

ESP Learners' Attitudes towards the Inquiry-Based Approach

Nadia Saraa*

University of Mohamed Ben Ahmed Oran2 - Algeria

saraa.nadia@univ-oran2.dz

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Abstract. Recent research in the field of ESP indicates that ESP teachers have become more aware of the role of teaching methodologies in ESP classrooms. Today, the majority of teachers want to meet their students' needs and teach through better innovative compelling approaches to guarantee learners successful attainment of the target language and at the same time bring forth productive learners. To throw light on the students' reaction to these innovative methods, this study attempts to examine ESP learners' attitudes toward the Inquiry-based learning/teaching approach into their ESP learning environment, thereby recommend or discourage its use. In order to assess students' feedback and preference of this approach, a questionnaire was administered to 120 ESP biology learners at the University of Ibn khaldoun Tiaret, Algeria. Results obtained from data showed positive attitudes and thorough support among learners of the Inquiry -based instructions. Thus, the Inquiry-based learning/teaching approach is perceived positively and it is esteemed to reinforce learners linguistic and science knowledge.

Keywords. ESP; ESP learners' attitudes; Inquiry-based approach.

تهدف هذه الدراسة إلى ضرورة إدراج مناهج تعليمية حديثة في تعليمية اللغة الإنجليزية المتخصصة لتزويد الطلبة باللغة الإنجليزية المتخصصة التي يحتاجونها في ميادينهم . على الرغم من عدم وجود منهج تعليمي موحد في تعليمية اللغة الإنجليزية المتخصصة إلا أن هذا البحث يسعى لدراسة مواقف طلبة البيولوجيا حول تبين المنهج القائم على الاستفسار كمنهج في تعليمية اللغة الإنجليزية المتخصصة. لهذا الغرض تم توجيه إستبيان إلى 120 طالب للغة الإنجليزية المتخصصة في أقسام البيولوجيا في جامعة ابن خلدون ،تيارت. أظهرت نتائج البحث ردود فعل إيجابية من طرف طلبة البيولوجيا ، حيث أكدوا أن المنهج القائم على الاستفسار يمكن الطالب ليس فقط بتعلم اللغة ، بل أيضا في إكتساب معرفة علمية لغوية في ميدان تخصصه. الكلمات الدالة ، اللغة الإنجليزية المتخصصة؛ مواقف طلبة اللغة الإنجليزية المتخصصة ؛ المنهج القائم على الاستفسار .

*corresponding author

1 . Introduction

The increasing changes in social and economic lives caused by the worldwide spread of English urged many countries around the globe to introduce the learning/teaching of English into their programmes. Algeria, among these countries, strives to incorporate English into its higher teaching educational curricula either as second or foreign language. Today, English is taught in various branches such as medicine, biology, business, law and other disciplines. However, despite the paramount necessity for learning/teaching English, Algeria still employs either Arabic or French as a medium of language teaching instruction. Although experts in higher education are completely aware of the prevailing necessity of English particularly in scientific research, they endeavor to implement the teaching of English through specific programming called English for Specific Purposes (ESP) as an additional module at all afore mentioned scientific branches in the hope to ensure students access to research or communication. English, thus, is regarded as a compulsory module named ESP which is still in its infancy.

Even though difficulties and demotivating factors occur in ESP Algerian higher educational programmes, Algerian ESP teachers and scholars are struggling to adjust the current ESP teaching status by looking for innovative teaching methodologies that can better serve learners' needs and increase their learning and their use of the target language. In the light of this issue, this research paper investigates students' attitudes about the inquiry-based teaching approach as a proposal for their ESP teaching/learning environment. It also hypothesizes that the Inquiry-based approach may help ESP learners, mainly of the scientific branches, improve their English language skills and their science knowledge.

1.1. Theoretical Support of Inquiry-Based Approach

Inquiry-based approach is rooted in the social constructivist philosophy. Among the proponents of this philosophy is Vygotsky (1978) who assumed that cognitive and learning developments are the result of social interactions between people in society. He also viewed dialogues and the act of questioning as the vehicle chain through which ideas and thoughts are shared and developed. Similarly, this theory of learning is with the assumption that knowledge takes place when subjects interact between individuals in social contexts. In this line of thought, Wells (1995,p.233) claimed that

A social constructivist theory of learning and teaching enacted through an inquiry-oriented curriculum would serve the two goals of education: transmission of knowledge and skills to students and fostering students' individual potential and creativity. (as quoted in Moreno & Janneth, 2008)

Wells (1995) believed that the most effective way for learning to take place happens when learners are engaged in inquiry instructions and when knowledge is implied through a co-instruction with peers and team working groups. Likewise, "*Inquiry is an activity that involves teamwork, collaborative dialogue, and dialogic curriculum*"; that is to say, the Inquiry-based education belongs to the constructivist theory (Moreno & Janneth, 2008,p.143).

1.2 Inquiry-Based Teaching Education

According to Sweetland and Towns (2008), the Inquiry-based teaching is a pedagogical approach which makes students explore the content by answering questions; investigating activities; engaging in arguments and interpreting data. It has been described as a student centered approach that supports the development of learners’ metacognitive skills and deeper understanding of the content. This method of teaching adopts most of its teaching principles from science and math education; however, it is also suited to other humanities teaching principles.

1.3 The Inquiry Teaching Model

The Inquiry model suggested by Bybee (1997) is called the five 5E model. In fact, the 5E instructional principles are derived from the constructivist theory of learning which is best practised particularly when teaching science. Even though the 5E model is commonly exploited in science and biological education, it has greatly contributed to foreign language education (Alberta,2004; Mohcen-Al-Wadi, 2018; Ermawati, 201 7). In effect, this teaching model promotes collaborative learning by which students solve problems, ask questions, make discoveries and construct knowledge from interaction with peers. Figure (1) below denotes the five phases of the 5 E model described in table (1) below

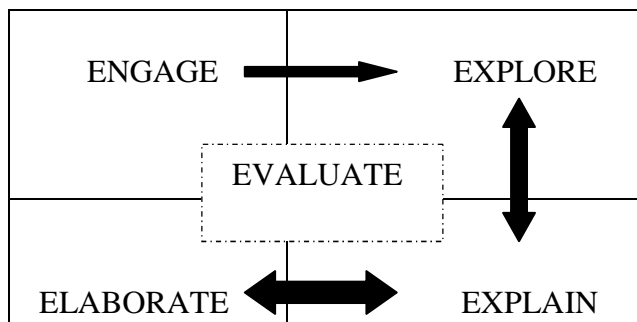


Figure (1): the 5 E Instructional Model

Source : the author

Table (1): The 5E process model

Engage	The teacher starts the learning process by making the students engaged in a new concept or a topic that generates students’curiosity and creates interest and raises their inquiries.
Explore	In this stage, students explore questions, perform phenomena of certain concepts, engage new ideas and skills while the teacher examines, observes and listens to students as they interact of the proposed activities

Explain	During this stage, students demonstrate their understanding of the concept process skills; accordingly, they communicate new facts, share discoveries and debate alternative explanations.
Elaborate	This stage allows students to extend their conceptual understanding principles, skills, and real-world concepts by applying them into real experiences that contribute to their learning.
Evaluate	The teacher evaluates students progression, at the same time, students assess their performances from the earlier stages .

Source: The author

In fact, there is no single design in Inquiry-based teaching; that is to say, the teaching strategies in Inquiry-based vary and change from one discipline to another and that the main principle to teaching the lecture begins with an authentic question or a problem, case scenarios, or an investigation. In addition, the selection of the task in the inquiry instruction depends mostly on the teacher objectives and goals of the course. All in all, the Inquiry-based teaching starts with delivering content and experiences that are most likely familiar to students' previous knowledge of the subject matter so that can be easy for them linking the prior knowledge with the existing (Jenkins, Breen, Lindsay & Brew, 2003).

1.4. Characteristics of Inquiry-Based Learning

Inquiry-based learning is more than that a simple approach to education. Lots of educators, authors and researchers attempt to describe this approach in the same way. They all believed that this approach is driven out from learners' curiosity to understand the conceptual knowledge that intrigues, surprises or makes them confused. Arauz (2013) provides 5 five characteristics to Inquiry-based learning set as follows :

- "It helps students develop critical thinking skills.
- It fosters a lot of feedback in the classroom and prepares active receipt of information.
- It exposes students into problem-solving skills.
- It evinces the act of questioning and encourages for self-directed learning.
- It uses real-life tasks and admits the use of ICT" (p.482).

1.5. Inquiry-Based Learning Specific to ESP

Although no comparison between ESP and Inquiry-based learning is found in literature; both pedagogies mandated at the policy level in different countries. On the one hand, ESP is regarded as an approach to English language teaching in various contextualized disciplines such as (medicine, science, math, biology, engineering, business.) and in which the goal of teaching ESP is to train students to use English either in academic or professional areas. On the other hand, Inquiry-based learning is a scientific learning model driven by the process of Inquiry in which learners work collaboratively and interact with their teachers and peers of the content.

Generally speaking, traditional learning approaches assumed that science learning and language learning are separate fields. However, recent research suggested that blending

science principles into foreign language teaching classes is mutually beneficial. In addition, teachers have demonstrated that the understanding of content by the act of questioning is a powerful tool that could highly create a desire among learners to share ideas, express thoughts or debate results and thus provide them with opportunities to improve their language proficiency. Therefore, blending the Inquiry-based approach into an ESP teaching environment can stimulate learners' curiosity and encourage them to use the content as well as the target language. In other words, using the Inquiry-based learning in an ESP environment can help students gain self-learning confidence and become autonomous learners (i.e., the initiator of the learning process), and at the same time enable them to develop a vigorous sophisticated linguistic knowledge.

2- Method and Tools:

Our research study involves 120 third year ESP students at the biology department of the University of Tiaret. All the participants have studied English as a foreign language in middle and secondary schools and they are still studying English as a compulsory module labeled ESP. To collect the necessary information for the study, a survey questionnaire was administered to the research participants in the hope to diagnose students' satisfaction or dissatisfaction with the current ESP course and also to find out whether the Inquiry-based teaching approach meets their expectations or not. The questionnaire comprises 15 questions in the form of yes/no questions, multiple choice questions, and likert scales questions (see Appendix A). The first part (Part A) is a preliminary introduction that describes students' age, the field of specialism and their level in English. The second part (Part B) explores students' beliefs and feedback about the current ESP course while the last part (Part C) measures students' attitudes about the Inquiry-based approach to instruction. Among the motives that make the investigator choose the questionnaire as a data tool for this study is that this latter is a convenient and reliable instrument that researchers use to obtain data from large scale of individuals.

3. Data Analysis

3.1. Students' Attitudes Towards the Current ESP Course

This section of the questionnaire includes 4 questions, whose answers are presented graphically (in a form of table or chart) in what follows

3.2. Students' Evaluation of the Current ESP Course in Terms of their Needs

Figure(2) below shows that a slight majority of the student-participants have indicated that the current ESP course satisfies their needs. However, it could be argued that the number of ESP students who think that this course does not meet their expectations is significant.

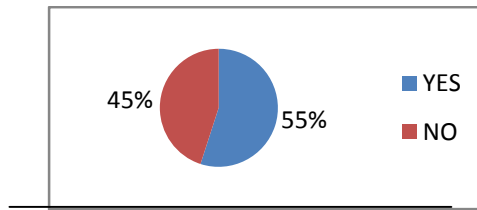


Figure 2 : Students' evaluation of the current ESP course

Source : The author

3.3. Students' Evaluation of the Effectiveness of the Current ESP Course

As could be seen in Figure(3) below, only a slight majority of the informants think that the existing ESP course is defective. However, a significant number of the respondents (31.5 %) consider the program as successful only in a few aspects. They have reported that it is defective in some of its aspects such as time constraints, selection of topics, language skills, authentic materials, and methodology.

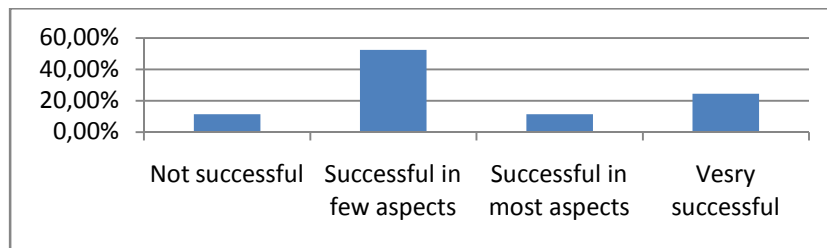


Figure 3: Students' evaluation of the effectiveness of the existing ESP course

Source : The author

3.4. The Impact of the ESP Course on the Students English Proficiency

Most of the students reported that the current ESP course does not help them progress in English language proficiency. Thus, this current ESP program needs to be reviewed to make it more contributive to the development of students' level in English.

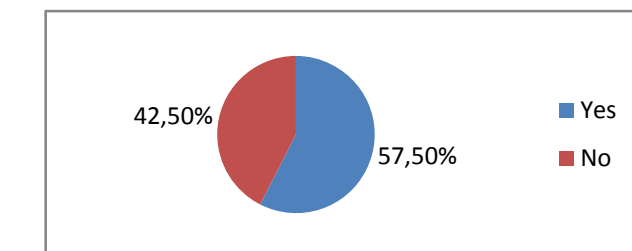


Figure 4: Students' evaluation of the impact of the ESP course on their language proficiency

Source : The author

3.5. Students' View about the Teaching Methodology of the Current ESP Course

Figure(5) below indicates that the majority of the students think that the methodology of the ESP course is inappropriate, with 32 % saying that it is as inadequate and 30 % indicating that it is ineffective. It follows then to say that the methodology of this University course needs improvements.

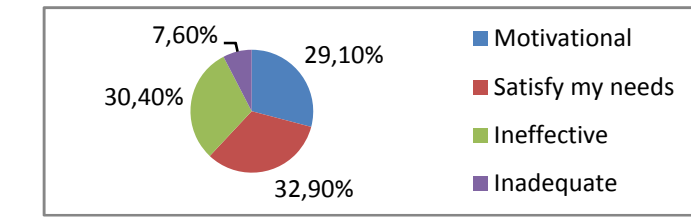


Figure 5: Students' evaluation of the methodology of the ESP course

Source : The author

3.6. Students' Attitudes Towards the Inquiry-Based Approach

This section reports students' attitudes towards the Inquiry-based approach in ESP. The responses are presented in the table and followed with prose comments organised in a form of sub-topics.

Questions	1	2	3	4	5
5- I like learning English by carrying out experimental tasks such as plants absorption, plants and light, How plants breathe) in English .	17,5%	47 ,5%	15%	16,5%	3,5%
6-I like to be exposed to science inquiry tasks such as investigating an experiment, formulation an explanation, searching for solutions ..) in English	23,8%	40%	20%	11,3%	4,9%
7-I like learning English by describing evidence, solving problems or interpreting results.	27,5%	41,3%	16,2 %	11,3%	3,7%
8-I like making hypotheses to experiments in English.	17,5%	48,8%	15%	16,2%	2 ,5 %
9-I find it necessary to understand graphs, diagrams, charts and writing reports about them in English.	33,8%	31,3%	13,8 %	18,8%	1,2%
10-I like learning English by solving puzzles of scientific inquiries tasks.	27,5%	30%	27,5 %	13,8%	1,2%
11-I like learning English by discussing with my colleagues of my findings of tasks .	43,8%	36,3%	12,5 %	3 ;7%	3,7%

12-I prefer using real-life tasks.	37,5%	41,3%	15%	2,5%	3,7
13-I like learning English through my background of the special knowledge.	26,3%	40%	23,7 %	5%	3,7%
14-The process of questions answers in tasks can enhance my acquisition of vocabulary and grammatical structures in the ESP course.	25%	46,3%	16,2 %	7,5%	5%
15- I like the use of Information and Communication Technologies such as computers, internet and power point) in the ESP course.	38,8%	33,8%	18,8 %	6,3%	2,5%

(Note:1= strongly agree ; 2= agree ; 3= neutral ; 4= disagree ; 5= strongly disagree) .

3.6.1. Students' Opinion about Learning Experientially

As shown in table (2) above, apart from mixed feelings or disagreements that certain respondents expressed, the majority of the students welcomed the idea of using inquiry-based instructions as a teaching methodology for appropriating English. Responses to question 5 indicate that 65 % of the participants are of the opinion of exploring tasks and investigating experiments. Similarly, question 7 indicates that 68% of the students like solving problems and interpreting results in English. Furthermore, questions 8 to 10 highlight that the students aspire learning through formulating hypotheses, exploring charts or diagrams, and solving science puzzles in English.

3.6.2. Students' Attitudes towards the Use of the Special Knowledge and Authentic Tasks in Collaboration

The results reported in table(2) above indicate that the respondents like working on authentic tasks and teamwork. Moreover, the majority of the informants showed their preference for learning through interaction and peer negotiation which in turn could be considered as key precepts of inquiry-based learning. Furthermore, the students reacted positively to capitalising on their scientific background knowledge in their endeavour to get into grips with the English language.

3.6.3. Students' Reaction to the Use of Information and Communication Technology

ICTs are essential tools for speeding up the student acquisition of content and for promoting research skills. The use of visual aids in lectures is absolutely required as it facilitates delivery procedures, stimulates learners' thinking, and enhances their motivation. In line with this argument, most of the students (71%) who responded to question 15 expressed their approval for the use of these technological means in their ESP classes.

4. Discussion of the Results

Since the incorporation of needs analysis in the 1970s in ESP syllabus design, it has been found that the selection of the teaching/learning approach should be based on the views of the experts of the profession and the students wants as well. However, in the field of ESP learners are expected to learn English to accomplish specific tasks; thus, investigating their

needs is of paramount importance. Likewise, it is necessary for the ESP teachers, while designing their syllabi, to negotiate the content, the topics, and the methodology of teaching with the recipient students.

In Algerian higher education, ESP students seem to be taught in a traditional way because they are not consulted on their preferences and likes with regard to the topics, the content and the methodology of the course. As far as this study is concerned, results indicate that the majority of the students are unhappy with the current ESP course. They have reported that the current ESP course is defective in many ways and does not suit their needs. In this line of thought, Richards and Rodgers (2014) state that an ESP course should respond to students' immediate needs and should involve them in decision-making notably when selecting and sequencing of the course syllabus. Similarly, Swales (1990) maintains that teaching ESP revolves around the needs of the learners and that the ESP teacher is the tailor-made of his /her courses.

Concerning teaching methodologies, the selection of an appropriate teaching method has always secured a lion's share in ESP curricula. Even though no particular teaching methodology is found in ESP, the ESP practitioner is required to select an adequate one that must necessarily serve the aims and the objectives of the ESP course and also meet learners' needs. In this line of thought, Kenny(2016) posits that ESP teaching approaches vary from one setting to another. She is with the opinion that in order to select an appropriate teaching methodology in ESP, teachers must take into account some factors such as needs analysis process, learners objectives of learning, and the context in which the language is being taught.

When the ESP biology learners were asked to evaluate the compatibility of Inquiry-based approach with the ESP perspectives, they welcomed it favourably . In fact, these biology learners, like any other scientific learners, are familiar with the Inquiry-based instruction, and this is not surprising because the principles of this form of instruction such as exploring, observing, describing, analysing, interpreting, and discussing are daily routine activities of any scientist. The thing that might be considered as new for our participants is the blending of the Inquiry-based principles with the learning of English.

In comparing the findings of this study with other similar studies, it seems that they concur with the findings of Yi-Lee (2014) and Mohsen-Alwadi (2018). Both studies support the use of Inquiry- based learning as a successful teaching methodology for English. For instance, Yi-Lee (2014) explores Chinese second language class feedback and preferences of the Inquiry-based teaching approach regarding some aspects such as motivation, anxiety, class interaction, and the use of visuals. His findings indicate that Inquiry-based teaching is valid and an efficacious approach in L2 classes. Besides, it encouraged students to be actively engaged in high level of learning experiences whilst evolving them linguistically and cognitively. However, Mohsen-Alwadi (2018) investigates the effect of implementing Inquiry-based teaching strategies into English language courses in motivating students' and teachers' critical knowledge. He claimed that the Inquiry-based learning/teaching technique is adequate when teaching pure theoretical content courses to foreign language classes and it helps EFL/ ESL students learn the content and the target language.

In a nutshell, It can be said that the Inquiry-based approach can suit the ESP teaching instructions and it is believed to be effective especially for the scientific branches. Besides, the findings of our study and those of Yi-Lee (2014) and Mohsen-Alwadi (2018) endorse the use of this form of language teaching methodology as it meets learners' expectations and the nature of ESP/ EFL teaching environment.

5. Suggestions and Recommendations

Recently, trends in higher education have moved away from teacher-centered instructions to more student-centered instructions. In turn, Inquiry-based learning is highly students focused which gives learners opportunities to learn the language course content by making them exploring questions, solving problems, describing graphics and investigating scientific inquiries. In this regard, the following suggestions and recommendations are addressed to ESP teachers who might be willing to using this teaching/learning model in their ESP context. In addition, it is worth mentioning that phases of the integration of the Inquiry-based approach into the ESP course are similar to those used of any course design such as identifying needs analysis, determining course goals and objectives, conceptualizing an instructional plan, selecting activities, and evaluation.

5.1 Identifying Needs Analysis

When designing an ESP course for Inquiry-based learning, teachers have to look at their learners' needs and overestimate their experiences. In other words, they have to identify the students academic levels such as language proficiency, academic level, and their pre-knowledge.

5.2 Determining Course Goals and Objectives

Course goals and objectives are general statements of what to be taught and what learners will be able to do at the end of the course. Goals and objectives are often the outcomes of needs analysis (Hutchinson& Waters,1987). Moreover, if the ESP teachers decide on the use of the Inquiry-based course, they have to work with subject matter teachers in order to develop and share unique skills, topics, and experiences that students will need to acquire.

5.3 Conceptualizing an Instructional Plan, Activities, and Assignments

It is referred to the ways in which the teacher grades tasks, selects activities and delivers content. Likewise, in Inquiry-based course the teacher is dictated to choose one instructional inquiry lesson with respect to the long inquiry list described by authors such as Alberta learning (2014) model, the 5E inquiry cycles, Bruce and Davidson model and also updates his/her model according to the needs of the learners, the available materials, and the course goals and objectives. Besides, the role of the teacher in an inquiry course is to help students generate the content-related questions and engage them in a deep understanding of the tasks, knowledge and skills .

5.4 Evaluation

According to Lawton (1983) "Evaluation is essentially concerned with supplying information about the success or the failure of a teaching-learning situation" (p.90). In other words, the term evaluation can indicate the merits or the shortcomings of something such as courses. As for what has been mentioned in table (1), the teacher evaluates students'

progression within the course and at the same time, the students assess their performance and achievement.

6. Conclusion

This study has investigated the attitudes of the biology ESP students at the University of Tiaret towards the current ESP course and towards the use of an Inquiry-based approach to ESP. A survey questionnaire was used to elicit learners' opinion on the subject. The findings indicate that ESP biology learners are unhappy with the ESP courses; however, these students seem to prefer embracing an Inquiry-based approach to make their learning enjoyable and effective. When using the Inquiry-based teaching/learning project, students will investigate language skills through scientific inquiry instructions in which they make connections between their prior scientific understanding of knowledge and the target language (i.e., English). Therefore, the Algerian ESP teachers should consider the possibility of reconsidering their approaches to the instruction of the ESP course. This study, then, argues for the use of an Inquiry-based approach as an alternative to the dysfunctional existing one.

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Appendix

Students' questionnaire

Dear students feel free to fill this questionnaire, you are asked to put a tick () on the right answer.

Part A : Personal information

Age :

Field of specialism :

1/What is your level in English ?

- Beginner
- Intermediate
- Advanced

Part B: Attitudes towards the current ESP course

1/Do you think the current ESP course satisfies your needs ?
 Yes No

2/How do you evaluate the current ESP course ?

- Not successful
- Successful in few aspects
- Successful in most aspects
- Very successful and effective

3/Do you think the current ESP course is helping you making progress in English ?
 Yes No

4/The teaching method adopted in the current ESP course is

- New and motivational
- Satisfy my needs
- Ineffective
- Inadequate

Part C : Attitudes towards the Inquiry -based learning

Please put a tick () in the appropriate column

Key for the table : 1 =stronglyagree ; 2 =agree ; 3= neutral ; 4= disagree ;5 = strongly disagree .

Questions	1	2	3	4	5
5- I like learning English by carrying out experimental tasks such as plants absorption, plants and light, How plants breathe) in English .					
6-I like to be exposed to science inquiry tasks such as investigating an experiment, formulation an explanation, searching for solutions ..) in English					
7-I like learning English by describing evidence, solving problems or interpreting results.					
8-I like making hypotheses to experiments in English.					
9-I find it necessary to understand graphs, diagrams, charts and writing reports about them in English.					
10-I like learning English by solving puzzles of scientific inquiries tasks.					
11-I like learning English by discussing with my colleagues of my findings of tasks .					
12-I prefer using real- life tasks.					
13-I like learning English through my background of the special knowledge.					
14-The process of questions answers in tasks can enhance my acquisition of vocabulary and grammatical structures in the ESP course.					
15- I like the use of Information and communication technologies such as computers , internet and powepoint) in the ESP course.					

Thank you for your cooperation