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Evaluating Malaysian Science and Technology undergraduates' reactions towards an online ESP Course

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Abstract

Thang (2005, 2001) and Thang and Azarina (2004) brought in question the extent of autonomy of Malaysian undergraduates. Their studies on the undergraduates of a public university in Malaysia disclosed that both the on-campus and the distance learners lacked autonomy and awareness of language learning and language learning processes. In view of that, an online English for Specific Purposes (ESP) course for undergraduates of Science and Technology of the public university was devised. The aims are two folds: to help them handle scientific texts and more importantly to increase their autonomy, interest and motivation in reading scientific texts on their own. Students have to respond to the interactive lessons and activities online and give feedback to the various sections in the provided online questionnaires. This paper first describes the rationale behind the design of the course and the various components of the course. Finally, it shares the results of a study that traces the 23 students' attitudes and reactions towards the online course over six weeks. The findings reveal that the students generally react positively towards the online component and they are interested and motivated to learn via this mode. However, some problems have to be overcome.

Introduction

In recent years, more and more universities are designing and implementing online courses for their distant and on-campus students and making all or parts of the required courses accessible online. In the context of language education, online learning makes it possible for learners to access and learn a second or a foreign language far beyond the classroom. Warschauer (2000) goes a step further by proposing that technology is not just as an aid for learning language or writing, but also an important new medium of literacy in its own right. This means that by developing electronic literacy, students can learn to participate in the English language-dominated on-line world and also carve out online space for their language and culture.

One important principle of electronic literacy is that of learner autonomy. Well-known researchers have proposed that online learning can be utilised as tools for the development of learner autonomy (Little, 1996; Warschauer, 2000; Shetzer and Warschauer, 2000). Autonomous learning as one of the most significant areas of innovation in language education has come of age during the 1980s and 1990s. This trend grew out of a "widespread desire in the language teaching community to develop means

of allowing learners to play a fuller, more active and participatory role in their language study" (Tudor, 1996:1). Learning through an online mode requires learners who are autonomous and know how to access tools and resources online and offline. Moreover, they need to take charge of their learning by working alone or in collaboration with others. Thus, it would appear that it is possible to train students to be more autonomous by allowing them to participate in online learning programs. Little (1996) supports this by suggesting that information systems can stimulate and support the development of autonomy in second language learning through interactions with, interactions around, and interactions via information systems.

Background of the Study

Thang (2005, 2001) brought in question the extent of autonomy of the distance-learning students of Universiti Kebangsaan Malaysia (UKM)(the National University of Malaysia), one of the eight public universities in Malaysia. Her study disclosed that the distance learners lacked autonomy in language learning and were unaware of the processes involved in language learning. Moreover, the findings of a study by Thang and Azarina (2004) into the readiness of first-year on-campus learners of UKM revealed that they were not ready for an autonomous online program and that the movement in that direction should be carried out in stages beginning with a more structured approach and moving towards a more autonomous one.

Because of this need, an online course for undergraduate students of Science and Technology was devised by an IRPA (Intensified Research for Priority Areas) research project team. This course aimed to help Science and Technology students tackle scientific texts by improving their reading skills and strategies. More importantly, it is hoped that this program will in the long run increase students' autonomy, interest, and motivation in reading scientific texts on their own. This ESP online program will not replace formal teaching in the class but is designed to supplement it. To put it, in a nutshell, the online program aims to give:

> learners the skills to study by themselves, experience in independent learning, strategies for adding to their repertoire, knowledge of tools like dictionaries and reference grammar that they can use for themselves and, above all, the confidence to go on working on their own. (CIEL Language Support Network, 2000: 5)

Research Questions

The research questions of the study are as follows:

1. To what extent does the IRPA online ESP course for the science and technology students help them to read English scientific texts and improve their reading skills and strategies?

2. To what extent does the online course increase the students' interest and motivation to read scientific texts in English?
3. To what extent does this online course foster students' desire to learn online and to learn on their own?

Benefits of Online Learning

Different terminologies have been used to refer to a concept, which in this study is referred to as online learning. These include e-learning, Internet learning, distributed learning, networked learning, tele-learning, virtual learning, computer-assisted learning, Web-based learning, and distance learning. Generally, all of them have a notion in common, that is all refer to a situation in which a learner is far from his tutor or instructor and is using technology (usually a computer which is connected to the Internet) to access the learning materials and to be in contact with his tutor or instructor and other learners and to receive support or feedback from them.

It is generally accepted nowadays that online learning benefits not only the learners but also the instructors. The web provides significant new functionality in transmitting information to the student and providing forums for exchange. (Dwyer et al., 1995). Learners can use the Internet to access up-to-date and relevant learning materials and to ask their instructors questions. Learners can also complete online courses while working on the job or in their own space and can contextualize the learning (Ally, 2004).

For the instructor, online learning offers the flexibility of allowing teaching and providing feedback and support from anywhere and at any time. The learners can see updated materials at once. It is easier for instructors to direct their learners to proper information based on their needs and requirements when they are online. If designed properly, online learning systems can be used to determine learners' needs and current level of expertise and this will enable instructors to assign appropriate materials for learners to achieve the desired learning outcomes (Ally, 2004).

Another benefit of using web-based communication tools is that they provide the learners with a comfortable and non-threatening environment in which all of them have equal opportunities to express their ideas and to ask questions by posting them on the message boards, sending them as emails or participating in forums/chat rooms discussions without inhibiting factors such as seating arrangements, the presence of classmates, and gender- and race-biased.

Online learning also fosters student-centered teaching approaches. Students may have different learning styles. For example, some students are visual learners; some are auditory learners and some learn better by doing. Web-based learning environments allow the instructor to build one course, yet implement a variety of resources, so students can utilize materials in whichever way that works best for them.

Online learning also encourages autonomy. In traditional education, students working on group projects must coordinate schedules, whereas in online learning environments, participants can work independently utilizing web-based collaborative tools like asynchronous discussions, and coordination is no longer an issue or a problem. Online learning also provides the tools for easy and appropriate evaluation and assessment and immediate feedback on online exercises or tests are undertaken.

The Implication of Learning Theories to the Design of Online Language Courses

The delivery medium does not guarantee the quality of learning; rather, the design of the course determines the effectiveness of the learning (Rovai, 2002). Thus, since the goal of any instructional system is to promote learning, an effective instructional system should be based on proven and sound learning theories and draw upon the strengths of these theories. According to Ertmer and Newby (1993), the principles of the three schools of thought, namely, Behaviorism, Cognitivism, and Constructivism can be utilized as a taxonomy for learning. Behaviorists' strategies can be used to teach the "what" (facts), cognitive strategies can be used to teach the "how" (processes and principles), and constructivist strategies can be used to teach the "why" (higher-level thinking that develops personal and contextual meaning). In the present study principles from these three schools of thought that apply to the construction of online ESP materials (as shown in Table 1) were used as guiding principles in designing the course. The ways they were utilized will be discussed in the course description section.

Table 1. *Principles applicable to online language learning*

Theories of learning	**Principles applicable to online language learning**
Behaviorism	• Learners should be aware of the explicit results of learning so they can set goals and can assess themselves. • Their progress should be evaluated and assessed. • They should be provided with immediate feedback so that they can monitor their progress. • Materials should be designed sequentially from easy to difficult.
Cognitivism	• Strategies should be taught and practised to help the students to transfer the knowledge from senses to sensory store and finally to working memory. • Information should be organized in the form of mind maps to show major concepts in a topic and the relationship between the concepts. • Students' working memory should not be overloaded. • Students' metacognitive awareness of their learning process should be increased. • Students should be encouraged to apply their knowledge in different and in real-life situations.
Constructivism	• The instructor should try to encourage students to discern principles by themselves. • The instructor and student should engage in an active dialogue (i.e. socratic learning). • The instructor should render information to be learned into a format suitable to the learner's current state of understanding. • Learning should be situated and contextual.

Reports of Studies on Online Language Learning in International Contexts

Cotteral and Reinders (2001) reported that data from their study suggested that the kind of learner training currently provided in the English Proficiency Program in the English Language Institute at Victoria University of Wellington fell somewhat short of the ideal. While learners reported that they found the online course very useful, interviews suggested that these claims might have been based on a shallow awareness of what is involved in independent learning. The study also highlighted the crucial role played by learners' initial orientation to the self-access centers (SAC) and the ongoing support provided. Results also suggested that learners' independent learning might at times have been held back by teacher-directed activities or a lack of knowledge of how to learn independently. They proposed that if stronger ties were forged between class-based learning and independent learning, learners' awareness of the potential of the online course might increase and a different kind of learning might occur there. Finally, while the study found that learners were generally well disposed to the concept of autonomous learning, they lacked a sensible understanding of the rationale behind this approach to learning, and of what is involved in the practice.

Lefever's study (2004) investigated an e-learning environment used for teaching distance education English courses at Iceland University of Education. The three main components investigated were communication, autonomous learning, and cooperative learning. Information and Communication Technology (ICT) in the form of course websites, Internet links, and asynchronous web-based tools was the common factor in the learning environment. Students participating in the program were asked to evaluate the content, organization, and the pedagogical effectiveness of the learning environment. The findings were positive in general and focused on how ICT generated more opportunities for student-teacher communication and feedback. It also assisted students separated by physical distance to work together in their studies. Finally, it also provided students broad access to information and resources and hence fostering learner autonomy.

Coll's study (2004) examined the effects of online learning for beginning Spanish classes in higher education at Shawnee State University, Portsmouth, Ohio. In this study, two first-level elementary Spanish classes were compared. One class underwent listening and writing activities using only audio compact discs whereas the other class had the added advantage of working on online activities as homework. The students from the two classes were monitored closely through formative evaluations until the end of their third level to assess their acquisition of listening, speaking, reading, writing and cultural skills. The study showed that the online program benefited both students and teachers. Students in the second class found the language instruction more meaningful and varied and they were interested and motivated to work harder in and outside of the classroom environment. They were also more autonomous learners.

Reports of Studies on Online Language Learning in the Malaysian Context

Azizah et al. (2004) investigated teachers' and students' perceptions of the efficiency of the SMART program by using questionnaires and interviews. The SMART School

Education Program integrates teaching and learning with ICT applications, which include computer-based teaching and web-based learning. This program started with four subjects, English, Bahasa Melayu (Malaysia's official language), Science, and Mathematics. The findings showed that both teachers and students were confident and ready to accept learning English through this method and 79.5% of the teachers felt comfortable with their new roles as facilitators. However, they revealed that limitations in infrastructure reduced the effectiveness of this mode of teaching.

Nadzrah and Mickan (2003) looked into Form Two students' perceptions of the use of computers in one of the SMART schools in Malaysia. The data were collected mainly from classroom observations and interviews. The findings revealed that students' attitudes towards the use of computers in the classroom were generally positive. They agreed that computer activities helped to improve their proficiency in English. This was particularly so when they were followed by discussions, role-plays, and presentations. However, the study demonstrated that weak students were not actively involved in follow-up activities. The findings further showed that students who lacked the necessary computer skills tended to have negative attitudes towards computer usage. Despite the overall positive attitudes towards the computer, it was evident that the students felt that teachers were indispensable. They generally felt that their teachers would be able to give better explanations than the computers, which to them were "mere machines".

Thang and Olaybal (2004) designed and implemented a Science in English website for Secondary One students in Malaysia. This website aimed to provide Science in English resources tailored to the needs of the Malaysian Secondary One students. This website provided an avenue for students to enrich and deepen their knowledge in science and at the same time enhance their English Language skills. The results showed keen support for the website from the ten teachers and fifty students who tried out the website. They found the website beneficial, fun, and entertaining. They also described the website as encouraging self-exploration and autonomy. However, infrastructure problems, such as lack of Internet access for a large proportion of Malaysian students at home and limited access to computers in schools hindered the effectiveness of this mode of learning.

Description of the Online ESP course

This English for Science and Technology course (ZH2042) is compulsory for all first-year undergraduates of the Faculty of Science and Technology, UKM who obtain a minimum of bands 3 and 4 in the Malaysian University English Test (MUET). ZH2042 is designed to provide the Science and Technology undergraduate students the necessary language skills to deal with the multitude of scientific reading materials in English and to enable them to use English in short and extended writing and in oral presentations on topics in various fields of science.

ZH2042 is a two-unit course with four class hours per week for fourteen weeks. The online component was an innovation to the course. The subjects of the present study were the first group to try out the online ESP course. This online course was designed to complement and not to replace the face-to-face English for Science and Technology course. The guided lessons and interactive exercises and activities/tasks aim at helping students handle scientific materials in English more effectively. They reinforce what the students learnt in class and allow them to increase their command of vocabulary and their

ICT skills. This hopefully will increase their interest and motivation to read scientific texts on their own. The ultimate goal of this project is to create awareness among the students on the vast opportunity for language learning available on the Internet and promote autonomous and lifelong language learning among these students.

The online course comprises three components, namely (A) Online interactive modules, (B) Online web-based tasks, and C) Oral presentation. The online course was designed with the use of the 'hot potatoes' software, and the management system used was Moodle - both accessible free online. No sophisticated software or systems were used. This was deemed unnecessary, as the purpose of this course was not to impress users with advanced technology but to show that simple online lessons devised with basic computer skills can enhance English Language learning. The website address of the online program is:

http://pkukmweb.ukm.my/~autolearner/

Since the present study only evaluated students' responses to the online interactive modules, the other components will not be described here. The online interactive modules comprise four modules. The first three modules contain lessons, exercises, and reinforcement activities in the form of interactive tasks. The first module contains an explanation of the reading skills and strategies required for effective reading. The skills and strategies taught include skimming, scanning, recognizing main ideas and supporting ideas, and note-taking. The reinforcement activities/tasks include completing lists and diagrams like mind maps and charts. The lessons were sourced from the Internet and the activities/tasks prepared by the IRPA team members.

The next module teaches general vocabulary skills and functions of reference words. The lessons and exercises for this module were taken from a coursebook entitled "VE1043: Reading Skills (Adul Aziz et al., 1986). This book was written by a group of lecturers from the School of Language Studies and Linguistics, UKM. The third module introduces the various methods of classifying scientific texts. These include classifying, comparing, cause and effect, hypothesizing, defining, exemplifying, and predicting. The lessons and activities/tasks were prepared by the IRPA team but ideas for the materials were drawn from Zimmerman (1989). The last module consists of five reading passages followed by reading comprehension questions, exercises, and activities/tasks to reinforce the lessons taught in the first three modules. The passages were taken from the Internet and Scientific magazines.

The lessons, exercises, and activities/tasks (all hereafter referred to as lessons for convenience) in the four modules were designed in line with the principles of learning theories applicable to online language learning. In this section, I will provide some examples of how online modules utilize these principles. For example, in general, the modules adhere to the principles of behaviourism by providing immediate feedback to the lessons so that learners can evaluate and assess their progress. Besides that, the materials are designed sequentially from easy to difficult.

By the cognitivism principle that recommends the accommodation of students' different learning styles, abilities, and interests, the online course allows students to choose the lessons they prefer to attempt first and to leave out those they do not like (though a few lessons were made compulsory). This fosters autonomy which is in line with the principles of Constructivism.

The lessons on reading skills and strategies abide by the principle of cognitivism that recommends the organization of materials in the form of mind maps to show major concepts in a topic and the relationship between them. In addition, students are provided with authentic scientific materials that can help to increase metacognitive awareness of the learning process, as well as encourage applications of knowledge in different and in real-life situations. Finally, the email exchanges and online forums allow students to engage in an active dialogue with their peers and instructor. This will provide the necessary feedback for instructors to further improve the course and have a better understanding of the needs and requirements of the learners. Thus, learning will be situated and contextualised according to the principles of Constructivism.

The Research Methods

The present study combined quantitative and qualitative approaches. The quantitative component was in the form of multiple-choice items in an online questionnaire (QEPC) that evaluated students' responses to a passage entitled "Copper" (which was one of the passages in Module Four). The qualitative component was in the form of an online forum and open-ended items in the QEPC. As pointed out by Denzin (1970) using a combination of approaches to assess the same research problem will improve the claim on the validity of the attained conclusions since data are more valid if generated by more than one technique. If the data gathered by the two different approaches are consistent, they should be integrated. This will increase the validity and generalizability of the data. However, if the data cannot be easily integrated than further investigation should be considered to find out the reasons for the inconsistencies.

Subjects

This study traced the responses of twenty-three students towards the online interactive modules over six weeks. The subjects were first-year undergraduates enrolled in an English for Science and Technology course in UKM. Subjects comprised two males and twenty-one females aged between twenty-one and thirty- one except for one who was above thirty-one. There was an equal number of Malays and Chinese students. The students were generally of average proficiency level in English. Eighteen out of twenty-one of them scored bands 3 and 4 in the Malaysian University English Test (MUET). Learners in these bands are classified as "modest" and "competent users" according to the MUET scale. The other three students scored Band 5 (classified as "good users").

Training Procedures

The students were given two training sessions to familiarize themselves with the online interactive modules. In the first training session, they were introduced to the various modules and taught how to utilize them. The students were allowed a certain degree of independence in that they were asked to undertake the online lessons during their free time outside class hours. However, they were told that they had to complete certain sections of the online modules and submit them online for assessment. No time frame was given to allow for flexibility and autonomy.

During the second training session, the students were encouraged to talk about the problems encountered while trying out the online lessons. Most of the students expressed unhappiness over the fact that they had to fork out money to perform the online lessons in the UKM main library and cyber cafes. To ease their burden, students were then offered the opportunity to access the Internet free-of-charge for three hours every Wednesday from 2 pm to 5 pm in the computer laboratory at the School of Language Studies and Linguistics, UKM. A facilitator was present at these sessions to solve any arising technical problems or to answer any questions regarding their online modules. The students were also encouraged to participate in the online forum and to email their instructor if they had any problems regarding the course.

Data Collection and Analysis Procedures

Students' attitudes and reactions towards this online course were collected in two ways:

(1) Students' responses to the online forum

Students were invited to submit their views regarding the online course to an online forum. Here, they could post their opinions, problems, and suggestions for improving the online modules. In addition, they could reply to their classmates' messages or difficulties. Participation was not obligatory but encouraged. The responses to the forum were analyzed qualitatively by looking for a pattern of communalities.

(2) Evaluation of the passage "Copper"

The online QEPC for the online passage consisted of both multiple-choice items and open-ended items. The QEPC was designed to collect data on the students' opinions of the contents as well as the format of the passage (see Appendix I for a sample questionnaire). The multiple-choice items were analyzed quantitatively by percentage counts and the open-ended items were used to support the quantitative data where applicable.

Students' Responses to the Online Forum

The feedback received can be classified into three main types, namely the students' opinions, the problems they faced while performing the online lessons, and their suggestions for improvements. The finding revealed that fourteen out of twenty-three students (i.e. 60.9%) participated in the forum. All of them had positive opinions regarding the online course. Their positive comments ranged from tentative remarks like the course was 'quite good', 'quite ok' and 'quite interesting and unique', and 'informative', to more encouraging ones like 'helpful indeed', 'certainly useful' and 'flexible', to remarks that showed strong approval such as: 'well done!! Keep up with the good jobs!!!! Thanks.', 'so I hope this online course will last forever.', and 'anyway thanks a lot for the effort u have make it done!'.

Nine of them (64%) indicated that online lessons helped them to improve their English and computer skills. Some of their comments were:

- The passage of the lessons quite helps me by learning more extra knowledge in scientific terms.
- Really helpfull indeed. It really improves my vocabs and my knowledge.
- If we think for a short time it is also can improve our skills in computing.
- The online course is very funny, useful and can improve our usage of English. Though I was not really good in English, but I do think that this online course help me a lot in my learning process.
- For mecthis is quite goodcit can improve my English skills and give me a lot of information. I think this is a good way to students learn and improve their skills about English.
- I can learn more vocabulary from the passage by using the computer dictionary.

Furthermore, eleven of them (79%) reported that they enjoyed learning online as they found learning through this mode flexible, fun, entertaining, and non-threatening. These were explicitly expressed by the following students:

- I always find many problem in learning English such as pronouncing the words. I can't speak English confidently and loudly in class. I feel most pressure every morning and Tuesday because there are EST lesson on this both day. Fortunately, I present every lessons and never think to skip out all of theses. With the online courses, I have already find the freedomcto learn more and gain more knowledge.
- I think that this course is certainly useful. I can be able to try the passage for several times in my on pace. Indeed, I have learned a lot through the online program.
- Okchmcits quite interesting to me alsocthe passage is quite interesting coz got some cartoonc no so bored as what we usual read on papercThe exercise given also not so boredcand for some that I'm not that sure of the answerscI can also click the 'hint' to get some tips...hahacthat's great.
- Very nice, because I can study English by myself without a teacher at home or at cybercaf?!
- It is easy to access and very interesting especially for those who are very easy to get sleeping when reading English books. I'm not sleepy anymore when doing English exercises.
- I like this type of teaching skill actually. It is quite flexible.

Five students (35.7%) expressed dissatisfaction with the online course. Three of them complained about having to pay to access the course. One said, 'when I have to pay to learn from this online course, I do feel like it is very stressful as times go and my money gone!' Another said 'but the problem is I did not have any computer in ukm. So every time must paid or line up at library to use the computer.' Two students complained about difficulty in accessing the online component (which can only be assessed via the university server).

Two students (14.3%) gave some suggestions on how to improve the online course. This includes:

- If provided with a computer lab for us to online, it's much more easier for us to complete the lessons.
- I hope that maybe we can have a chatroom similar to ICQ in langconcepts. Then we can all discuss a certain topic online. Besides that, I would like to have a sections that introduce us to various type of scientific articles.

Analysis of the Evaluation of the Passage "Copper"

Analysis of the multiple-choice items in the QEPC

Twenty-two out of the twenty-three students responded to the QEPC. Students' responses to the multi-choice items showed that they had a favorable opinion of the passages and the lessons (as shown in Table 2). The majority of the students rated four out of the ten categories as 'excellent'. The categories are: (5) their interest to read more about the topic of the lessons, (6) their motivation to do the lessons, (9) clarity of the instruction of the lessons; and (10) enjoying the online lessons. As for the other six categories, the majority of them rated them as 'Good'. The categories are: (1) organization of the course, (2)&(3) their improvement of knowledge of general vocabulary and scientific terms, (4) their interest in the lessons, and (7) the passage is informative and (8) helpfulness of the passage to increasing their reading skills.

Table 2: Evaluation of the passage 'Copper'

.	Excellent	Good	Moderate	Poor	Very poor
1. Organization of the lessons	6 students 27.27%	13 students 59%	3 students 13.6 %	--	--
2. Improvement of knowledge of general vocabulary	6 students 27.27%	13 students 59%	3 students 13.6%	--	--
3. Improvement of the knowledge of scientific terms	6 students 27.27%	11 students 50%	5 students 22.72%	--	--
.	**Very interesting**	**Interesting**	**Fairly interesting**	**Un-interesting**	**Very un-interesting**

4. Their interest in the lessons	5 students 22.72%	12 students 54.54%	5 students 22.72%	--	--
.	**Yes**	**No**	.	.	.
5. Their interest to read more about the topic of the passage	19 students 86.36%	3 students 13.63%	.	.	.
6. Their motivation to do the lessons	20 students 90.90%	2 students 9.09%	.	.	.
.	**Very informative**	**Informative**	**Fairly informative**	**Uninformative**	**Very Un-informative**
7. Passage is informative	7 students 31.81%	15 students 68.18%	--	--	--
.	**Very helpful**	**Helpful**	**Not very helpful**	**Not helpful at all**	.
8. Helpfulness of the passage to increasing their reading skills	6 students 27.27%	14 students 63.63%	2 students 9.09%	--	--
.	**Very clear**	**Clear**	**Fairly clear**	**Unclear**	**Very unclear**
9. Clarity of the instructions of the lessons	12 students 54.54%	10 students 45.45%	--	--	--
.	**Yes**	**No**	.	.	.
10. Enjoying the online lessons	18 students 81.81%	4 students 18.18%	.	.	.

Analysis of the open-ended items in the QEPC

The students' responses to the open-ended questions of the online QEPC were in line with their responses to the multiple-choice items. Those who rated the various categories as "Excellent" and "Good" gave comments which confirmed that they felt the lessons were well-organized, interesting, motivating, informative, challenging, and useful for them to increase their knowledge of general and scientific vocabulary. They also expressed willingness to read and learn more about the topic of the passage.

Nevertheless, students who described the various categories as "Moderate" revealed some of the problems they faced. In the category of 'improvement of knowledge of general vocabulary', three students rated it as Moderate. One complained, "Because there are still many words that I don't get their meaning." Another said, "Some of the vocabulary was explained quite well, but some words like elixirs and arithmetic patients was hard to understand.". Five students evaluated their improvement of knowledge of scientific terms as "Moderate". One grumbled, "In my opinion, there are a lot of scientific terms in the passage. Sometimes, we can guess the meaning from the passage but sometimes we don't.".

Five students did not find the lessons interesting. One of them did not like the topic; another said that she was not interested and added: "This is the first time I have been introduced to e-learning process". The third one attributed her lack of interest to the fact that she was not "good in computer". Only three students mentioned that they were not interested in reading more about the topic of the passage. One said "I don't really like the topic" and another remarked that, "For me it is boring". Regarding the category "motivation to do the lessons", only two students responded negatively, but no comments were given.

Overall Discussion of Findings

The results derived from the online forum and the evaluation of the passage on "Copper' are very encouraging. It clearly shows that almost all the learners have a favorable opinion of the online passage. They feel that the passage equip them not only with the necessary reading skills and strategies but also computer skills. Moreover, they find online learning of English fun, entertaining, and flexible. These findings are in line with those of Lefever (2004), Coll (2004), Azizah et al. (2004), Nadzrah and Micken (2003), and Thang and Olaybay (2004). The students also express interest and motivation to learn via this mode. Some of them also appear to enjoy the freedom of learning on their own. More importantly, to many of these students, online learning offers an environment that is non-threatening and away from the pressure of a face-to-face classroom situation. Koo et al. (2005) posits that social cultural-factors such as fear of being laughed at by peer groups and by the larger ethnic group to which they belong may hinder effective learning of English among students who are not confident in English. Thus, the students' strong approval of this online component may be because it offers them an opportunity to escape from having to expose their lack of proficiency in English in front of their peers and their teacher. As one of the students puts it aptly:

> I always find many problem in learning English such as pronouncing the words. I can't speak English confidently and loudly in class. I feel most pressure every morning and Tuesday because there are EST lesson on this both day. Fortunately, I present every lessons and never think to skip out all of theses. With the online courses, I have already find the freedomcto learn more and gain more knowledge.

The highly positive feedback of the students towards the passage 'Copper' reiterates their strong support for this mode of learning. The forum discussion reveals two main infrastructure problems that is difficulty in accessing the online component and inaccessibility to computers. The first problem can be easily reduced by providing an alternative means of accessing the materials such as providing a CD to each student. However, the second problem cannot be easily resolved. Azizah et al. (2004) and Thang and Olaybal (2004) also found that limitations in infrastructure deter the effectiveness of online learning.

Conclusion

The highly favorable responses of the EST students to online learning suggest its potential for the teaching and learning of languages and its wider implication for learners, language teachers, and researchers. However, caution must be exercised in interpreting the results as Cotterall and Reinders (2001) pointed out students' positive attitudes could be due to a shallow awareness of what independent learning involved and a lack of understanding of the rationale behind autonomous learning. Thus, further research needs to be undertaken to determine the reliability and validity of the results.

Nonetheless, the study does suggest that it is time to consider introducing online learning to the teaching and learning of ESP courses in UKM, and possibly to other public universities too. However, before this can be done, the problems associated with the website and implementation of online learning on a larger scale have to be resolved first. Problems, such as lack of computer skills among the students can be easily rectified but more serious problems such as lack of the necessary infrastructure support cannot be overcome unless the relevant authorities step in.

References

Abdul Aziz Idris, Chin S.P., Koo, Y.L., Lim, H.P., Thang, S.M., Yeo, B.K., & Zawiah Yahya (1986). VE 1043: Reading Skills. Bangi, Malaysia: Language Centre, UKM.

Azizah Yaacob, Nor Fariza Md. Nor, & Hazita Azman. (2004). Teaching English the SMART way: Creating online lifelong educational opportunities at schools. Proceedings of the First COLLA Regional Workshop, Putrajaya, Malaysia. 28-29 June.

Ally. M. (2004). Role and function of theory in online education development and delivery. In T. Anderson & F. Elloumi (eds.). *Theory and Practice of Online Learning*. Athabasca: Athabasca University Press.

CIEL Language Support Network. (2000). CIEL Handbook I: Integrating independent learning with the curriculum.

Coll. J. (2004). Teacher and learner Autonomy in electronic foreign language classroom. Proceedings of the UNTELE Conference. Universite de Compiegne, France. 17-20 March.

Cotterall, S. & Reinders, H. (2001). Fortress or Bridge? Learners' Perceptions and Practice in Self Access Language Learning. Tesolanz, 8, 23-38.

Denzin, N. K. (1989). *The research act*. Englewood Cliffs, NJ: Prentice-Hall.

Dwyer, D. Barbieri, K. & Doerr, H. (1995). Creating a Virtual Classroom for Interactive Education on the Web. The Third International World Wide Web Conference. http://www.igd.fhg.de/www/www95/.

Ertmer, P. A., & Newby, T. J. (1993). Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, 6(4), 50-70.

Koo, Y.L., Thang, S.M. & Lee, S.K. (2005). Investigating learner characteristics in the design of an online ESP programme: Learner readiness, identity and literacy in changing contexts. In Siti Hamin Stapa et. al (eds.), *Language Policy and Practice in Nation Building*, Bangi, Malaysia: School of Language Studies and Linguistics, UKM.

Lefever, S. C. (2004). ICT and language learning - Can an e-learning environment promote learner autonomy. Proceedings of the UNTELE Conference. Universite de Compiegne, France. 17-20 March.

Little, D. (1996). Freedom to learn and compulsion to interact: Promoting learner autonomy through the use of information systems and information technologies. In R. Pemberton, E. S. L. Li, W. Or & H. D. Pierson (eds.), *Taking control: Autonomy in language learning*. Hong Kong: Hong Kong University Press.

Nadzrah Abu Bakar & Mickan, P. (2003). Students' Experiences in Computer-based English Language Classroom. Proceedings of the 2003 AsiaCALL International Conference. Bangkok, Thailand 2-5 December.

Rovai, A. (April, 2002). Building sense of community at a distance. International Review of Research in Open and Distance Learning (IRRODL), 3, 1. http://www.irrodl.org/content/v3.1/rovai.pdf

Shetzer, H., & Warschauer, M. (2000). An electronic literacy approach to network-based language teaching. In M. Warschauer and R. Kern (eds.), *Network-based language teaching: Concepts and practice*. Cambridge: Cambridge University Press.

Thang, S.M. (2005). Investigating Malaysian distance learners' perceptions of their English proficiency courses. *Open Learning*, 20(3), 243-256.

Thang, S.M. & Azarina Alias, 2004. Comparison of Malaysian ESL undergraduates' characteristics to determine readiness and desire for online learning. Proceedings of the ALTECH colloquium, School of Language Studies and Linguistics, FSSK, UKM, 28 September.

Thang, S. M. & Olaybal, D. (2004). An online English course for Malaysian Science and Technology undergraduates: Feedback from Questionnaires. Proceedings of the International Conference CLaSIC incorporating PacCALL, Singapore, 1-3 December.

Thang, S. M. (2001). Malaysian learners' conceptions of their learning processes and their perceptions of their English as a second language course in a tertiary distance learning context. Unpublished PhD thesis, University of Nottingham, Nottingham.

Tudor, I. (1996). *Learner- Centeredness as language education*. Cambridge: Cambridge University Press.

Warschauer, M. (2000). On-line learning in second language classrooms: An ethnographic study. In M. Warschauer & R. Kern (eds.), *Network-based language teaching: Concepts and practice*. Cambridge: Cambridge University Press.

Zimmerman, F. (1989). *English for Science*. New York: Prentice Hall Regents.

Appendix I: Questionnaire on the Evaluation of the Passage "Copper"(QEPC)

For Question 1 - 8, please check and respond to the following questions about the lessons you have just completed

1- How would you rate the organization of the lessons?

a. Excellent
b. Good
c. Moderate
d. Poor
e. Very poor

Please give reason(s) for your choice.

2- After completing the lessons, how would you rate your improvement of knowledge of general vocabulary?

a. Excellent
b. Good
c. Moderate
d. Little
e. Very little

Please give reason(s) for your choice.

3- After completing the lessons, how would you rate your improvement of knowledge of scientific terms?

a. Excellent
b. Good
c. Moderate
d. Little
e. Very little

Please give reason(s) for your choice.

4- How interesting were the lessons to you?

a. Very interesting
b. Interesting
c. Fairly interesting

d. Uninteresting
e. Very uninteresting

Please give reason(s) for your choice.

5- After finishing the lessons, did you feel like reading more about the topic of the passage?

a. Yes
b. No

Please give reason(s) for your choice.

6- Do the lessons motivate you?

a. Yes
b. No

If yes, how do they motivate you?
If no, please state how they can be made more motivating.

5- How informative were the lessons to you?

a. Very informative
b. Informative
c. Fairly informative
d. Uninformative
e. Very Uninformative

Please give reason(s) for your choice.

7- How helpful were the lessons in increasing your reading skills?

a. Very helpful.
b. helpful
c. not very helpful
d. not helpful at all

How can the lessons be made more helpful in improving your reading skills?

8- How clear were the instructions of the lessons?

a. Very clear
b. Clear
c. Fairly clear
d. unclear
e. very unclear

If you find the instructions not clear, suggest ways they can be made clearer.

9- Do you enjoy doing the lessons online?

a. Yes
b. No

Please give reason(s) for your choice.