	L What I Have Learned

- In peers, discuss your answers and find out similarities and differences.
- Ask your group members for additional information to be added to your W column.
- Summarize your answers in one table to be discussed with the instructor.

Phase 2 & 3: Explore and Explain

Time: 120 m

After discussing the relevant background knowledge about the strategies, procedures and techniques of administering the inquiry approach in the actual classroom, let's explore more ideas about strategies, procedures and techniques to teach based on the inquiry approach. More specifically, we will explore the answers to the following questions:

- What are the procedures of integrating the inquiry approach into classroom environment?
- What are the ways of beginning an inquiry?
- How to practice the strategies for progressing with an inquiry?
- How to interpret the results of an inquiry?
- How to communicate conclusions and reflections about using an inquiry?
- How can instructors teach a lesson that incorporates the inquiry approach?

Activity 1: procedures of integrating the inquiry approach into classroom environment

20 m

- Discuss with your group the results you have got from the warm up activity.

- Ask the instructor about technical procedures of the inquiry approach to identify definite steps to incorporate the inquiry approach.
- Share your ideas with the group and summarize your thoughts.
- The following information available at <https://www.britishcouncil.org/voices-magazine/how-use-inquiry-based-learning-young-learners> might help you:
 - Starting with a big question. This question acts as a catalyst to get students thinking more deeply about the subject.
 - Finding out what students already know. They can do this first in small groups, then as a whole-class activity. In this first step, students become active participants in the process of learning, drawing from their own personal life experiences to share previously learned knowledge. As students discuss what they know, you can record this information in the What we know section of the KWL chart.
 - As students begin to express what they know, they use their productive (i.e., speaking and writing) language skills
 - Finding out what students want to know. This step allows students to freely wonder about the world around them. You should record the questions on the What we want to know section of the KWL chart.
 - As teachers, we can help to elicit interesting questions from our students by being 'wonderers' ourselves. In the topic above, we might say out loud, 'I wonder why people weigh less on the moon than on earth' or ask 'How far away is the closest star to our sun?'
 - Embarking on a discovery phase in the learning process. Students, with your help and guidance, now embark on the discovery phase of the learning process.

- Finding out what students have learned. As students discuss and write down their knowledge and experience, they use their productive skills of speaking and writing while applying the new vocabulary and grammar they have learned. When the discussion moves to a whole-class activity, students have the confidence to speak out about their learning experiences. You can record this on the What we have learned section of the KWL chart. This is often followed up by a project, in which students work together and use what they have learned to achieve a goal.
 - Summing up. Essentially, inquiry-based learning is a natural way to learn a second language. It allows students much more control of their learning experience, while teachers help and guide them along. It encourages our children’s natural curiosity and sense of wonder about the world around them.
- Now highlight all thoughts and ideas of the whole group using the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:

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Conclusion:

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Activity 2: Beginning an Inquiry

20 m

- Navigate the internet to find out the principle of the inquiry approach.
- Discuss with your group the principles you have got.
- Ask the instructor about some links and hints that might help get these principles.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you:
 - o To begin an inquiry-based lesson, a teacher may ask a question to stimulate student interest in the topic. Students are then in a position to generate their own questions about the topic that can be answered through their investigations.

- At the start of a lesson, teachers implement the questioning process by asking, and helping students generate, two types of questions:
 1. Essential Questions—enable students to learn and then apply their knowledge to wider circumstances. Essential questions share several characteristics, including:
 - a. Relevance to the learner
 - b. Open-ended and higher-order (no right or wrong answer)
 - c. Answers are not already known
 - d. Multiple possible answers
 - e. Cannot be answered without careful research; i.e., answers have to be more than simple facts
 - f. Able to be researched given available resources.
 2. Foundation Questions—are generated by the essential question and are often created through student brainstorming. They are used to guide research aimed at answering the essential question. Examples of these questions include:
 - a. Relevance to the learner
 - b. Open-ended and higher-order (no right or wrong answer)
 - c. Answers are not already known
 - d. Multiple possible answers
 - e. Cannot be answered without careful research (have to be more than simple facts)
 - f. Able to be researched given available resources.
- Now fill out the following template:

Worksheet 2

Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 3: Strategies for Progressing with An Inquiry

20 m

- Given the previous knowledge, discuss with your group how to keep up the progress of your inquiry.
- Ask the instructor about additional ideas or strategies to be included in the discussion.
- Share your ideas with the group and summarize your thoughts.
- As you go through your inquiry, the following questions might help you:
 - o Where have you seen something like this before?
 - o What would happen if we changed this... to this...?
 - o What hypotheses can you form?
 - o What counter examples can you think of?
 - o What mistakes have we made?
 - o What might be a different way of doing this?
- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 4: Interpreting the Results of an Inquiry

20 m

- As a result of the questions raised in the previous activities, ask yourselves how you could interpret the results of such inquiry in an informative way.
- Ask the instructor about any more explanation.
- Share your ideas with the group and summarize your thoughts.
- The following questions might help you in this phase:
 - How can you best display your data?
 - What patterns do you see in your data?
 - What reasons might there be for these patterns?
 - How can you be 100% sure that this is true?

- What do you think of (another student's) argument?

- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:
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Conclusion:
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Activity 5: Communicating Conclusions and Reflections

20 m

- As a result of the questions raised in the previous activities, ask yourselves how you could infer conclusions and help your students reflect on the inquiry.
- Ask the instructor about any more explanation and expansion.
- The following questions might help you in this phase:
 - What method did you use?
 - What other methods have you considered?
 - Which of your methods was the best? Why?
 - Where have you seen a problem like this before?
 - What helpful strategies have you learned for next time?
- Share your ideas with the group and summarize your thoughts.
- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:
Conclusion:

Activity 6: Practice the Procedures within your group

20 m

- Orchestrating the knowledge you have got from the previous activities, work in groups to teach a primary lesson plan that incorporates the inquiry approach.
- Ask the instructor about any more explanation and expansion.
- Join those who have the same curriculum area as yours and discuss your ideas of incorporating the inquiry approach while teaching.
- Share your ideas with the group and summarize your thoughts.

Phase 4: Elaborate

Time: 20 m

- Utilizing information you have got from the discussion in Activity 5 above, discuss with your group some techniques and questions to be incorporated in your lessons.
- Use the generated ideas and thoughts to be applied to other lessons or subject areas of your specialization.
- Use the internet to extend your knowledge about incorporating inquiry approach in the classroom (**THIS PART WILL BE LEFT FOR HOME AS AN EXTRA HOUR EXPANSION OF THIS SESSION**, so no need to do further efforts now). The following links might help you:
 - o <https://www.teachermagazine.com.au/articles/inquiry-based-learning-in-action>
 - o <https://www.youtube.com/watch?v=sTIGjBEPA2o>
 - o <https://www.youtube.com/watch?v=mAYh4nWUkU0>
 - o <https://thinkingpathwayz.weebly.com/inquiry-based-learning.html>
 - o <https://www.youtube.com/watch?v=ixS6BnEpjQs>
 - o https://www.youtube.com/watch?v=GQ_8q8rrvi8
 - o https://www.youtube.com/watch?v=WmnOXU2_gMU
- Collaborate with your group to refine the ideas you have got from the session.
- Fill out the following form:

<p>Worksheet 3</p> <p>Elaborate</p> <p>I can use the inquiry approach to teach:</p> <ul style="list-style-type: none"> - - -

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The new concepts I need to explore more about are:

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The real world connections that I might use the inquiry approach are:

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The refined ideas about the inquiry approach are:

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Phase 5: Evaluate

Time: 20 m

- In addition to the evaluation throughout the session, this final evaluation of the module aimed to:

- o Answering questions that explain or show your thinking.
- o Demonstrating your understanding of the topic as you complete activities.
- o Demonstrating applicable skills.

- As such, work in groups to provide answers to the following questions:

- o What are the procedures of integrating the inquiry approach into classroom environment?

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- o What are the ways of beginning an inquiry?

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- o How to practice the strategies for progressing with an inquiry?

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- How to interpret the results of an inquiry?

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- How to communicate conclusions and reflections about using an inquiry?

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- How can instructors teach a lesson that incorporates the inquiry approach?

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- To demonstrate your understanding of the topic, evaluate a session of your colleague while incorporating the inquiry approach in his teaching.
- Use the acquired knowledge of the inquiry approach to teach a session to your students and find out the difference in terms of engagement and motivation.

- Use the provided links to expand your knowledge and ask more questions in the next session on how to apply the inquiry approach in your class.

**MODULE THREE:
LEVELS OF QUESTIONING**

Module Outline

Intended Learning Outcomes:

By the end of this module, university English language instructors will be able to:

- Identify the three levels of questioning.
- use levels of questioning
- adjust level of questioning to individual students.
- use questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.
- use probing, prompting and redirecting techniques.
- pose open-ended questions.
- use wait time strategies effectively.
- use prompts and rephrasing techniques effectively when students cannot answer questions.

Teaching/Learning Strategies:

University English Language instructors will adopt the 5Es Model strategies

Materials and Teaching Aids

- Worksheets
- Online websites
- Lesson plans

Time Allocated: 3 hours in-class + an hour online



Levels of Questioning

Phase 1: Engagement

Time: 20 m

- How do you ask your students at the beginning, the middle and the end of the lecture, i.e. questioning strategies?
- How do you form your questions?
- Do you take into account the individual differences among students while asking?
- Fill in the following chart based on your current knowledge. The first two columns and save the “L” column for the end of each activity:

Worksheet 1

K.W.L. Chart

Topic: _____

K What I Already Know	W What I Want to Know	L What I Have Learned

- In peers, discuss your answers and find out similarities and differences

- Ask your group members for additional information to be added to your W column.
- Summarize your answers in one table to be discussed with the instructor.

Phase 2 & 3: Explore and Explain

Time: 120 m

After discussing the relevant background knowledge about the questioning skills, let's explore the three levels of questioning as well as how to use them in a lesson adopting the inquiry approach. More specifically, we will explore the answers to the following questions:

- What are the three levels of questioning?
- How to use levels of questioning?
- How to adjust level of questioning to individual students?
- How to use questioning skills to assess prior knowledge, facilitate discussions and construct knowledge?
- How to use probing, prompting and redirecting techniques?
- pose open-ended questions?
- How to use wait time strategies effectively?
- How to use prompts and rephrasing techniques effectively when students cannot answer questions?

Activity 1: Explore the three levels of questioning

20 m

- Discuss with your group three levels of questioning.
- Ask the instructor about them and compare your answers with your colleagues'.
- Share your ideas with the group and summarize your thoughts.

- The following ideas might help you:
 - There are 3 levels of questions you can ask about a text:
 - Level 1: Recall
 - Level 2: Analyze/Inference
 - Level 3: Synthesis
 - Embed the question in your answers about texts.
 - Example: How does Mr. Harper like answers to be written?
 - Answer: Mr. Harper likes answers to be written with the question embedded in the answer.
 - Level 1 Questions-Recall
 - What?
 - Who?
 - Where?
 - The answer is “right there” in the text
 - Answer is IN the lines: fully and clearly expressed
 - Level 2 Questions: Analysis
 - Analyze the text
 - Interpret the text
 - Asks How?
 - Asks Why?
 - May be more than one answer
 - Answer is understood though not directly expressed
 - Answer may be found BETWEEN the lines, requiring us to make an inference
 - The definition of inference is a conclusion reached on the basis of evidence and reasoning. • the process of reaching such a

conclusion : *his emphasis on order and health, and by inference cleanliness.*

- Synonyms for inference:
- *there should be no inference drawn from the fact that he chooses not to be a witness: deduction, conclusion, reasoning, conjecture, speculation, guess, presumption, assumption, supposition, reckoning, extrapolation.*

○ Level 3 Questions: Synthesis

- Apply to the bigger world
- No right or wrong answers
- Provoke thinking and feeling
- Deal with values and opinions
- Answers are BEYOND the lines and connect to the world outside the book

- Now provide a definition that represent the thoughts and ideas of the whole group using the following template:

Worksheet 2
Exploring
My ideas about the topic:
Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 2: Using questioning skills to assess prior knowledge, facilitate discussions and construct knowledge

20 m

- Navigate the internet to explore the questioning skills.
- Discuss with your group the questioning skills you have got.
- Ask the instructor about some links and hints that might help get these skills.
- Share your ideas with the group and summarize your thoughts.
- Use the levels of questioning to pose questions that activate your students' prior knowledge on a given topic of your own. All questions should be in the recall level. Write these questions here:
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- Ask your colleagues to discuss those questions and facilitate their discussion by posing more questions in the level of analysis. Write these questions here:
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- Now collect all ideas and ask them to synthesize such ideas in categories and bigger ideas. All questions should target the synthesis level. Write these questions here:
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- Now fill out the following template:

Worksheet 2
Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 3: Explore probing, prompting and redirecting techniques

20 m

- Given the previous knowledge, discuss with your group the difference between probing, prompting and redirecting techniques.
- Ask the instructor about the main terms to be included in the comparison.
- Share your ideas with the group and summarize your thoughts.
- The following information might help you:
 - There are different types of questions for different purposes.
 - *Focusing questions* are used to focus students' attention on the lesson or on material being discussed. They may be used to determine what students have learned, to motivate and generate interest, or to check for understanding during or at the end of a lesson.
 - A teacher may need to prompt students when asking questions. *Prompting questions* include hints and clues to aid students in answering questions or to assist them in correcting and initial response, a prompting question is usually a rewording of the original question with clues or hints included.
 - *Probing questions* may be needed when a student does not answer the question completely. In this case a teacher may stay with the same student by asking one or more probing questions that are intended to seek clarification and to provide guidance students to more complete answers (e.g. What do you mean by that? Could you explain that more fully? What are the reasons for that?).

- *Redirecting* is a technique that is useful for increasing the amount of student participation. It allows you to draw students into a discussion by asking them to respond to a question in light of a previous response from another student. Because this technique requires several correct responses to a single question, the question asked must be divergent, productive, or evaluative.
- Now pose some questions and discuss with your group how to redirect them through your discussions.
- Now fill out the following template:

Worksheet 2
<p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p> <p>.....</p> <p>.....</p>

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Conclusion:

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Activity 4: Open-Ended Questions

20 m

- Open-ended questions are the core of the inquiry approach. Unlike the closed-ended questions, open ended ones strike the students’ thinking and help them brainstorm the answers in a creative manner. As such, discuss with your group the characteristics of open-ended questions.
- Ask the instructor about any more explanation.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you to understand how to ask open-ended questions:
 - o Before you can start effectively asking open-ended questions, you need to know what that is. An open-ended question is a question that requires a full answer, using the subject's own knowledge or feelings. These questions are objective, do not lead the person being asked, and result in an answer that requires an explanation.

- A closed-ended question can be answered in a short or single-word answer. They are used to obtain facts and specific pieces of information.
- Sometimes, people think they have asked open-ended questions when they have not. To successfully ask open-ended questions in conversation, be knowledgeable of the *characteristics of an open-ended question*.
 - They require a person to pause, think, and reflect.
 - Answers, typically, will not be facts, but personal feelings, opinions, or ideas about a subject.
 - When using open-ended questions, the control of the conversation switches over to the person being asked the question, which begins an exchange between people. If the control of the conversation stays with the person asking questions, you are asking closed-ended questions. This technique makes it feel more like an interview or interrogation than a conversation.
- Avoid questions that have the following characteristics:
 - answers that provide facts
 - easy to answer questions
 - answers that can be given quickly and require little to no thought.Questions that reflect these things are closed-ended.
- To make sure you actually ask open-ended questions, you need to understand the language involved. Open-ended questions begin in very specific ways.
 - Open-ended questions or statements begin with the following words: why, how, what, describe, explain, tell me about..., or what do you think about...

- Although "tell me about" or "describe" does not begin a question, the result is the same as asking an open-ended question.
- Closed-ended questions also have a specific language. If you want to avoid closed-ended questions, do not start questions with the following verbs: are/was, did/do, will, won't, didn't, aren't, would, if.

- Now fill out the following template:

Worksheet 2
<p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Conclusion:</p>

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Activity 5: Wait Time Strategies and Using Prompts and Rephrasing Techniques

20 m

- As a university English language instructor, discuss with your group the time needed for students to think of your own open-ended questions in your curriculum.
- Discuss how you could use prompts and rehearsing techniques to expand the answers to the posed questions.
- Ask the instructor about any more explanation and expansion.
- Join those who have the same curriculum area as yours and discuss your ideas of incorporating the inquiry approach while teaching.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you:
 - o Wait time depends on the complexity of the question, the ability of the students and the clarity with which the question was asked. In general, recall and lower-level questions will take most students 1-3 seconds to answer. Questions that require calculation, such as 11×3 , usually take 4-6 seconds to generate a response. Higher-order questions that require more thought than the simple recall questions, could take anywhere from 6 to 10 seconds to formulate a reply.

- Rehearsal techniques such as taking deep breaths, silent reading, repeating the questions such as rehearsing the entire speech, timing the speech well, simulating the actual speech and incorporating the necessary changes after getting feedback.
 - Rehearsals minimize apprehension, can help anticipate potential problems, and it allows the presenter to make adjustments before the actual presentation.
 - A person has to go through several steps to achieve an effective rehearsal. You must rehearse the entire speech, time the speech, simulate the actual speech, and incorporate the necessary changes from received feedback. It is also a good idea to rehearse often.
- Now fill out the following template:

Worksheet 2
<p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p>

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Conclusion:

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Activity 6: Practice Questioning skills in the Classroom

20 m

- Orchestrating the knowledge you have got from the previous activities, work in groups to practice the questioning skills and apply the skills you have learned.
- Ask the instructor about any more explanation and expansion.
- Join those who have the same curriculum area as yours and discuss your ideas of incorporating the questioning skills while teaching.
- Share your ideas with the group and summarize your thoughts.

Phase 4: Elaborate

Time: 20 m

- Use the generated ideas and thoughts to be applied to other lessons or subject areas of your specialization.

- Use the internet to extend your knowledge about the questioning skills
(THIS PART WILL BE LEFT FOR HOME AS AN EXTRA HOUR EXPANSION OF THIS SESSION, so no need to do further efforts now).

The following links might help you:

- o <https://www.wikihow.com/Ask-Open-Ended-Questions>
- o <https://www.surveymonkey.com/mp/open-ended-questions-get-more-context-to-enrich-your-data/>
- o <https://www.youtube.com/watch?v=61aFHm81pas>
- o <https://www.youtube.com/watch?v=oSV9qGG6wYU>
- o <https://courses.edx.org/courses/course-v1:UTAustinX+UT.IITL.11.02x+2T2019/courseware/2cbcedbea55748c583be29c91cf56850/402f243d50594f8d85dae15c5aff9b7c/>

- Collaborate with your group to refine the ideas you have got from the session.
- Fill out the following form:

<p>Worksheet 3</p> <p>Elaborate</p> <p>I can use the inquiry approach to teach:</p> <ul style="list-style-type: none"> - - - - - <p>The new concepts I need to explore more about are:</p> <ul style="list-style-type: none"> - -
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The real world connections that I might use the inquiry approach are:

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The refined ideas about the inquiry approach are:

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Conclusions

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- In addition to the evaluation throughout the session, this final evaluation of the module aimed to:

- Answering questions that explain or show your thinking.
- Demonstrating your understanding of the topic as you complete activities.
- Demonstrating applicable skills.

- As such, work in groups to provide answers to the following questions:

○ What are the three levels of questioning?

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○ How to use levels of questioning?

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○ How to adjust level of questioning to individual students?

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○ How to use questioning skills to assess prior knowledge, facilitate discussions and construct knowledge?

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- How to use probing, prompting and redirecting techniques?

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- How to pose open-ended questions?

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- How to use wait time strategies effectively?

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- How to use prompts and rephrasing techniques effectively when students cannot answer questions?

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**MODULE FOUR:
PROBING, PROMPTING AND REDIRECTING TECHNIQUES**

Module Outline

Intended Learning Outcomes:

By the end of this module, university English language instructors will be able to:

- Identify the different types of questions for different purposes.
- Identify the definition of prompting questions.
- Identify the different types of prompting questions.
- Design prompting questions.
- Identify the definition of probing questions.
- Design probing questions.
- Differentiate between clarifying and probing questions.
- Identify the question redirecting techniques.
- Practice prompting, probing and redirecting techniques in the classroom.

Teaching/Learning Strategies:

University English Language instructors will adopt the 5Es Model strategies

Materials and Teaching Aids

- PowerPoint Presentations
- Worksheets
- Online websites
- Lesson plans

Time Allocated: 3 hours in-class + an hour online



Probing, Prompting and Redirecting Techniques

Phase 1: Engagement

Time: 20 m

- What do you do when you ask your students and they do not have an answer?
- What do you call these techniques?
- Match your answers with the three concepts in the title of the module.
- Fill in the following chart based on your current knowledge. The first two columns and save the “L” column for the end of each activity:

Worksheet 1

K.W.L. Chart

Topic: _____

K What I Already Know	W What I Want to Know	L What I Have Learned

- In peers, discuss your answers and find out similarities and differences.

- Ask your group members for additional information to be added to your W column.
- Summarize your answers in one table to be discussed with the instructor.

Phase 2 & 3: Explore and Explain

Time: 120 m

After discussing the relevant background knowledge prompting, probing and redirecting techniques, let's explore the definition of each term and how they relate to the inquiry approach. More specifically, we will explore the answers to the following questions:

- What are the different types of questions for different purposes?
- What is the definition of prompting questions?
- What are the different types of prompting questions?
- How to design prompting questions?
- What is the definition of probing questions?
- How to design probing questions?
- What is the difference between clarifying and probing questions?
- What are the question redirecting techniques?
- How to practice prompting, probing and redirecting techniques in the classroom?

Activity 1: Types of Questions

20 m

- Discuss with your group the types of questions as you discussed in the warmup activity.
- Ask the instructor about them and compare your answers with your colleagues.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you:
 - o The teachers may use the techniques of prompting, probing and redirecting in the inquiry-based teaching and learning:
 - *Prompting*: questions can be broken up into parts where the initial questions is difficult to answer. Further clues or hints may be given for the students to complete.
 - *Probing*: when the initial response by the student is incomplete or partially correct, questions requiring the students to clarify, elaborate or explain his initial answer may be asked.
 - *Redirecting*: a discussion can be simulated among the students by asking other students to answer the same question or addressing it to the class in genera. Redirecting teaching increases students participation.
- Now provide a definition that represent the thoughts and ideas of the whole group using the following template (Use the template three times, one for each technique):

Worksheet 2

Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 2: Prompting Questions

20 m

- Navigate the internet to explore the definition of prompting and ind examples of prompting questions.
- Discuss with your group the definitions and examples you have got.

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Conclusion:

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Activity 3: Types of Prompting Questions

20 m

- Given the previous knowledge, categorize your questions into different types.
- Ask the instructor about the main terms to be included in the comparison.
- Share your ideas with the group and summarize your thoughts.
- The following information might help you:
 - o There are different types of prompting questions.
 - *Mini-tour questions:* such as you previously mentioned Tell me more about that. ... can you describe
 - *Extension questions:* Tell me more about Is there anything else you can tell me about What else?

- *Encouragement questions/ comments:* go on ... Yes ... Uh huh?
 - *Example questions:* Can you give an example of that?
- Now pose some prompting questions and discuss with your group how to redirect them through your discussions.
 - Now fill out the following template:

Worksheet 2
<p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Conclusion:</p> <p>.....</p> <p>.....</p>

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Activity 4: Probing Questions

20 m

- Navigate the internet to explore the definition of probing and some examples of probing questions.
- Discuss with your group the definitions and examples you have got.
- Ask the instructor about some links and hints that might help you.
- Share your ideas with the group and summarize your thoughts.
- Apply the definition and the examples to some questions in the course you are teaching:
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- Now fill out the following template:

Worksheet 2

Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 5: Types of Probing Questions

20 m

- Given the previous knowledge, categorize your questions into different types.
- Ask the instructor about the main terms to be included in the comparison.
- Share your ideas with the group and summarize your thoughts.
- The following information might help you:
 - When seeking more detail, there are a number of types probes you can use, depending on what they are saying and what you want to discover.
 - *Clarification*: When they use vague or unclear language, or when you just need more detail, seek to further understand them by asking for clarification.
 - What exactly did you mean by 'XXX'?
 - What, specifically, will you do next week?
 - Could you tell me more about YY?
 - *Purpose*: Sometimes they say things where the purpose of why they said it is not clear. Ask them to justify their statement or dig for underlying causes.
 - Why did you say that?
 - What were you thinking about when you said XX?
 - *Relevance*: If they seem to be going off-topic, you can check whether what they are saying is relevant or salient to the main purpose of inquiry.
 - Is that relevant to the main question?
 - How is what you are saying related to what I asked?
 - *Completeness and accuracy*: You can check that they are giving you a full and accurate account by probing for more detail and

checking against other information you have. Sometimes people make genuine errors (and sometimes deliberate), which you may want to check.

- Is that all? Is there anything you have missed out?
- How do you know that is true?
- How does that compare with what you said before?
- *Repetition*: One of the most effective ways of getting more detail is simply by asking the same question again. You can use the same words or you can rephrase the question (perhaps they did not fully understand it first time).
 - Where did you go?
 - What places did you visit?
 - You can also repeat what they have said ('echo question'), perhaps with emphasis on the area where you want more detail.
 - He asked you to marry him??
- *Evaluation*: To discover both how judgmental they are and how they evaluate, use question that seek evaluation:
 - How good would you say it is?
 - How do you know it is worthless?
 - What are the pros and cons of this situation?
- *Emotional*: Particularly if they are talking in the third person or otherwise unemotionally and you want to find out how they feel, you can ask something like:
 - And how did you feel about that?

- When you do this, do be careful: you may have just asked a cathartic question that results in them exploding with previously suppressed emotion.
- Clarifying Questions are simple questions of fact. They clarify the dilemma and provide the nuts and bolts so that the participants can ask good probing questions and provide useful feedback.
- Examples of Clarifying Questions:
 - Is this what you said...?
 - What resources were used for the project?
 - Did I hear you say...?
 - Did I understand you when you said...?
 - What criteria did you use to...?
 - What's another way you might...?
 - Did I hear you correctly when you said...?
 - Did I paraphrase what you said correctly?
- Probing Questions are intended to help the presenter think more deeply about the issue at hand.
- Examples of Probing Questions:
 - Why do you think this is the case?
 - What do you think would happen if...?
 - What sort of impact do you think...?
 - How did you decide...?
 - How did you determine...?
 - How did you conclude...?
 - What is the connection between... and...?
 - What if the opposite were true? Then what?

- Now pose some probing questions and discuss with your group how to redirect them through your discussions.
- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:
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Conclusion:
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Activity 6: Redirecting techniques

20 m

- Navigate the internet to explore the techniques of redirecting questions, when and how to use them.
- Discuss with your group the definitions and examples you have got.
- Ask the instructor about some links and hints that might help you.
- The following information might help you:
 - A redirecting question is not meant to be used when students really do "need" the answer or are so lost that using this question would cause more frustration than results. These questions have to be used at the right times and in an ideal way. However, these questions are hard to apply and take practice.
 - *When to Use Them:* As a general rule, the ideal time to use Redirecting Questions is when:
 - To have students increase their own understanding by explaining ideas and concepts to someone else.
 - To help students better understand the question asked by encouraging them to first consider why (aka the purpose of the question) it was even asked in the first place.
 - To require students to actively think on a deeper level.
 - *How to Use Them:* Redirecting Questions can be phrased in almost every way imaginable. Here are some suggestions of words/phrases that might be used to redirect a question:
 - Why...do you think that is the case?
 - What....part of the question do you understand?
 - Can...you find that in your notes?

- Does...anyone else know what they (previous answer given by student) are missing?
 - Why....don't you read the question one more time?
 - Would...someone like to explain (to confused student) how they found the answer?
- Share your ideas with the group and summarize your thoughts.
 - Now fill out the following template:

Worksheet 2
<p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Conclusion:</p>

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Phase 4: Elaborate

Time: 20 m

- Use the generated ideas and thoughts to be applied to other lessons or subject areas of your specialization.
- Use the internet to extend your knowledge about prompting, probing and redirecting techniques (**THIS PART WILL BE LEFT FOR HOME AS AN EXTRA HOUR EXPANSION OF THIS SESSION**, so no need to do further efforts now). The following links might help you:
 - o <https://sites.google.com/site/tapfacilitatorresourcecenter/questioning-techniques/redirecting-questions>
 - o http://changingminds.org/techniques/questioning/probing_questions.htm
 - o https://www.etown.edu/offices/learning/Questioning_Techniques_for_tutors.aspx
 - o <https://www.meritsolutions.com.au/recruitment-and-selection/to-prompt-or-not-to-prompt-that-is-the-question/>
 - o <https://www.youtube.com/watch?v=Y4sjTag4acs>
 - o <https://www.youtube.com/watch?v=8h4ky2im3xU>
- Collaborate with your group to refine the ideas you have got from the session.
- Fill out the following form:

Worksheet 3

Elaborate

I can use the inquiry approach to teach:

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The new concepts I need to explore more about are:

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The real world connections that I might use the inquiry approach are:

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The refined ideas about the inquiry approach are:

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Conclusions

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Phase 5: Evaluate

Time: 20 m

- In addition to the evaluation throughout the session, this final evaluation of the module aimed to:
 - o Answering questions that explain or show your thinking.
 - o Demonstrating your understanding of the topic as you complete activities.
 - o Demonstrating applicable skills.

- As such, work in groups to provide answers to the following questions:

- o What are the different types of questions for different purposes?

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- o What is the definition of prompting questions?

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- What are the different Types of Prompting Questions?

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- How to design prompting questions?

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- What is the definition of probing questions?

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- How to design probing questions?

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- What is the difference between clarifying and probing questions?

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- What are the question redirecting techniques?

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- How to practice prompting, probing and redirecting techniques in the classroom?

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**MODULE FIVE:
QUESTIONING STRATEGIES**

Module Outline

Intended Learning Outcomes:

By the end of this module, university English language instructors will be able to:

- Identify the questioning strategies.
Recognize the functions of the questioning strategies.
- Identify the levels of questions.
- Design questions in the different levels of questions.
- Identify the steps for planning questions.
- Identify some strategies to be used when students respond.
- Identify some strategies for responding to student questions.
- Identify some strategies to be used when students don't respond.
- Practice questioning strategies in action.

Teaching/Learning Strategies:

University English Language instructors will adopt the 5Es Model strategies

Materials and Teaching Aids

- PowerPoint Presentations
- Worksheets
- Online websites
- Lesson plans

Time Allocated: 3 hours in-class + an hour online



Questioning Strategies

Phase 1: Engagement

Time: 20 m

- What strategies do you adopt when you ask your students; i.e. How do you plan for your question, what do you do when students answer, don't answer, or ask questions as a response to your question?
- Fill in the following chart based on your current knowledge. The first two columns and save the "L" column for the end of each activity:

Worksheet 1

K.W.L. Chart

Topic: _____

K What I Already Know	W What I Want to Know	L What I Have Learned

- In pairs, discuss your answers and find out similarities and differences.

- Ask your group members for additional information to be added to your W column.
- Summarize your answers in one table to be discussed with the instructor.

Phase 2 & 3: Explore and Explain

Time: 120 m

After discussing the relevant background knowledge about questioning strategies, you adopt in the classroom, let's explore some questioning strategies in planning the questions, responding to students' questions, answers and when they do not answer. More specifically, we will explore the answers to the following questions:

- What are the questioning strategies?
- What are the functions of the questioning strategies?
- What are the levels of questions?
- How to questions in the different levels of questions?
- What are the steps for planning questions?
- What are the strategies to be used when students respond?
- What are the strategies for responding to student questions?
- What are the strategies to be used when students don't respond?
- How could you practice questioning strategies in action?

Activity 1: Questioning Strategies

20 m

- Discuss with your group the questioning strategies as you discussed in the warmup activity.

- Ask the instructor about them and compare your answers with your colleagues.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you:
 - Questioning strategies are useful to instructors for effectively planning class participation activities, for designing homework assignments, and for writing exams. The strategies help instructors to match their goals or objectives for an assignment with the actual components of the assignment. Other functions of questioning strategies are as follows.
 - to motivate and to interest
 - to reveal prior misconceptions
 - to evaluate
 - to guide thinking
 - to discipline, manage, or control
 - to encourage involvement of passive learners
 - to diagnose strengths and weaknesses
 - to understand how students form concepts
 - to help students form the habit of reflection
 - to gain insight about students' interests
 - to increase students' incentive to inquire
 - to help students learn to construct meaning
 - to help students set realistic expectations
 - to summarize information
 - to relate concepts
 - to provide student feedback
 - to give listening clues

- **PLANNING QUESTIONS:** Effective questioning sessions in classroom require advance preparation. While some instructors may be skilled in extemporaneous questioning, many find that such questions have phrasing problems, are not organized in a logical sequence, or do not require students to use the desired thinking skills.
- **HANDLING STUDENT RESPONSES TO QUESTIONS:** An important aspect of classroom interaction is the manner in which the instructor handles student responses. When an instructor asks a question, students can either respond, ask a question, or give no response.
- **STRATEGIES FOR RESPONDING TO STUDENT QUESTIONS:** There are many ways in which an instructor can respond to questions from students. However, all strategies begin with this important step: Listen to the student's question. After you are certain that you understand the question, be sure that other students have heard and understood the question.
- **Cold Call Strategy**
 - Name the question before identifying students to answer it
 - Call on students regardless of whether they have hands raised, using a variety of techniques such as random calls, tracking charts to ensure all students contribute, name sticks or name cards
 - Scaffold the questions from simple to increasingly complex, probing for deeper explanations
 - Connect thinking threads by returning to previous comments and connecting them to current ones. In this way, listening to

peers is valued, and even after a student's been called on, he or she is part of the continued conversation and class thinking

○ **No Opt Out Strategy**

- Require all students to correctly answer questions posed to them
- Always follow incorrect or partial answers from students by giving the correct answer themselves, cold calling other students, taking a correct answer from students with hands raised, cold calling other students until the right answer is given, and then returning to any student who gave an incorrect or partial answer for complete and correct responses

○ **Think or Ink-Pair-Share Strategy**

- Students are given a short and specific timeframe (1-2 minutes) to **think** or **ink** (write) freely to briefly process their understanding/opinion of a text selection, discussion question or topic.
- Students then share their thinking or writing with a peer for another short and specific timeframe (e.g. 1 minute each).
- Finally the teacher leads a whole-class sharing of thoughts, often charting the diverse thinking and patterns in student ideas. This helps both students and the teacher assess understanding and clarify student ideas.

○ **Turn and Talk Strategy**

- When prompted, students turn to a shoulder buddy or neighbor and in a set amount of time, share their ideas about a prompt or question posed by the teacher or other students. Depending on the goals of the lesson and the nature of the Turn and Talk,

students may share some key ideas from their discussions with the class.

○ **Go-around Strategy**

- When a one- or two-word answer can reveal student thinking, teachers ask students to respond to a standard prompt one at a time, in rapid succession around the room.

○ **Whiteboards Strategy**

- Students have small white boards at their desks or tables and write their ideas/thinking/ answers down and hold up their boards for teacher and/or peer scanning.

○ **Hot Seat**

- The teacher places key questions on random seats throughout the room. When prompted, students check their seats and answer the questions. Students who do not have a hot seat question are asked to agree or disagree with the response and explain their thinking.

○ **Fist-to-Five or Thumb-Ometer Strategy**

- To show degree of agreement or commonalities in ideas, students can quickly show their thinking by putting their thumbs up, to the side or down; or by holding up (or placing a hand near the opposite shoulder) a fist for 0/Disagree or 1-5 fingers for higher levels of confidence or agreement.

○ **Human Bar Graph Strategy**

- Identify a range of answers to a question or prompt as labels for 3-4 adjacent lines. Students then form a human bar graph by

standing in the line that best represents their answer to the question(s) posed.

○ **Four Corners Strategy**

- Students form four groups (vary the number based on your purpose) based on commonalities in their responses to a question posed. In those groups, students discuss their thinking and one student shares their ideas with the class. Students in other groups/corners may move to that corner if they change their thinking based on what they hear.

- Now match the results of your discussion with information above using the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:
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Conclusion:

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Activity 2: Levels of Questions

20 m

- Navigate the internet to explore the question levels related to Bloom’s taxonomy.
- Discuss with your group all what you have got.
- Ask the instructor about some links and hints that might help you.
- The following ideas might help you:

There are two levels of questions: low-level questions and high-level questions:

- Lower Level Questions
 - Memory Questions
 - Who?
 - What?
 - Where?
 - When?
 - Why?
 - How?
- Higher Level Questions

- Definitions of Terms
 - What is the author's meaning of the term?
 - What is your meaning of the term?
 - Does the term change meaning in the article?
- Generalizations
 - What events led to this situation?
 - In what three ways does this situation resemble . . . ?
 - How do these events cause change?
- Values
 - What is said about this topic? Do you agree?
 - What kind of person supports this topic?
 - Did anyone say or do something that you wouldn't do?
- Translations
 - Retell this situation in your own words.
 - What kind of diagram could you use to illustrate this concept?
 - How could we restate these ideas for a person from another culture?
- Comparisons
 - How is this idea like . . . ?
 - How does this idea today compare with ideas of 20 years ago?
 - How does this idea in the U.W. compare with ideas in another country?
 - Which three ideas are most alike?
- Implications
 - What will these ideas lead to . . . ?
 - What justification does the author give for these ideas?

- If these ideas or events continue to happen, what will result?
- Applications
 - How can these ideas be applied to life here in school?
 - How can we show from this story that we need . . . ?
 - What would be necessary if we wanted to . . . ?
- Analyses
 - Discuss the statement, "ASL is not a language."
 - Some people think that English skills deteriorate when Sign is used, on what do they base this assumption? What do you think?
- Evaluation
 - What do you think of the person or situation; why do you feel this way?
 - Find the opinions; find the facts. Are the supporting reasons logical? emotional? ethical?
- Share your ideas with the group and summarize your thoughts.
- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:

- The following information might help you:
 - STEPS FOR PLANNING QUESTIONS
 - Decide on your goal or purpose for asking questions. Your goal should help you determine what levels of questions you will ask.
 - Select the content for questioning. Choose material which you consider important rather than trivial. Students will study and learn based on the questions you ask. Do not mislead them by emphasizing less important material.
 - Ask questions that require an extended response or at least a "content" answer. Avoid questions that can be answered "yes" or "no" unless you are going to follow with more questions to explore reasoning.
 - Until you are quite skilled at classroom questioning you should write your main questions in advance. This is called "scripting." Arrange your list in some logical sequence (specific to general, lower level to higher level, a sequence related to content). Should you think of additional or better questions during the questioning process, you can be flexible and add those or substitute them for some of your planned questions. However, having a prepared list of questions will help to assure that you ask questions appropriate for your goals and representative of the important material.
 - Phrase your questions so that the task is clear to students. Questions such as "What about foreign affairs?" do not often lead to productive answers and discussion. "What did we say

about chemical bonding?" is too general unless you are only seeking a review of any material the students remember.

- Your questions should not contain the answers. Avoid implied response questions when you are genuinely seeking an answer from the class. A question such as "Don't we all agree that the author of the article exaggerated the dangers of agent orange to strengthen his viewpoint?" will not encourage student response.
 - When planning your questions, try to anticipate possible student responses. Anticipating student responses should help in your planning by forcing you to consider whether the phrasing is accurate, whether questions focus on the goal you have in mind, and whether you have enough flexibility to allow students to express ideas in their own words. You might consider the following:
 - What are some typical misconceptions that might lead students to incorrect answers?
 - Am I asking an open or closed question?
 - What type of response do I expect from students, a definition? Example? Solution?
 - Will I accept the answer in the students' language or am I expecting the textbooks' words or my own terms?
 - What will my strategy be for handling incorrect answers?
 - What will I do if students do not answer?
- Now plan for questions in your course and discuss with your group.
- Now fill out the following template:

Worksheet 2

Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 4: Handling Student Responses to Questions

20 m

- Navigate the internet to explore some strategies that are used to handle student responses to questions.
- Discuss with your group the strategies you have got.
- Ask the instructor about some links and hints that might help you.
- Share your ideas with the group and summarize your thoughts.
- The following strategies might help you:
 - **Reinforcement:** The instructor should reinforce student responses and questions in a positive way in order to encourage future participation. The instructor can reinforce by making positive statements and using positive nonverbal communication. Proper nonverbal responses include smiling, nodding and maintaining eye contact, while improper nonverbal responses included looking at notes while students speak, looking at the board, or ruffling papers. The type of reinforcement will be determined by:
 - The correctness of the answer. If a student gives an answer that is off-target or incorrect, the instructor may want to briefly acknowledge the response, then think of ways to help the student provide a correct answer. The instructor could use strategies such as probing, paraphrasing, or asking the question in a different way.
 - The number of times a student has responded. Instructors may want to provide a student who has never responded in class with more reinforcement than someone who responds often.

Be sure to vary reinforcement techniques between various verbal statements and nonverbal reactions. Try not to overuse reinforcement in the classroom by overly praising every student comment. Students begin to question the sincerity of reinforcement if every response is reinforced equally or in the same way.

- **Probing:** The initial response of students may be superficial. The instructor needs to use a questioning strategy called probing to make students explore initial comments. Probes are useful in getting students more involved in critical analysis of their own and other students' ideas. Probes can be used to:
 - Analyze a student's statement, make a student aware of underlying assumptions, or justify or evaluate a statement. *Instructor: What are some ways we might solve the energy crisis? Student: I would like to see a greater movement to peak-load pricing by utility companies. Instructor: What assumptions are you making about consumer behavior when you suggest that solution?*
 - Help students deduce relationships. Instructors may ask students to judge the implications of their statements or to compare and contrast concepts. *Instructor: What are some advantages and disadvantages of having grades given in courses? Student 1: Grades can be a motivator for people to learn. Student 2: Too much pressure on grades causes some students to stop learning, freeze, go blank. Instructor: If both of those statements are true, what generalizations can you make about the relationship between motivation and learning?*

- Have students clarify or elaborate on their comments by asking for more information. ***Instructor:** Could you please develop your ideas further? Can you provide an example of that concept? **Student:** It was obvious that the crew had gone insane. **Instructor:** What is the legal definition of insane? **Student:** It was a violation of due process. **Instructor:** Can you explain why?*
- **Adjust/Refocus:** When a student provides a response that appears out of context, the instructor can refocus to encourage the student to tie her response to the content being discussed. This technique is also used to shift attention to a new topic. ***Instructor:** What does it mean to devalue the dollar? **Student:** Um—I'm not really sure, but doesn't it mean that, um, a dollar doesn't go as far as it used to? Does that mean it's devalued? **Instructor:** Well, let's talk a little bit about another concept, and that is inflation. How does inflation affect your dollar?*
- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:

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Conclusion:

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Activity 5: Strategies for Responding to Student Questions

20 m

- Explore the internet for some strategies that are used for responding to student questions.
- Ask the instructor to help you.
- Share your ideas with the group and summarize your thoughts.
- The following information might help you:
 - o Answer the question yourself. This strategy is best when you have little time remaining in class. The disadvantage of this approach is that you do not encourage student-to-student interaction or independent learning.

- Redirect the question to the class. This strategy helps to encourage student-to-student interaction and to lessen reliance on the instructor for all information.
- Attempt to help the student answer his own question. This may require prompting through reminders of pertinent previously learned information. Or this strategy may require you to ask the student a lower-level question or a related question to begin his thought process. The advantage of this strategy, as in redirecting, is that the student may learn the process of searching for answers to his own questions rather than relying on the teacher. The risk is that the process can be embarrassing or so threatening that the student will be too intimidated to ask questions in the future. Obviously some human compassion is called for when using this strategy.
- Ask the student to stop after class to discuss the question. This strategy is most appropriate when a student raises complicated, tangential questions or when a student is obviously the only one who does not understand a point and a simple answer does not clarify it for the student. Even in these situations there are risks in using this strategy. Students may be intimidated from raising questions in class. The instructor may think that only the questioning student does not understand when actually a number of students are having the same problem.
- Refer the student to a resource where she can find the answer.
- Defer the question until a more appropriate time if the question is not connected to the material you're covering. Be sure to note the question and the student, and to return to the question at a more appropriate time.

- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:
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Conclusion:
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Activity 6: Strategies to Use When Students Don't Respond

20 m

- Navigate the internet to explore strategies to use when students don't respond.
- Discuss with your group the strategies you have got.
- Ask the instructor about some links and hints that might help you.
- The following information might help you:
 - **Redirect:** When a student responds to a question, the instructor can ask another student to comment on his statement. One purpose of using this technique is to enable more students to participate. This strategy can also be used to allow a student to correct another student's incorrect statement or respond to another student's question. *Instructor: Ali, do you agree with Mark's comment? Instructor: From your experience, Aisha, does what Vito said seem true? Instructor: Li, can you give me an example of the concept that Pat mentioned?*
 - **Rephrasing:** This technique is used when a student provides an incorrect response or no response. Instead of telling the student she is incorrect or calling upon another student, the instructor can try one of three strategies:
 - The instructor can try to reword the question to make it clearer. The question may have been poorly phrased. *Instructor: What is neurosis? Student: (No response) Instructor: What are the identifying characteristics of a neurotic person?*
 - The instructor can provide some information to help students come up with the answer. *Instructor: How far has the ball fallen after 3 seconds? Student: I have no idea. Instructor: Let's break down the question, Ann. How do we measure distance?*

- The instructor can break the question down into more manageable parts. *Instructor: What is the epidemiology of polio? Student: I'm not sure. Instructor: What does "epidemiology" mean?*
- **Using "wait time":** One factor that can have powerful effects on student participation is the amount of time an instructor pauses between asking a question and doing something else (calling on a student or rewording the question).
- Share your ideas with the group and summarize your thoughts.
- Now fill out the following template:

Worksheet 2
<p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

<p>Conclusion:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
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Phase 4: Elaborate

Time: 20 m

- Use the generated ideas and thoughts to be applied to other lessons or subject areas of your specialization.
- Use the internet to extend your knowledge about questioning strategies **(THIS PART WILL BE LEFT FOR HOME AS AN EXTRA HOUR EXPANSION OF THIS SESSION, so no need to do further efforts now).**

The following links might help you:

- o <https://citl.illinois.edu/citl-101/teaching-learning/resources/teaching-strategies/questioning-strategies>
- o <https://www.gallaudet.edu/tutorial-and-instructional-programs/english-center/reading-english-as-second-language/reading-and-mapping-strategies/questioning-strategies>
- o <https://www.youtube.com/watch?v=DVfOJjKV5QE>
- o <https://www.youtube.com/watch?v=BGBLMdXnTmo>
- Collaborate with your group to refine the ideas you have got from the session.
- Fill out the following form:

<p>Worksheet 3</p> <p>Elaborate</p>

I can use the inquiry approach to teach:

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The new concepts I need to explore more about are:

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The real world connections that I might use the inquiry approach are:

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The refined ideas about the inquiry approach are:

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Phase 5: Evaluate

Time: 20 m

- In addition to the evaluation throughout the session, this final evaluation of the module aimed to:
 - o Answering questions that explain or show your thinking.
 - o Demonstrating your understanding of the topic as you complete activities.
 - o Demonstrating applicable skills.

- As such, work in groups to provide answers to the following questions:

- o What are the questioning strategies?

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- o What are the levels of questions?

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- How to questions in the different levels of questions?

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- What are the steps for planning questions?

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- What are the strategies to be used when students respond?

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- What are the strategies for responding to student questions?

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- What are the strategies to be used when students don't respond?

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- How could you practice questioning strategies in action?

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MODULE SIX:
INDIVIDUAL AND GROUP QUESTIONING TECHNIQUES

Module Outline

Intended Learning Outcomes:

By the end of this module, university English language instructors will be able to:

- Identify the individual and group questioning techniques.
- Recognize the meaning of guided self-questioning.
- Practice the activity steps of guided self-questioning.
- Identifying the traps of group questioning.
- Practice techniques of group questioning.
- Discuss the advantages and disadvantages of both individual and group questioning techniques.
- Appreciate the role of both individual and group questioning techniques in constructing knowledge and skills.

Teaching/Learning Strategies:

University English Language instructors will adopt the 5Es Model strategies

Materials and Teaching Aids

- PowerPoint Presentations
- Worksheets
- Online websites

Time Allocated: 3 hours in-class + an hour online



Individual and Group Questioning Techniques

Phase 1: Engagement

Time: 20 m

- Do you ask your students individually or as a group? Why?
- Fill in the following chart based on your current knowledge the first two columns and save the “L” column for the end of each activity:

Worksheet 1

K.W.L. Chart

Topic: _____

K What I Already Know	W What I Want to Know	L What I Have Learned

- In peers, discuss your answers and find out similarities and differences.
- Ask your group members for additional information to be added to your W column.
- Summarize your answers in one table to be discussed with the instructor.

Phase 2 & 3: Explore and Explain

Time: 120 m

After discussing the relevant background knowledge about individual and group questioning, let's explore more techniques of both questioning skills and highlight some traps you might fall in when adopting group questioning technique. More specifically, we will explore the answers to the following questions:

- What are the individual and group questioning techniques?
- What do we mean by guided self-questioning?
- How could you use the activity steps of guided self-questioning?
- What are the traps of group questioning?
- How could you use the techniques of group questioning?
- What are the advantages and disadvantages of both individual and group questioning techniques?
- How important is the role of both individual and group questioning techniques in constructing knowledge and skills?

Activity 1: Individual and Group Questioning

20 m

- Discuss with your group the difference between individual and group questioning.
- Ask the instructor about what would help you distinguish between their techniques.
- Try with your group to write some questions that you might address individually or to a group of students.
- Share your ideas with the group and summarize your thoughts.

- Now discuss your thoughts and ideas of the whole group using the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:
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Conclusion:
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Activity 2: Guided self-questioning

20 m

- Navigate the internet to find out meaning of guided self-questioning.
- Find out the steps that might help you design an activity that utilize the guided self-questioning.
- Discuss with your group such steps.
- Ask the instructor about some links and hints that might help you.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you:
 - When engaged in Guided Self-Questioning, students are able to process, clarify, and extend the content of a presentation through structured individual work. The set of generic thought-provoking questions helps ensure that students will engage in deep thinking skills such as analysis and evaluation; the transparency of the process helps students to develop metacognition. Guided Self-Questioning is an individual version of Guided Group Questioning. It can be used as homework, students can use it in individual work following a presentation or reading, or students can use it as a form of note-taking to facilitate learning during a presentation or reading.
 - **Preparation**
 - Create a handout, sets of index cards, or large display of generic thought-provoking questions. See attached examples of generic thought-provoking questions.
 - Identify and prepare the lecture, presentation, film, or text that you would like students to process through Guided Self-Questioning.

- **Activity Steps**
- *Teacher displays or passes out a set of generic thought-provoking questions to students.*
 - If this is a new activity for students, you will probably want to model completing these questions based on a familiar text or topic, and lead students in a discussion about how these generic sentence stems can lead to better questions. You may want to design and lead a mini-lesson in which students compare and contrast “memory questions” with “thought questions,” and practice generating and answering each. If students are familiar with this activity, then you can simply distribute the generic question stems.
- *Teacher gives the lecture or presentation, or students read the target text.*
 - Encourage students to begin generating questions while listening or reading, as they think of them.
- *Individually, each student writes down several questions about the content of the presentation or text using the provided generic sentence stems.*
 - During this time, you can circulate and listen to students’ ideas and what they are noticing. You can also help them to clarify or extend their thinking.
- *Individually, students work on responding to each of their questions in writing.*
 - During this time you can circulate and discuss the questions with the students. Probe their thinking and understanding and help to extend their ideas.

- *Students reflect on their learning in writing or in conversation.*
 - Students respond to questions such as: · How did the generic questions help you to write thought-provoking questions? · What is meant by a “thought-provoking question”? How is it different from a “memory question”? · How did writing and answering these questions help you to understand and remember the material? · In what other contexts might this strategy be useful to you? · How could you use this strategy to learn during a lecture? During a reading? How might it be useful in studying?
- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:

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Conclusion:

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Activity 3: Traps of Group Questioning

20 m

- As you teach to university students, discuss with your group the traps you might fall in while asking group questions.
- Differentiate between the individual and group questions in terms of these traps.
- Discuss the different ways you might use to overcome such traps.
- Share your ideas with the group and summarize your thoughts.
- The following might help you:
- The following information might help you:
 - o **Who are you asking?**
 - o When you ask within a group, you can ask in a number of directions. Be clear about this so people in the group know how to answer. A general question asked to thin air may get no answer as people either think it is rhetorical or are not sure if you asking them.

- *Ask an individual*
 - When asking an individual, use their name, point to them, say 'the person in the red hat' or otherwise ensure that they know you are asking them in particular.
 - Give them a moment or two to realize that they are being asked a question. A way of doing this is to first indicate that you are asking them a question, or even ask if you can ask. For example:
 - 'Jeff, can I ask you a question about this?'
- *Ask a selection*
 - To ask a subset from the group, first qualify them, and also let them know how they should make themselves visible. For example:
 - 'Who here has got a Toyota car? Please put your hands up.'
- *Asking everyone*
 - Even if you are asking the group as a whole, again give them a prompt to let them know that they should wake up (if they were daydreaming) and start thinking. You can do this by asking for a volunteer:
 - 'Who can tell me what this means?'

- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 4: Techniques of Group Questioning

20 m

- Discuss with your groups the techniques you usually use to avoid the traps of group questions as in the previous activity.

- Ask the instructor about any more explanation.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you:
 - It is easy in a group to go to sleep or otherwise zone out. Keep them with you by being interesting and ensuring they are engaged at all times.
 - Scanning
 - Keep looking around to see whether people are showing interest, confusion, agitation, etc. And then respond accordingly, of course. Ask those who look confused or agitated what the problem is, or ask them something to engage them (but beware of tirades, of course).
 - Pointing
 - Point yourself at everybody from time to time. This does not need a finger - all you need is to point your body. Range back and forth looking down lines and diagonals of people (all in the line will think you are looking at them). Look into eyes - not just scanning but pausing on people but not staring, of course.
 - Rehearsing
 - Help them think by talking about what they perhaps should be thinking. This may mean musing about meaning, summarizing understanding so far, making tentative conclusions and so on. Then look out to see if they are with you, of course.
 - Repeating

- When you have an answer from someone, it is often good to repeat it back to the group as many will not have heard it clearly. A way of doing this in combination with testing your understanding of the answer is to repeat it back to the person who answered in the form of a question. Thus:

- 'Thanks, Jim, so you think we should all learn to fly, is that right?'

- Engaging

- Engage individual in short conversations, but beware of being dragged into something longer. Also beware of falling into a comfort zone of talking only with those who you like. Engage the whole group allowing multiple inputs with such as:

- 'Who else has an opinion on this?'

- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:

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Conclusion:

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Activity 5: Advantages and Disadvantages of Individual and Group Questioning

20 m

- Given the previous discussions, identify the advantages and disadvantages of both individual and group questioning techniques.
- Ask the instructor about any more explanation and expansion.
- Join those who have the same curriculum area as yours and discuss your ideas of incorporating the inquiry approach while teaching.
- Share your ideas with the group and summarize your thoughts.
- Now fill out the following template:

Worksheet 2

Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 6: Practicing Individual and Group Questioning

20 m

- Orchestrating the knowledge you have got from the previous activities, work in groups to design n activity to be taught in the class utilizing both individual and group questioning techniques.
- Ask the instructor about any more explanation and expansion.

- Join those who have the same curriculum area as yours and discuss your ideas of incorporating the inquiry approach while teaching.
- Share your ideas with the group and summarize your thoughts.

Phase 4: Elaborate

Time: 20 m

- Discuss with your group the main considerations and ideas related to incorporating individual and group questions in your lessons.
- Use the generated ideas and thoughts to be applied to other lessons or subject areas of your specialization.
- Use the internet to extend your knowledge about the individual and group questioning techniques (**THIS PART WILL BE LEFT FOR HOME AS AN EXTRA HOUR EXPANSION OF THIS SESSION**, so no need to do further efforts now). The following links might help you:
 - o http://changingminds.org/techniques/questioning/group_questioning.htm
 - o <http://www.redesignu.org/design-lab/learning-activities/guided-self-questioning>
 - o <https://www.youtube.com/watch?v=Iu4NeySL6y8>
 - o <https://www.youtube.com/watch?v=BGBLMdXnTmo>
 - o <https://www.youtube.com/watch?v=e1Gj-m4lSzw>
 - o <https://www.youtube.com/watch?v=y1QVIcDsnEg>
- Collaborate with your group to refine the ideas you have got from the session.
- Fill out the following form:

Worksheet 3

Elaborate

I can use the inquiry approach to teach:

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The new concepts I need to explore more about are:

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The real world connections that I might use the inquiry approach are:

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The refined ideas about the inquiry approach are:

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Conclusions

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Phase 5: Evaluate

Time: 20 m

- In addition to the evaluation throughout the session, this final evaluation of the module aimed to:

- Answering questions that explain or show your thinking.
- Demonstrating your understanding of the topic as you complete activities.
- Demonstrating applicable skills.

- As such, work in groups to provide answers to the following questions:

- What are the individual and group questioning techniques?

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- What do we mean by guided self-questioning?

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- How could you use the activity steps of guided self-questioning?

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- What are the traps of group questioning?

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- How could you use the techniques of group questioning?

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- What are the advantages and disadvantages of both individual and group questioning techniques?

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- How important is the role of both individual and group questioning techniques in constructing knowledge and skills?

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- To demonstrate your understanding of the topic, utilize individual and group questioning techniques in your next session and find out how your discussions improved.
- Use the acquired knowledge to teach a session to your students and find out the difference in terms of engagement and motivation.
- Use the provided links to expand your knowledge and ask more questions in the next session.

**MODULE SEVEN:
STUDENTS' ENGAGEMENT THROUGH QUESTIONS**

Module Outline

Intended Learning Outcomes:

By the end of this module, university English language instructors will be able to:

- Identify different methods of students' engagement through questions, e.g. open-ended questions, investigations and reflections.
- Identify the two levels of engagement questioning.
- Utilize hands-on and minds-on activities to encourage students initiate investigations and explorations.
- Solicit information from students' investigations and explorations.
- Practice engagement strategies through questioning students.

Teaching/Learning Strategies:

University English Language instructors will adopt the 5Es Model strategies

Materials and Teaching Aids

- PowerPoint Presentations
- Worksheets
- Online websites
- Lesson plans

Time Allocated: 3 hours in-class + an hour online



Students' Engagement Through Questions

Phase 1: Engagement

Time: 20 m

- As you have finished the practice part of the previous module, what was the impact of questioning on your students' engagement?
- Discuss your answers with your group and take notes of things that you noticed you should have done for improving students' engagement.
- Fill in the following chart based on your current knowledge about engaging students through questioning. The first two columns and save the "L" column for the end of each activity:

Worksheet 1

K.W.L. Chart

Topic: _____

K What I Already Know	W What I Want to Know	L What I Have Learned

- In peers, discuss your answers and find out similarities and differences.

- Ask your group members for additional information to be added to your W column.
- Summarize your answers in one table to be discussed with the instructor.

Phase 2 & 3: Explore and Explain

Time: 120 m

After discussing the relevant background knowledge about how you engage your students in the actual classroom, let's explore more ideas about different ways and levels of engaging students' through utilizing questions. More specifically, we will explore the answers to the following questions:

- What are the different methods of students' engagement through questions?
- What are the two levels of engagement questioning?
- How to use hands-on and minds-on activities to encourage students initiate investigations and explorations?
- How to solicit information from students' investigations and explorations?
- To what extent can you practice engagement strategies through questioning students?

Activity 1: Methods of Students' Engagement through Questions

20 m

- Discuss with your group the results you have got from the warmup activity.
- Ask the instructor about more information of fuzzy areas that you cannot figure out.

- Use your previous knowledge on open-ended questions and reflection and discuss how they affect the engagement of your students.
- Surf the internet for more information about the usability of investigations and reflection to engage your students.
- Share your ideas with the group and summarize your thoughts.
- Read this article “<https://www.washington.edu/teaching/topics/engaging-students-in-learning/>” and find out other ways of engaging students in the learning process.
- Now highlight all thoughts and ideas of the whole group using the following template:

Worksheet 2
<p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p> <p>.....</p> <p>.....</p>

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Conclusion:

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Activity 2: Levels of Engagement Questioning

20 m

- As a result of the previous activity, you have now some strategies that you might use to engage your students through questioning. Discuss with your group how to put these strategies in action.
- Ask the instructor to help you define levels of engagement and what strategies you need to use at each level.
- Share your ideas with the group and summarize your thoughts.
- The information in this article might help you [“https://www.createdbymrhughes.com/engagement-strategies-questioning/”](https://www.createdbymrhughes.com/engagement-strategies-questioning/).
- Use the following template to register the kinds of activities according to their levels and gather data for the next step:

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Conclusion:

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Activity 3: Hands-On and Minds-On Activities

20 m

- Given the previous knowledge, discuss with your group how you practice questioning strategies. Do you use activities? What kinds of activities do you use to improve your students' engagement?
- Ask the instructor about additional information about hands-on and minds-on activities.
- Surf the internet to find out some differences between hands-on and minds-on activities.
- Share your ideas with the group and summarize your thoughts.
- As you go through your inquiry, the following comparison might help you:

	A hands-on activity teacher	A minds-on activity teacher
Planning and objectives	<p>She started planning based on what she thought would be more fun for the students, in which they use their previous knowledge.</p> <p>Objective: none really meaningful. Just demonstrating previous knowledge and the art of students in a total of 3 sessions.</p>	<p>She began by planning based on a clear goal*: to get students to understand the interdependence of an ecosystem, the network and food chains. This goal helped her to know exactly what she had to do to achieve it. In addition, during objective-based planning, the possibility of analysing and understanding the concept of ecological equilibrium appeared. After two sessions, and without planning it, the students developed deductions on extinction and conservation.</p>
Quality of interest in the activity	<p>Students are very happy to develop the manual activity and show their art.</p>	<p>Students are very focused on analysing and deducing about the concepts and knowledge explored.</p>
Quality of learning	<p>The students only managed to apply and share their</p>	<p>The students reflected on the consequences of extinction</p>

	A hands-on activity teacher	A minds-on activity teacher
	previous knowledge, as well as to review their artistic skills.	within the Food Network of an ecosystem. Conceptual understanding was taken from the experience.

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- Now fill out the following template:

Worksheet 2
<p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Conclusion:</p>

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Activity 4: Soliciting Information from Students

20 m

- As a result of the previous utilization of hands-on and minds-on activities in the previous activity, ask yourselves how you could solicit or elicit information from your students through these activities.
- Ask the instructor about any more explanation.
- Share your ideas with the group and summarize your thoughts.
- Now fill out the following template:

Worksheet 2

Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:
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Activity 5: Practice the Levels of Engagement

20 m

- As we have discussed in Activity 3, now design an activity with your group according the two steps of engaging students through the different levels of questioning.
- Ask the instructor about any more explanation and expansion.
- Choose one of you to demonstrate the activity and find ways to improve students' engagement
- Share your ideas with the group and summarize your thoughts.

Activity 6: Practice the Procedures within your group

20 m

- Orchestrating the knowledge you have got from the previous activities, work in groups to design some activities in your own course that help students engage more through questioning.
- Ask the instructor about any more explanation and expansion.

- Join those who have the same curriculum area as yours and discuss your ideas of incorporating the inquiry approach while teaching.
- Share your ideas with the group and summarize your thoughts.

Phase 4: Elaborate

Time: 20 m

- Utilizing information you have got from the discussion in Activity 6 above, discuss with your group ways to improve engagement activities.
- Use the generated ideas and thoughts to be applied to other lessons or subject areas of your specialization.
- Use the internet to extend your knowledge about incorporating inquiry approach in the classroom (**THIS PART WILL BE LEFT FOR HOME AS AN EXTRA HOUR EXPANSION OF THIS SESSION**, so no need to do further efforts now). The following links might help you:
 - o <https://www.youtube.com/watch?v=5mnIP2MVq58>
 - o <https://www.youtube.com/watch?v=BYBJQ5rIFjA>
 - o <https://www.youtube.com/watch?v=Caad2aGyils>
 - o <https://www.youtube.com/watch?v=GclzfPwKP2c>
 - o <https://www.youtube.com/watch?v=lyYrAgnKe1A>
 - o <https://www.youtube.com/watch?v=XmqsskSyUkc>
 - o <https://www.youtube.com/watch?v=ktRuN54CE1I>
- Collaborate with your group to refine the ideas you have got from the session.
- Fill out the following form:

<p>Worksheet 3</p> <p>Elaborate</p>

I can use the inquiry approach to teach:

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The new concepts I need to explore more about are:

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The real world connections that I might use the inquiry approach are:

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The refined ideas about the inquiry approach are:

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Phase 5: Evaluate

Time: 20 m

- In addition to the evaluation throughout the session, this final evaluation of the module aimed to:

- Answering questions that explain or show your thinking.
- Demonstrating your understanding of the topic as you complete activities.
- Demonstrating applicable skills.

- As such, work in groups to provide answers to the following questions:

○ What are the different methods of students’ engagement through questions?

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○ What are the two levels of engagement questioning?

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- How to use hands-on and minds-on activities to encourage students initiate investigations and explorations?

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- How to solicit information from students' investigations and explorations?

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- To what extent can you practice engagement strategies through questioning students?

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- To demonstrate your understanding of the topic, evaluate a session of your colleague using the observation sheets in this module to assess the level of engaging his students in the classroom.
- Use the acquired knowledge of the inquiry approach to teach a session to your students and find out the difference in terms of engagement and motivation.

- Use the provided links to expand your knowledge and ask more questions in the next session on how to apply the inquiry approach in your class.

**MODULE EIGHT:
INQUIRY-BASED ASSESSMENT**

Module Outline

Intended Learning Outcomes:

By the end of this module, university English language instructors will be able to:

- Identify the connection between inquiry and assessment.
- Find out the significance of inquiry-based assessment in overcoming typical barriers and frustrations of instruction.
- Identify authentic methods of inquiry-based assessment.
- Recognize how assessment blur the lines between “testing” and instruction.
- Practice some methods of the inquiry-based assessment.
- Appreciate the role of inquiry-based assessment in the quality of learning and teaching.

Teaching/Learning Strategies:

University English Language instructors will adopt the 5Es Model strategies

Materials and Teaching Aids

- Worksheets
- Online websites
- Lesson plans

Time Allocated: 3 hours in-class + an hour online



Inquiry-Based Assessment

Phase 1: Engagement

Time: 20 m

- We always use questions to assess students' progress and learning. What are the tools you use to assess your students in terms of the inquiry approach? Do you use authentic materials, worksheets, tests, activities ..., etc.?
- Do you take into account the individual differences among students while assessing?
- Fill in the following chart based on your current knowledge. The first two columns and save the "L" column for the end of each activity:

Worksheet 1

K.W.L. Chart

Topic: _____

K What I Already Know	W What I Want to Know	L What I Have Learned

- In peers, discuss your answers and find out similarities and differences

- Ask your group members for additional information to be added to your W column.
- Summarize your answers in one table to be discussed with the instructor.

Phase 2 & 3: Explore and Explain

Time: 120 m

After discussing the relevant background knowledge about the questioning skills, let's explore the three levels of questioning as well as how to use them in a lesson adopting the inquiry approach. More specifically, we will explore the answers to the following questions:

- What is the connection between inquiry and assessment?
- What is the significance of inquiry-based assessment in overcoming typical barriers and frustrations of instruction?
- What are authentic methods of inquiry-based assessment?
- How can assessment blur the lines between “testing” and instruction?
- How to practice some methods of the inquiry-based assessment?

Activity 1: Connections between Inquiry and Assessment

20 m

- Discuss with your group how the inquiry approach relates to the way we assess our students.
- Reflect on your answers and highlight to what extent inquiry-based instruction enriches the assessment procedures at the different levels, namely, diagnostic, formative and final assessment of learning.
- Discuss with your group the concept of “Assessment as Inquiry” from your viewpoints.

- This article would help you identify this connection through a scenario of inquiry-based assessment

[https://www.emerald.com/insight/content/doi/10.1108/S2048-0458\(2012\)0000001004/full/html](https://www.emerald.com/insight/content/doi/10.1108/S2048-0458(2012)0000001004/full/html)):

- Reviewing the previous scenario the connection between assessment and inquiry.
- Ask the instructor about them and compare your answers with your colleagues’.
- Share your ideas with the group and summarize your thoughts.
- Now provide a definition that represent the thoughts and ideas of the whole group using the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:
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Questions raised from discussions:
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Conclusion:

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Activity 2: Significance of Inquiry-Based Assessment

20 m

- Based on the previous discussions, identify the significance of inquiry-based assessment.
- Discuss your ideas with your group.
- Share your ideas with the group and summarize your thoughts.
- Try to connect your ideas to the following:
 - o Student learning assessment is often not connected back to teaching and programming, especially when we are measuring the impact of co-curricular activity. We may collect, but we do not always close the loop, missing the chance to make meaning of the data in ways that bring fresh understanding to our work.
 - o Assessment is something done to centers by externally driven priorities, rather than owned by centers. Often we assess because we are asked to provide a specific kind of result to someone external to our center/program/initiative. We are “under the assessment gun,”

rather than pursuing assessment motivated by our own inquiry about our work and its impact.

- Assessment can turn up some interesting data but it is definitely not a creative activity. When we present about assessment at non-assessment conferences, attendees often report that they are there because they feel they “should be,” not because they necessarily want to be. Assessment is bitter medicine, separate from the food that sustains us.
- Assessment is something experts do. Assessment relies on specialized knowledge; therefore, doing it well demands that we outsource it when/if at all possible.

- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
Knowledge that I got from sharing with the group:
Questions raised from discussions:

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Conclusion:

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Activity 3: Authentic Methods of Inquiry-Based Assessment

20 m

- Given the previous knowledge, discuss with your group the methods you use to apply inquiry-based assessment.
- Ask the instructor about the main methods to be included.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you:
 - Videos of students' Senior Presentations of Learning
 - Essays written by students in service-learning courses
 - Written reflections and blogs
 - Spoken reflections during service immersion experiences

- Students' written research papers
 - Students' senior theses and capstones
 - Students' e-portfolios
- Reflect on these authentic methods and highlight which of them you can use while teaching.
 - Discuss with your group other methods of authentic inquiry-based assessment.
 - Now fill out the following template:

Worksheet 2
<p>Exploring</p> <p>My ideas about the topic:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

Conclusion:

Activity 4: Testing, Instruction and Inquiry-Based Assessment

20 m

- Based on your knowledge and the discussions above, highlight the correlation between testing, instruction and inquiry-based assessment in a figure of related circles.
- Ask the instructor about any more explanation.
- Share your ideas with the group and summarize your thoughts.
- The following ideas might help you to understand this relationship:
 - o For many students, testing and teaching constitute a curious dialectic, reflected in the universal question “Will it be on the test?” On the one hand, students should assume that all learning should be “testable,” but should go beyond the short-term demands of a Friday quiz.
 - o Formative assessments employ a variety of strategies to align teaching and testing. First, assessment takes place over a lengthy period of time that extends over more than a single class period. The format tends to blur the lines between “testing” and instruction. Because instruction is responsive and dynamic, it may not occur to the student to ask if a particular snippet will be on the test. In formative assessment the test is often embedded in the activity itself. In fact, if related activities like

those found in a project format comprise the assessment, the combination transcends a typical assessment by offering the teacher an ongoing opportunity to gauge students' understanding of both process and content. This multifaceted approach to data gathering about student learning offers rich and deep insights into the next steps in instruction for both levels.

- Formative assessments, when they are embedded within instruction, can accommodate a range of instructional strategies, from direct instruction to facilitation, observation, and modeling. They can be supported by a variety of grouping arrangements, allowing the teacher to make informed adaptations along the way in timing, resources, and attention to groups and individuals. The teacher can continuously monitor performance and learning, products and processes, student interactions, and discourse. If formative assessment is embedded across interrelated instruction rather than individual tasks, evidence cumulates about longer-term learning. This longer-term assessment process aids teachers in observing shifts in performance, while also moving students toward increased independence and more challenging tasks, from formative toward summative, from progress toward accomplishment.

- Now fill out the following template:

Worksheet 2
Exploring
My ideas about the topic:
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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Activity 5: Inquiry-Based Assessment in Action

20 m

- As a university English language instructor, discuss with your group how to use inquiry-based assessment in your course.
- Discuss ways for improving your methods of diagnostic, formative and summative evaluation based on the inquiry approach.
- Ask the instructor about any more explanation and expansion.
- Join those who have the same curriculum area as yours and discuss your ideas of incorporating inquiry-based assessment.
- Share your ideas with the group and summarize your thoughts.
- Now design a tool for assessing an activity of your own based on the results of previous discussions.

Activity 6: Reflections on Inquiry-based Assessment

20 m

- Orchestrating the knowledge you have got from the previous activities, work in groups to design a plan of inquiry-based assessment of your course.
- Develop your methods of assessment utilizing the inquiry-based assessment authentic methods.
- Ask the instructor about any more explanation and expansion.
- Join those who have the same curriculum area as yours and discuss your ideas of incorporating the inquiry-based assessment while teaching.
- Share your ideas with the group and summarize your thoughts.

Phase 4: Elaborate

Time: 20 m

- Use the generated ideas and thoughts to be applied to other lessons or subject areas of your specialization.
- Use the internet to extend your knowledge about inquiry-based assessment **(THIS PART WILL BE LEFT FOR HOME AS AN EXTRA HOUR EXPANSION OF THIS SESSION, so no need to do further efforts now).**

The following links might help you:

- o <http://bonner.pbworks.com/w/page/106093284/Inquiry-Based%20Assessment%20-%20Overview>
- o [https://www.emerald.com/insight/content/doi/10.1108/S2048-0458\(2012\)0000001004/full/html#idm46017063676368](https://www.emerald.com/insight/content/doi/10.1108/S2048-0458(2012)0000001004/full/html#idm46017063676368)
- o <https://www.youtube.com/watch?v=kqbyei74zhY>
- o <https://www.youtube.com/watch?v=4szE0k0qo5E>
- o <https://thelearningexchange.ca/videos/assessment-inquiry-based-learning-gr-6-7/>
- o <https://www.youtube.com/watch?v=oUHcIqh9wSs>
- Collaborate with your group to refine the ideas you have got from the session.
- Fill out the following form:

<p>Worksheet 3</p> <p>Elaborate</p> <p>I can use the inquiry approach to teach:</p> <ul style="list-style-type: none"> - - - - -

The new concepts I need to explore more about are:

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The real world connections that I might use the inquiry approach are:

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The refined ideas about the inquiry approach are:

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Conclusions

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Phase 5: Evaluate

Time: 20 m

- In addition to the evaluation throughout the session, this final evaluation of the module aimed to:
 - o Answering questions that explain or show your thinking.
 - o Demonstrating your understanding of the topic as you complete activities.
 - o Demonstrating applicable skills.
- As such, work in groups to provide answers to the following questions:

- What is the connection between inquiry and assessment?

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- What is the significance of inquiry-based assessment in overcoming typical barriers and frustrations of instruction?

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- What are authentic methods of inquiry-based assessment?

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- How can assessment blur the lines between “testing” and instruction?

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- How to practice some methods of the inquiry-based assessment?

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**MODULE NINE:
INQUIRY-BASED ACTIVITY DESIGN**

Module Outline

Intended Learning Outcomes:

By the end of this module, university English language instructors will be able to:

- Identify the design of the inquiry-based activities.
- Recognize the components of each phase in inquiry-based activity design.
- Design inquiry-based activities in different curriculum areas.
- Evaluate inquiry-based activities in terms of the design criteria.
- Implement inquiry-based activities with reference to their curriculum areas.
- Discuss the significance of inquiry-based activities in developing students' engagement.
- Evaluate the teacher performance while teaching inquiry-based activities.

Teaching/Learning Strategies:

University English Language instructors will adopt the 5Es Model strategies

Materials and Teaching Aids

- PowerPoint Presentations
- Worksheets
- Online websites
- Lesson plans

Time Allocated: 3 hours in-class + an hour online



Inquiry-Based Activity Design

Phase 1: Engagement

Time: 20 m

- How do you design inquiry-based activities?
- What are the steps you follow to design inquiry-based activities?
- Fill in the following chart based on your current knowledge. The first two columns and save the “L” column for the end of each activity:

Worksheet 1

K.W.L. Chart

Topic: _____

K What I Already Know	W What I Want to Know	L What I Have Learned

- In peers, discuss your answers and find out similarities and differences.

- Ask your group members for additional information to be added to your W column.
- Summarize your answers in one table to be discussed with the instructor.

Phase 2 & 3: Explore and Explain

Time: 120 m

After discussing the relevant background knowledge about inquiry-based activities, let's explore how to design, implement and evaluate inquiry-based activities. More specifically, we will explore the answers to the following questions:

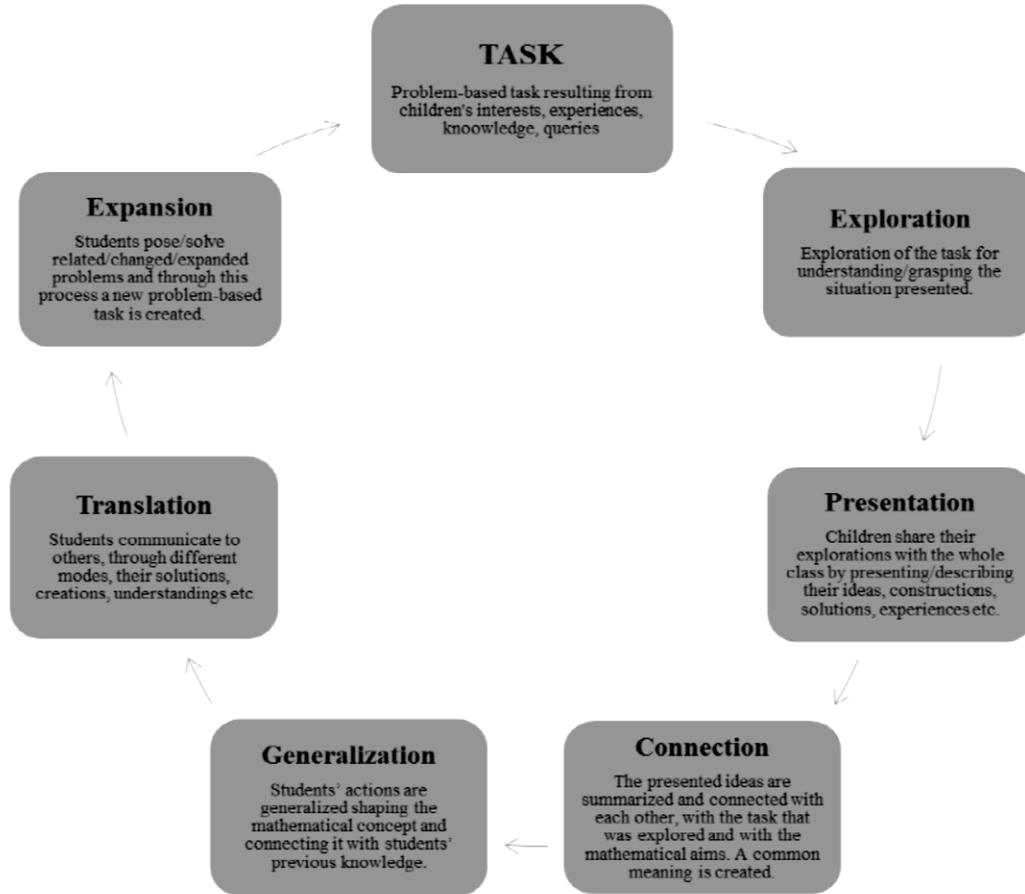
- What is the design of the inquiry-based activities?
- What are the components of each phase in inquiry-based activity design?
- How to design inquiry-based activities in different curriculum areas?
- How to evaluate inquiry-based activities in terms of the design criteria?
- What is the significance of inquiry-based activities in developing students' engagement?
- How to evaluate the teacher performance while teaching inquiry-based activities?
- To what extent do you use inquiry-based activities while teaching?
- How could inquiry-based activities impact students' engagement in the classroom?

Activity 1: Inquiry-Based Activities Design

20 m

- Discuss with your group how to design inquiry-based activities.
- Ask the instructor to give you some hints and ideas.

- Share your ideas with the group and summarize your thoughts.
- The following figure might help you:



- Now compare your answers with the seven steps in the figure above and finish the following worksheet:

Worksheet 2

Exploring

My ideas about the topic:

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<p>Knowledge that I got from sharing with the group:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Questions raised from discussions:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Conclusion:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>

Activity 2: Exploring the Seven Steps in Inquiry-Based Activity Design

20 m

- Navigate the internet to explore components of the previous seven steps.
- Discuss with your group what each step means and highlight the similarities between your answers and theirs.
- Ask the instructor about some links and hints that might help you.
- The following might help you:
 - o 1. Task (key person: teacher): A problem-based task is invented and presented, by the teacher, through a context, resulting from children’s

interests, experiences, knowledge, queries (emergent from a previous free talk and sharing experiences with the students in the class which is based on the curriculum and is in accordance with a mathematical purpose). The task, which may have one or more solutions, is designed in such a way that it problematizes and incites children, in order to engage them in a problem solving and posing process. The problem to be solved could be a non-standard, unfamiliar, a bit complex and novel situation in order not to be solved just by applying existing knowledge and already-known strategies, but through exploration.

- 2. Exploration (key person: students): Children (individually or in groups) use their own (informal) problem-solving strategies to explore the problem introduced by the scenario, to choose/use materials and other auxiliary means, to make conjectures, to pose questions to each other and to the teacher for understanding/grasping the situation and to suggest solutions, in order to ‘solve’ the problem. In that stage, students have the opportunity to reflect and think about the problem on their own, before sharing their thoughts with their peers. They are also free to discuss their ideas about the problem with their peers before presenting them to the whole class.
- 3. Presentation (key person: students): Children share their explorations with the whole class by presenting/describing their ideas, constructions, solutions, experiences etc. Teacher, in that stage, is an observer and organizer of each team’s presentation, orchestrating students’ contributions, posing questions to help children describe, explain and open out their explorations. He/She also encourages

students to pose questions to their peers, from other groups, in order to ensure that they understand all the presentations.

- 4. Connection (key person: teacher): Teacher, in cooperation with students, summarizes the results, poses questions and encourages students to ask questions that connect the presented ideas with each other, with the task that was explored and with the mathematical aims, in order to construct the common meaning that the classroom would share. Teacher's questions have to encourage mathematical thinking and reasoning and can be of several types. At that stage, it will become apparent if cooperative grouping strategies are effective in promoting classroom discourse.
 - 5. Generalization (key person: teacher): Teacher is generalizing (and mathematizing when and if possible) students' actions, shaping the mathematical concept, connecting it with students' previous knowledge and giving feedback to them.
 - 6. Translation (key person: students): At that stage, students are asked to communicate to others (students from another class, family etc.), their solutions, creations, understandings etc. through different modes—verbalizing, gesturally and schematizing.
 - 7. Expansion: Students are asked to pose/solve related/changed/expanded problems. In all the above stages, teachers are also responsible to take students' questions and comments into consideration, turn them into learning opportunities incorporating them to their instructional design, creating a new problem-based task.
- Share your ideas with the group and summarize your thoughts.
 - Now fill out the following template:

Worksheet 2

Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 3: Design Inquiry-Based Activity

20 m

- Given the previous knowledge, work in pairs to design an inquiry-based activity in any of the curriculum areas utilizing the previous steps.
- Ask the instructor for help.
- Discuss the design with your group.
- Develop your activity based on the feedback from the group.

Activity 4: Implementing Inquiry-Based Activities

20 m

- Using the activity you have designed in the previous activity, choose a model one from your group to be taught in the session.
- Discuss how could you improve your teaching of the inquiry-based activity based on the feedback.
- Reteach the activity taking into account the comments you have received.

Activity 5: Evaluating Inquiry-Based Activities

40 m

- Now listen to the other group and evaluate their teaching based on the criteria you have developed in your group.
- Ask the instructor for formulating these comments in a list of indicators.
- Discuss the indicators of evaluating inquiry-based activities with the group.
- Now design an evaluation sheet for assessing inquiry-based activities.
- Use the inquiry-based activities evaluation form in assessing the other presentations.

Phase 4: Elaborate

Time: 20 m

- Use the generated ideas and thoughts to be applied to other lessons or subject areas of your specialization.
- Use the internet to extend your knowledge about inquiry-based activities design, implementation and evaluation (**THIS PART WILL BE LEFT FOR HOME AS AN EXTRA HOUR EXPANSION OF THIS SESSION**, so no need to do further efforts now). The following links might help you:
 - <https://hal.archives-ouvertes.fr/hal-01938922/document>
 - <https://www.ibcoordinator.com/inquiry-based-teaching-activities-videos>
 - <https://www.ibcoordinator.com/inquiry-based-classroom-activities-booklet>
 - <https://www.youtube.com/watch?v=0vJCltsd6A0>
 - <https://www.youtube.com/watch?v=OnqPxUp5hms>
- Collaborate with your group to refine the ideas you have got from the session.
- Fill out the following form:

Worksheet 3

Elaborate

I can use the inquiry approach to teach:

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The new concepts I need to explore more about are:

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The real world connections that I might use the inquiry approach are:

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The refined ideas about the inquiry approach are:

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Conclusions

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Phase 5: Evaluate

Time: 20 m

- In addition to the evaluation throughout the session, this final evaluation of the module aimed to:
 - o Answering questions that explain or show your thinking.
 - o Demonstrating your understanding of the topic as you complete activities.
 - o Demonstrating applicable skills.
- As such, work in groups to provide answers to the following questions:
 - o What is the design of the inquiry-based activities?
 - o
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 - o What are the components of each phase in inquiry-based activity design?
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○ How to design inquiry-based activities in different curriculum areas?

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○ How to evaluate inquiry-based activities in terms of the design criteria?

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○ What is the significance of inquiry-based activities in developing students' engagement?

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○ How to evaluate the teacher performance while teaching inquiry-based activities?

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○ To what extent do you use inquiry-based activities while teaching?

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○ How could inquiry-based activities impact students' engagement in the classroom?

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**MODULE TEN:
WEB TOOLS OF INQUIRY-BASED LEARNING**

Module Outline

Intended Learning Outcomes:

By the end of this module, university English language instructors will be able to:

- Identify the web tools of inquiry-based learning.
- recognize the different uses of online web tools in the inquiry-based environment.
- explore how to build a space in a website for inquiry-based learning.
- Use the web tools in developing inquiry-based activities.
- Identify the significance of utilizing web tools in developing inquiry-based learning.
- Appreciate the role of technological innovations in developing inquiry-based practices.

Teaching/Learning Strategies:

University English Language instructors will adopt the 5Es Model strategies

Materials and Teaching Aids

- PowerPoint Presentations
- Worksheets
- Online websites
- Lesson plans

Time Allocated: 3 hours in-class + an hour online



Web Tools of Inquiry-Based Learning

Phase 1: Engagement

Time: 20 m

- What web tools you use to enrich your inquiry-based learning?
- What are the applications you might use in inquiry-based learning and teaching?
- Fill in the following chart based on your current knowledge. The first two columns and save the “L” column for the end of each activity:

Worksheet 1

K.W.L. Chart

Topic: _____

K What I Already Know	W What I Want to Know	L What I Have Learned

- In peers, discuss your answers and find out similarities and differences.

- Ask your group members for additional information to be added to your W column.
- Summarize your answers in one table to be discussed with the instructor.

Phase 2 & 3: Explore and Explain

Time: 120 m

After discussing the relevant background knowledge about web tools of inquiry-based learning, let's explore some web tools and apps that might help you while incorporating the inquiry approach in teaching. More specifically, we will explore the answers to the following questions:

- What are the web tools of inquiry-based learning?
- What are the different uses of online web tools in the inquiry-based environment?
- How to build a space in a website for inquiry-based learning?
- How to use the web tools in developing inquiry-based activities?
- What is the significance of utilizing web tools in developing inquiry-based learning?
- To what extent do technological innovations play a role in developing inquiry-based practices?

Activity 1: Web Tools of Inquiry-Based Learning

20 m

- Discuss with your group the web tools you have discovered as you discussed in the warmup activity.
- Ask the instructor about them and compare your answers with your colleagues.
- Share your ideas with the group and summarize your thoughts.

- The following web tools might help you:

Orientation	Conceptualization	Investigation	Conclusion/ Discussion
Bubbl.us	Google	Remote labs	Audacity
Mindmeister	Wikipedia	Evernote	Blogger
Youtube	Youtube	Pearlree	Canva
Poll Everywhere	Kidtopia	Photobucket	easel.ly
Spiderscribe	Padlet	QR codes	Flipboard
Padlet		Spiderscribe	Glogster
Lino		Padlet	GoAnimate
Socrative			infogr.am
			Piktochart
			Prezi
			Scribe

- Now match the results of your discussion with information above using the following template:

Worksheet 2

Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 2: Uses of Web Tools in Inquiry-Based Learning

20 m

- Navigate the internet for some of the above web tools and discover how could they help develop the inquiry-based learning.
- Discuss with your group how to use the web tools in each of the four main uses as in the previous figure in Activity 1.
- Use any of the designed activities in the previous module and support it with relevant web tools and discuss the modifications with the group.
- Ask the instructor about some links and hints that might help you.
- Share your ideas with the group and summarize your thoughts.
- Now fill out the following template:

Worksheet 2

Exploring

My ideas about the topic:

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Knowledge that I got from sharing with the group:

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Questions raised from discussions:

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Conclusion:

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Activity 3: Build a Space in Website for Inquiry-Based Learning

20 m

- Find the online labs aim at supporting inquiry-based learning using Go-Lab repository (web site address: <http://www.golabz.eu>).

- Create a unique environment just for your students with a variety of files, links and applications (web site address: <http://www.graasp.eu>).
- Share resources with students. We describe these steps in more detail. I stage. Users of educational portal can search for the necessary resources in 3 categories: Online Labs, Apps, Big Ideas



- The portal "Online Labs" has 1500 online labs that can be used in the classroom, and adapted to educational needs and goals.
- To facilitate the search, you can sort the online laboratory using the right sidebar navigation. Users are able to choose domain, user age, language and other resources.

GO-LAB Search Online Labs Apps Inquiry Spaces Big Ideas Support About Forum

Online Labs

The online labs aim at supporting inquiry-based learning and providing the possibility to conduct scientific experiments in a virtual environment. Importantly, the inquiry process should be well structured and scaffold to achieve optimal learning results. Scaffolding refers to support (dedicated software tools) that helps students with tasks that they cannot complete on their own. For example, they can help students to create hypotheses, design experiments, make predictions, and formulate interpretations of the data.

Online laboratories can be of two kinds. Remotely-operated educational labs (remote labs) provide students with the opportunity to collect data from a real physical laboratory setup, including real equipment, from remote locations. As an alternative there are virtual labs that simulate the real equipment. Remote and virtual labs both have specific advantages for learning and can be combined to support specific learning activities. Additionally, the Go-Lab project offers access to scientific databases, tools, and resources supporting inquiry learning activities of the students.

Please use the filters on the right to find appropriate online labs and resources for your class.

Teachers, please click [propose a lab](#) to tell us if there is a particular lab you would like to see on Golabz!

Lab owners, please click [publish a lab](#) to publish your lab on Golabz!

Sort and filter by:

Sort by
Alphabetically

Subject domains

- Physics (279)
- Chemistry (84)
- Mathematics (52)
- Biology (49)
- Astronomy (37)
- Environmental education (35)
- Technology (32)
- Geography and earth science (26)
- Engineering (22)

Age ranges

- 14-16 (354)
- 12-14 (337)
- 16-18 (284)
- 10-12 (168)
- >18 (98)
- 8-10 (51)
- 6-8 (22)
- Before 6 (4)

Languages

- English (466)
- German (128)
- Spanish (107)
- French (92)

13C Nuclear Magnetic Resonance Spectroscopy

13C NMR spectroscopy is a powerful tool to help determine the structure of molecules in organic chemistry, by mapping the framework of C atoms in a molecule. In the applet, NMR spectra are correlated with a rotatable 3D molecular structure, ... [Read more](#)

Lab owner: The King's Center For Visualization in Science
Language: English
Age range: 16-18
Subject domain: [Chemistry](#), [Organic chemistry](#)

- In category Big Ideas described the laws of nature, physical phenomena, the development and evolution of living and so on. You can also find experiments and demonstrations that reveal the essence of the phenomenon that children learn and add resources to your lesson based on research.
- Now search for an online website that might help you develop your own course with inquiry-based learning.

Activity 4: Developing an Inquiry-Based Activity using Web Tools

20 m

- Using one of the web tools in the first activity, develop an activity to be taught in your classroom.
- Describe how to use it in the following lines:

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- Now describe the steps you will follow to teach your activity in the following lines:

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- Discuss the method and the way you utilized the web tools with your group.
 - Develop your activity based on the group feedback.

Activity 5: Implementing Inquiry-Based Activities utilizing Web Tools

40 m

- Use the generated activities in the previous activity and teach them in front of your colleagues utilizing the web tools.
- Choose the appropriate web tools for your activity.
- Discuss methods of improving the activity using more web tools and websites.
- Suggest some websites that support exploring more information and skills related to your activity.

Phase 4: Elaborate

Time: 20 m

- Use the generated ideas and thoughts to be applied to other lessons or subject areas of your specialization.
- Use the internet to extend your knowledge about web tools for inquiry-based learning (**THIS PART WILL BE LEFT FOR HOME AS AN EXTRA HOUR EXPANSION OF THIS SESSION**, so no need to do further efforts now). The following links might help you:
 - o <https://k12teacherstaffdevelopment.com/tlb/5-web-tools-for-inquiry-based-learning/>

- <https://www.educatorstechnology.com/2015/09/10-educational-web-tools-that-support-inquiry-based-learning.html>
 - <https://edtechreview.in/news/435-how-teachers-use-web-tools-for-ibl>
 - <https://www.lookstein.org/journal/internet-tool-student-inquiry/>
 - <https://www.youtube.com/watch?v=0Is9q-jeJIo>
 - <https://www.youtube.com/watch?v=MdKy8KM9dBk>
- Collaborate with your group to refine the ideas you have got from the session.
 - Fill out the following form:

<p>Worksheet 3</p> <p>Elaborate</p> <p>I can use the inquiry approach to teach:</p> <ul style="list-style-type: none"> - - - - - <p>The new concepts I need to explore more about are:</p> <ul style="list-style-type: none"> - - - - - - -

The real world connections that I might use the inquiry approach are:

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The refined ideas about the inquiry approach are:

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Conclusions

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Phase 5: Evaluate

Time: 20 m

- In addition to the evaluation throughout the session, this final evaluation of the module aimed to:
 - o Answering questions that explain or show your thinking.
 - o Demonstrating your understanding of the topic as you complete activities.
 - o Demonstrating applicable skills.
- As such, work in groups to provide answers to the following questions:
 - o What are the web tools of inquiry-based learning?
 - o
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○ What are the different uses of online web tools in the inquiry-based environment?

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○ How to build a space in a website for inquiry-based learning?

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○ How to use the web tools in developing inquiry-based activities?

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○ What is the significance of utilizing web tools in developing inquiry-based learning?

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- To what extent do technological innovations play a role in developing inquiry-based practices?

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Appendix G
Samples of Participants' Interview Notes

Semi-Structured Interview (Pretest)

Name: Ramadan Salama

Time:

- What are the courses you are teaching in English?

I currently teach English for Specific Purposes for Social work Students and Psychology Department. In addition, I teach microteaching for EFL students.

- Why did you choose to teach such courses in English while you are allowed to teach in Arabic?

As for ESP, I prefer teaching in English as students can acquire the classroom language in addition to some general vocabulary and expressions that they can use.

- How comfortable do you feel with teaching subjects like microteaching and educational technology? Do you have any major concerns?

I prefer teaching microteaching rather than other subjects as I feel that EFL majors lack the chances of teaching and communication in English.

- Have you had any training or instructional material on using the inquiry approach in teaching? If yes, describe it. What did you learn?

Has it influenced your teaching in any way? How?

A. Actually, I didn't have any training on this approach and I would like to attend such training.

- Describe a typical session you have just finished with your students.

The last session, I taught lesson planning. I started by presenting the Bloom taxonomy in English. Providing examples of each level. Finally, I asked Ss. to write their own examples.

- Do you think you used inquiry? If so, what are the main aspects of the session that make it inquiry-based instruction?

If you mean by inquiry asking Ss. I used inquiry to ask about their previous knowledge.

- In your opinion, what are the main procedures you might follow to teach your session?

Presentation, giving examples, evaluation.

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.....
- Do your students ever generate their own questions to investigate? If not, do you ever give students questions to investigate?

..... *No, not at all.*

- Do you prefer having a training on developing your inquiry-based teaching performance skills?

..... *Of course, yes.*

- Do you mind having online assignments to fulfill the purpose of the training?

..... *Yes.*

Semi-Structured Interview (Pretest)

Name: Ahmed Helmy

Time:

- What are the courses you are teaching in English?

Microteaching, instructional aids
and Computer for Education.

- Why did you choose to teach such courses in English while you are allowed to teach in Arabic?

I want to enhance my student's
ability to use English in
the classroom.

- How comfortable do you feel with teaching subjects like microteaching and educational technology? Do you have any major concerns?

Microteaching.
It is about how to
teach English in the
classroom. So, I feel
natural while teaching.

- Have you had any training or instructional material on using the inquiry approach in teaching? If yes, describe it. What did you learn? Has it influenced your teaching in any way? How?

I did a research paper about inquiry based teaching with my professor in the pre-master subjects.

- Describe a typical session you have just finished with your students.

I was teaching how to plan a lesson, especially how to write the instructions and objectives.

- Do you think you used inquiry? If so, what are the main aspects of the session that make it inquiry-based instruction?

Yes, I asked the students many questions to form instructional objectives using the verbs in the Bloom taxonomy.

- In your opinion, what are the main procedures you might follow to teach your session?

Warm-up, presentation, demonstration, evaluation.

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- Do your students ever generate their own questions to investigate? If not, do you ever give students questions to investigate?

..... Some times they ask some
..... questions about the content
..... and I elicit the answers
..... from their colleagues.....

- Do you prefer having a training on developing your inquiry-based teaching performance skills?

..... Yes,
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- Do you mind having online assignments to fulfill the purpose of the training?

..... No, not at all.....
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Semi-Structured Interview (Posttest)

Name: Ramadan Salama

Time:

- What are the courses you are teaching in English?

English for Specific Purposes
Microteaching

- Why did you choose to teach such courses in English while you are allowed to teach in Arabic?

Actually, Using English in the classroom facilitates the inquiry based teaching & have been trained on and student use the language in demonstration.

- How comfortable do you feel with teaching subjects like microteaching and educational technology? Do you have any major concerns?

Using the inquiry-based approach teaching both of them becomes easier as students have many opportunities to participate and explore unknown experiences.

- Have you had any training or instructional material on using the inquiry approach in teaching? If yes, describe it. What did you learn? Has it influenced your teaching in any way? How?

Yes, as we I can use the inquiry based approach in teaching utilizing its 5 Es by starting from Engagement and ending with evaluation

- Describe a typical session you have just finished with your students.

The last session was "How to engage students in the classroom". I started the session by asking the students how their previous teachers engaged them, then explored their previous

- Do you think you used inquiry? If so, what are the main aspects of the session that make it inquiry-based instruction?

Of course, I followed the exploration of the principles of classroom engagement with explanation of different techniques for student's engagement elaborating with examples and ended with evaluation

- In your opinion, what are the main procedures you might follow to teach your session?

Engagement, exploration, explanation, elaboration and evaluation

-
.....
- Do your students ever generate their own questions to investigate? If not, do you ever give students questions to investigate?

At the first session, I was able to encourage them to ask and generate questions about the topic we are discussing, but now they do the problems themselves.

- Do you prefer having a training on developing your inquiry-based teaching performance skills?

In addition to that, I would like to professionally be developed in other related areas as well as the ~~is~~ how to apply inquiry approach in other subject.

- Do you mind having online assignments to fulfill the purpose of the training?

Of course not. The training online assignments were feasible and could reach at home. This helps me develop similar assignments for my students.

Semi-Structured Interview (Posttest)

Name: Ahmad Helmy

Time:

- What are the courses you are teaching in English?

Microteaching, instructional
Aids, and Computer for
Education

- Why did you choose to teach such courses in English while you are allowed to teach in Arabic?

Teaching in English allows me use
the skills I teach students
in the class as well as I
develop my students' skills
in the actual practices.

- How comfortable do you feel with teaching subjects like microteaching and educational technology? Do you have any major concerns?

All subjects now are easy
to teach in English using the
inquiry approach as students
share the responsibility with
me in delivering the content
and the skills.

- Have you had any training or instructional material on using the inquiry approach in teaching? If yes, describe it. What did you learn?

Has it influenced your teaching in any way? How?

Yes, I have just finish the training on how to use inquiry based teaching according to the 5Es model.

I found it very useful in teaching and it enhanced my teaching style to be more motivated and enthusiastic.

- Describe a typical session you have just finished with your students.

Engagement: Linking with ss previous knowledge

Exploration: Finding out what we are going to discuss

Explanation: Demonstrating the content

Elaboration: Expanding knowledge into practice

Evaluation: Self assessment and session evaluation

- Do you think you used inquiry? If so, what are the main aspects of the session that make it inquiry-based instruction?

Of course yes
Engagement, generating curiosity, encouraging students to explain their thinking, group work, asking questions, highlighting important ideas etc.

- In your opinion, what are the main procedures you might follow to teach your session?

The same procedures of The 5Es model.

-
.....
- Do your students ever generate their own questions to investigate? If not, do you ever give students questions to investigate?

..... of course, yes especially
..... after using the inquiry-based
..... instruction.

- Do you prefer having a training on developing your inquiry-based teaching performance skills?

..... If it is like this training,
..... I'd love to attend
..... more and more.

- Do you mind having online assignments to fulfill the purpose of the training?

..... No, of course, online
..... assignments helped me
..... explore many skills that the
..... 21st Century student teachers
..... need in the digital age.

Appendix G
Samples of Participants' Observations

Observation Checklist (Pretest)

Name:

Practicing Inquiry	1	2	3	4
Questioning Skills				
1. Teacher uses all levels of questioning and adjusts level to individual students.				
2. Teacher uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.				
3. Teacher consistently uses probing, prompting and redirecting techniques.				
4. Teacher consistently poses open-ended questions.				
5. Teacher consistently and effectively uses wait time strategies.				
6. Teacher consistently and effectively uses prompts and rephrasing techniques when students cannot answer questions.				
Lesson Presentation				
1. Teacher consistently acts as effective facilitator and coach.				
2. Teacher occasionally lectures and uses investigations so students can demonstrate understanding.				
3. Teacher uses an inquiry process approach and consistently provides teacher-initiated and student-initiated inquiries.				

Practicing Inquiry	1	2	3	4
4. Teacher effectively plans for whole group instruction as needed and frequently uses cooperative learning groups.				
5. Teacher accepts and anticipates unexpected results.				
Engagement of Students				
1. Teacher engages students through open-ended discussions, investigations, and reflections.				
2. Students are consistently active; teacher use hands-on and minds-on activities that encourage open-ended, student-initiated investigations and explorations.				
3. Teacher frequently and effectively solicits information from the students.				
Assessment Procedures				
1. Teacher seldom uses worksheets to assess learning; students record on student designed sheets and/or journal with complete success.				
2. Teacher consistently and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.				
3. Teacher assesses students based on concepts, knowledge, attitudes, transdisciplinary skills, and action taken because of new learning.				
4. Teacher works in collaboration with others in study group sessions to share units, articles, and success stories.				

Observation Checklist (Pretest)

Name:

Practicing Inquiry	1	2	3	4
Questioning Skills				
7. Teacher uses all levels of questioning and adjusts level to individual students.				
8. Teacher uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.				
9. Teacher consistently uses probing, prompting and redirecting techniques.				
10. Teacher consistently poses open-ended questions.				
11. Teacher consistently and effectively uses wait time strategies.				
12. Teacher consistently and effectively uses prompts and rephrasing techniques when students cannot answer questions.				
Lesson Presentation				
6. Teacher consistently acts as effective facilitator and coach.				
7. Teacher occasionally lectures and uses investigations so students can demonstrate understanding.				
8. Teacher uses an inquiry process approach and consistently provides teacher-initiated and student-initiated inquiries.				

Practicing Inquiry	1	2	3	4
9. Teacher effectively plans for whole group instruction as needed and frequently uses cooperative learning groups.				
10. Teacher accepts and anticipates unexpected results.				
Engagement of Students				
4. Teacher engages students through open-ended discussions, investigations, and reflections.				
5. Students are consistently active; teacher use hands-on and minds-on activities that encourage open-ended, student-initiated investigations and explorations.				
6. Teacher frequently and effectively solicits information from the students.				
Assessment Procedures				
5. Teacher seldom uses worksheets to assess learning; students record on student designed sheets and/or journal with complete success.				
6. Teacher consistently and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.				
7. Teacher assesses students based on concepts, knowledge, attitudes, transdisciplinary skills, and action taken because of new learning.				
8. Teacher works in collaboration with others in study group sessions to share units, articles, and success stories.				

Observation Checklist (Posttest)

Name:

Practicing Inquiry	1	2	3	4
Questioning Skills				
13. Teacher uses all levels of questioning and adjusts level to individual students.				
14. Teacher uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.				
15. Teacher consistently uses probing, prompting and redirecting techniques.				
16. Teacher consistently poses open-ended questions.				
17. Teacher consistently and effectively uses wait time strategies.				
18. Teacher consistently and effectively uses prompts and rephrasing techniques when students cannot answer questions.				
Lesson Presentation				
11. Teacher consistently acts as effective facilitator and coach.				
12. Teacher occasionally lectures and uses investigations so students can demonstrate understanding.				
13. Teacher uses an inquiry process approach and consistently provides teacher-initiated and student-initiated inquiries.				

Practicing Inquiry	1	2	3	4
14. Teacher effectively plans for whole group instruction as needed and frequently uses cooperative learning groups.				
15. Teacher accepts and anticipates unexpected results.				
Engagement of Students				
7. Teacher engages students through open-ended discussions, investigations, and reflections.				
8. Students are consistently active; teacher use hands-on and minds-on activities that encourage open-ended, student-initiated investigations and explorations.				
9. Teacher frequently and effectively solicits information from the students.				
Assessment Procedures				
9. Teacher seldom uses worksheets to assess learning; students record on student designed sheets and/or journal with complete success.				
10. Teacher consistently and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.				
11. Teacher assesses students based on concepts, knowledge, attitudes, transdisciplinary skills, and action taken because of new learning.				
12. Teacher works in collaboration with others in study group sessions to share units, articles, and success stories.				

Observation Checklist (Posttest)

Name:

Practicing Inquiry	1	2	3	4
Questioning Skills				
19. Teacher uses all levels of questioning and adjusts level to individual students.				
20. Teacher uses questioning skills to assess prior knowledge, facilitate discussions and construct knowledge.				
21. Teacher consistently uses probing, prompting and redirecting techniques.				
22. Teacher consistently poses open-ended questions.				
23. Teacher consistently and effectively uses wait time strategies.				
24. Teacher consistently and effectively uses prompts and rephrasing techniques when students cannot answer questions.				
Lesson Presentation				
16. Teacher consistently acts as effective facilitator and coach.				
17. Teacher occasionally lectures and uses investigations so students can demonstrate understanding.				
18. Teacher uses an inquiry process approach and consistently provides teacher-initiated and student-initiated inquiries.				

Practicing Inquiry	1	2	3	4
19. Teacher effectively plans for whole group instruction as needed and frequently uses cooperative learning groups.				
20. Teacher accepts and anticipates unexpected results.				
Engagement of Students				
10. Teacher engages students through open-ended discussions, investigations, and reflections.				
11. Students are consistently active; teacher use hands-on and minds-on activities that encourage open-ended, student-initiated investigations and explorations.				
12. Teacher frequently and effectively solicits information from the students.				
Assessment Procedures				
13. Teacher seldom uses worksheets to assess learning; students record on student designed sheets and/or journal with complete success.				
14. Teacher consistently and effectively varies assessments to include objective testing, portfolios, rubrics, and other authentic assessments.				
15. Teacher assesses students based on concepts, knowledge, attitudes, transdisciplinary skills, and action taken because of new learning.				
16. Teacher works in collaboration with others in study group sessions to share units, articles, and success stories.				

Appendix I
List of Participants

Name	Degree	Courses
1. Ayman Sha'ban	Assistant Lecturer	ESP, Microteaching
2. Ramadan Salama	Demonstrator	ESP, Microteaching
3. Osama Abdullah	Assistant Lecturer	ESP, Microteaching
4. Alaa Amin	Demonstrator	Microteaching, Instructional Aids, Computer for Education
5. Abdulmagid Saad	Assistant Lecturer	Microteaching, Instructional Aids, Computer for Education
6. Ramadan Ahmad	Assistant Lecturer	Microteaching, Instructional Aids, Computer for Education
7. Hasan Muhammad	Demonstrator	Microteaching, Instructional Aids, Computer for Education
8. Hasan Ashour	Assistant Lecturer	Microteaching, Instructional Aids, Computer for Education
9. Ahmed Helmy	Assistant Lecturer	Microteaching, Instructional Aids, Computer for Education
10.Hammad Hasan	Assistant Lecturer	Microteaching, Instructional Aids, Computer for Education
11.Mohamed Kamal	Assistant Lecturer	Microteaching, Instructional Aids, Computer for Education
12.Saied Adel	Demonstrator	Microteaching, Instructional Aids, Computer for Education
13.Mahmoud Ibrahim	Demonstrator	Microteaching, Instructional Aids, Computer for Education

Name	Degree	Courses
14.Mohamed Ahmed	Demonstrator	Microteaching, Instructional Aids, Computer for Education
15.Abdelrehim Ahmed	Assistant Lecturer	Microteaching, Instructional Aids, Computer for Education
16.Mohamed Emara	Assistant Lecturer	Microteaching, Instructional Aids, Computer for Education