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Student-generated questions in L2 — approaches to developing more complex question-types

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Abstract

This study considers how to encourage students in ESL classes to generate their own questions in response to oral presentations by other students and short written texts, in this case on dental topics. The question types, average question length and questions most commonly employed by intermediate level and upper intermediate level groups of students were analysed and compared. The findings may be of use for developing approaches to student-generated questions in university ESL classes where the focus is on interactive communication and learner independence which can be applied in later professional life.

Key words: referential questions, display questions, learner independence, interaction, student-generated, language learning environment.

Introduction

'Any questions?'. Hands shoot up, students vie with each other to be chosen by the students in the group at the front, who have just given a 5 minute PowerPoint presentation on a dental topic. The student chosen stands up and asks the question. The range of questions is from the obvious 'How much does the treatment cost?', to the more considered 'You say sugar damages the tooth enamel, is tooth-brushing harmful?'. The students at the front confer for a moment and then give their answer. This scene is taking place in an intermediate level first-year university class for dental students, during a mini-test in L2. Questions are being generated naturally in response to the peer-group presentations. One problem is that there isn't enough time for all the student questions, as there are 5 groups presenting in a 55 minute slot. The traditional image in many language learning environments is that the teacher asks the questions. However recent research has focused on students asking questions, for instance the degree to which students are encouraged to ask questions by Graesser and Black (1985), Davis (1994), put the case that getting students to ask questions, especially effective questions, is another way of promoting communication in L2. A strong case is put forward that encouraging students to ask questions in ESL (English as a second language), lessons improves English learning outcomes by Roberts (2006), who states that,

> 'ESL lessons should be designed and implemented so that students can ask questions which will in turn allow for the achievement of significant learning outcomes'.

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He goes onto suggest that asking questions as opposed to being asked questions gives the ESL student a sense of control and purpose that can be projected beyond the classroom.

In 2004 at Ritsumeikan University in Kyoto, a workshop entitled UK-Japan Young Scientists was held, students, teachers and scientists from both countries attended. A dvd recording of the week-long event was distributed by the Ministry of Education, Culture, Sports, Science and Technology, (MEXT), to all Japanese Super Science High Schools as an example of good practice.

The Clifton Scientific Trust, based in the UK, who supported the project suggest that young scientists in both the UK and Japan face a common challenge, stating that,

> 'The science education they receive is not preparing students to be the science-literate questioning young people the 21st century demands'.

The Study

Can generating more complex question-types be of use to help science students make the most of their ESL experience at university? Can it help to foster the science-literate questioning young people required for the future? University students want to learn to question more effectively in L2 but need a range of support in developing their cognitive skills. Questioning in itself is important in several ways, firstly it can enable students to find an effective way of communicating in a second language, secondly, it can help students to comprehend in more detail basic information or texts being presented. Thirdly, it can encourage a sense of enquiry through information gathering techniques which can be applied as a study-skill later in professional life. Fourthly, through active involvement with other learners and the materials, thinking of a question, asking a question or actively listening and comprehending others' questions develops confidence to interact in L2. Finally, questioning as a means of learner independence cannot be underestimated. Current ESL methodology, CLT (Communicative Language Teaching), emphasizes real situations, rather than a conscious understanding of the rules that govern the language being studied. T-BLT (Task-Based Language Teaching), which developed from CLT, is also based on learning through interaction in the target language, (Knight, 2001 ; Nunan, 2004). The main aims of this study were to find out how ESL university students of dentistry generate questions in response to oral presentations by other students on dental topics and also to a written exam text featuring a dental issue. What complexity of question-types are used and identification of the differences in intermediate and upper-intermediate student response in both areas in L2.

In July 2007, 120 first-year undergraduate students of Nihon University School of Dentistry gave oral presentations in English in groups of 3 or 4 on a dental topic chosen by each group. This was assessed as a mini-test on the course. Topics chosen varied from pediatric dentistry to cosmetic dental techniques such as whitening. The oral presentations could take either a PowerPoint or poster format and lasted for 10 minutes followed by approximately 3 minutes

for reflection time (to generate questions). 5 minutes were allowed for questions and answers relating to the presentation. Groups presented consecutively over a 3 week period, having prepared for the previous 4 weeks. The presentations had to include—

a). Rhetorical questions to structure the content of the material being presented through visual images, keywords and technical terms explained in easy-to-understand English.

b). Evidence of original research through a survey devised and conducted by the students consisting of questions about the dental topic aimed at their peers or other age-groups. Results were shown by graphs, bar or pie-charts.

c). A 5 minute Q&A (question and answer) session from the students listening to the presentation. Students were expected to formulate questions during the presentation and in a 3 minute reflection period after the presentation. These questions after the presentations were recorded by the author as part of the basis for this study.

In September 2007, the same group of students took a written exam based on a short text about a dental topic. One of the exam questions required the students to write down 3 questions about the text, each of which had to be at least 7 words long and employ a variety of question -types. There were 2 texts, one, on the topic of the use of fluoridation against tooth-decay, was given to the group of intermediate students and the other, on the topic of the regeneration of teeth, was given to the group of upper-intermediate students.

The student response in generating questions to both the oral presentations and the written text was analysed and compared.

Findings

Referential questions, genuine questions where the answer is not known by the questioner rather than display questions where the answer is known by the questioner, were naturally generated from both the oral presentations and written texts on dental topics. In both cases the fact that the students were encouraged to interact in language environments mimicking real situations ; in the case of the oral presentations, a situation such as at international science conferences and in the case of the written text, a situation similar to comprehending and actively responding to academic papers on dentistry was worthwhile. The students could see the relevance of the task and tried to develop both question length and the range of question -types. Recent research has focused on question-types and average length of reply, but usually on the interaction between teacher and student, rather than student-generated, (Chaudron, 1998 ; O'Keefe, McCarthy, Carter, 2007).

A. Questions generated in response to—Oral presentations.

These questions were from the class audience to the student groups after presentations on dental topics. Students were allowed to use dictionaries in the reflection period before questioning.

i. The intermediate group had the least inhibitions about asking questions in front of their

peer-group, in fact they were keen to interact. The bulk of the questions were wh-questions and the average length of the question was 7 words, eg. 'How much do dentures cost?', 'How many dentists currently work in Japan?', 'What is the most effective way of cleaning teeth?', 'Why is cranberry juice good for preventing gingivitis?'. Tag-questions were also employed, eg. 'Do you have any cavities, if so, how many?', 'You said that the treatment period for orthodontic treatment is long, so how long is it?'.

ⅱ. The upper-intermediate group was more inhibited about asking questions in front of their peers and were more concerned with forming the correct grammatical structure of the question. However by the third week of presentations there was far more confidence and less concern with getting it right. The bulk of the questions were also wh-questions, eg. 'What are the different points between home and office whitening?', 'Why can bone be re-generated but tooth enamel cannot?'. However more tag-questions were employed, eg. 'I have wisdom teeth, but I didn't have them pulled out, what do you suggest?', 'You said that there are many kinds of artificial teeth, metallic, plastic and so on, which are the most expensive?' and more complex sentence structures, sometimes using modal verbs, eg 'I'm interested in the magnetic attachment for dentures, does insurance apply in this case?', 'I think we should brush our teeth after eating snacks or sweets, why should we brush our teeth before going to bed?'. These more complex questions were more inquiring and reflected more depth of thinking as well as personal opinion. The average question length in this group was 12-14 words.

B. Questions generated in response to—Written texts.

These questions were in response to the following exam question about a short written text on a dental issue,

'Write down 3 questions that you have about the article. Make each question at least 7 words long and use a variety of question-types (for example—tag-questions, wh-questions). 25 minutes were given to answer the whole paper, dictionary reference was not permitted. This exam question is unusual as it requires students to ask questions about the text, rather than answering questions about it.

ⅰ. The intermediate group dental issue was 'Fluoride' (see appendix 1). The group found this task more difficult than responding to the oral presentations. Around 3 percent of the students either didn't answer or didn't finish answering this section. Over 80 percent of the questions generated were wh-questions. The average length of the written questions in this group was 8 words. The most commonly asked question was, 'What effect is the use of fluoride in tooth -paste or water to the human body?'.

Other frequently asked questions were, 'How many people use fluoride in toothpaste?', 'Can fluoride cause cancer and osteoporosis as well as mottling of teeth?', 'Which substance is in tooth-paste now?', 'How many people use fluoride in toothpaste?'. Around 14 percent of the written questions were tag-questions, eg. 'About 5 million people drink fluoridated water in England, what do they think about fluoride?', 'Today the effects of fluoride for the human body

is unknown, do you still want to use fluoride?'.

ii. The upper-intermediate group dental issue was 'Re-generation of teeth' (see appendix 2). The group all answered this section fully. About 66 percent of the questions generated were wh-questions, 30 percent were tag-questions, 4 percent were other types. The average question length was 15 words, which is almost double that of the intermediate group. The 2 most commonly asked questions were, 'I understand that hair, skin and other tissues would be turned into "tooth primordial", but how?' and 'How much does re-generative dentistry cost?'. Other often asked questions were, eg. 'Do teeth which are made from stem cells have a dangerous effect on us?', 'They made a tooth surrounded by bone from stem cells, why was the tooth surrounded by bone?'. Generally questions were well formed and contained genuine curiosity about the topic or related it to their own experience, eg. 'This topic was written in 2004, but now can they grow new teeth in adult human's mouth?', 'New teeth will be grown in the mouth of adult patients within a few years, are some treatments (such as dentures), going to decrease in the future?', 'Is the research developed in Japan?'.

The intermediate group in this study were keen to participate in the Q&A sessions after the oral presentations., but found the written questions in response to the written text more difficult. They seemed to find group activity more supportive and were able to generate more complex question-types as a result. The upper-intermediate group initially found questioning in L2 after oral presentations quite difficult, this did change after several sessions of presentations, the need to display perfect grammatical form and fluency was gradually replaced with a desire to communicate and express what was really thought.

The written response, which was done individually, revealed thoughtful questions with a variety of question-types and sentence structure.

Conclusion

The Ministry of Education, Culture, Science and Technology in Japan are promoting courses and exchange forums such as the UK-Japan Young Scientists workshop as examples of good practice in education which has real applications in later professional life. One aspect of this is cultivating young people's confidence to question through shared enquiry in L2. In the classroom providing real-life language learning environments is key to motivating students to develop this confidence and for students to perceive its relevance to their future. Effective questioning in L2 in class is sometimes thought of as 'difficult' by students and often depends on earlier language education experiences and peer pressure. Initially students will also expect the teacher to be the one asking the questions. This study, although based on a small group of 120 students, does show that referential questions, both spoken and written, can be generated quite naturally by students if there is genuine interest in the topic and peer interaction is the norm in class activity, in L2. Although there can be problems with grammar through this approach, it is valid that students are developing communicative skills and beginning to able to

express what they think in L2. The need to continually provide opportunities for students to generate questions in response to spoken, written English is vital. Providing such language learning environments where the student is able to formulate questions independently is challenging and several issues need to be addressed. Firstly, this study addresses two main groups of students, intermediate and upper-intermediate, however there is a wide range within this band, there are both advanced and pre-intermediate students who need more specific challenge and support. Secondly, finding effective test materials which will allow students to formulate questions as well as answer them is vital. Allowing students to generate questions is a new way of approaching examining, but will help to develop skills of enquiry at all levels.

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Appendix 1 : English Test material (Intermediate level), for First Year/First Semester 2007/8.

Fluoride in water 'risks unknown'.

By Celia Hall, 05/09/2002.

The use of fluoride in toothpaste is now so widespread that people's total exposure to the chemical is no longer known, leading scientists said yesterday. A report from the Medical Research Council, commissioned by the Government, could put into question the government's plans to change the law to encourage more fluoridation in the fight against tooth decay. The MRC report says that fluoride toothpaste use has risen so much in 20 years that the earlier research on its safety is out of date and needs to be done again. Anti-fluoride campaigners say the MRC report has failed to look at the toxic effect of other chemicals used in water fluoridation. They claim that fluoride can cause cancer and osteoporosis as well as mottling of teeth. The MRC recommends new research that will look for any differences in the effects of fluoride on health depending on whether people live in areas with artificial fluoride in the water or not. That includes research on osteoporosis, a disease on which there is contradictory evidence on the effects of fluoride and into cancer, although evidence suggests that fluoride in the water does not cause it. Dr Paul Harrison, chairman of the report working party, said : "Use of fluoride in toothpaste has become extremely widespread and we think that has changed the picture #. The MRC found no evidence that fluoridation damaged the immune and reproduction systems, child development, the kidneys or the gastro-intestinal tract. About 5 million people in England drink fluoridated water, mainly in the West Midlands and the North East.

Please read the dental article above carefully and answer the following questions—

1. Write down 3 key words from the article and the meaning in English.
2. Write down 3 key points of the article. Try to use your own English, rather than directly copying.
3. Write down 3 questions that you have about the article. Make each question at least 7 words long and use a variety of question-types, (for example—tag-questions, wh-questions).
4. Write down your opinion of this topic.

Appendix 2 : English Test material (Upper Intermediate level), for First Year/First Semester 2007/8.

Dental advance will let adults grow new teeth.

By Roger Highfield in Seattle. 15/02/2004.

The end of dentures is nigh. Dental scientists are perfecting techniques that will allow new teeth to be grown in the mouths of adult patients within a few years. Hair, skin and other tissues would be turned into "tooth primordia" in the laboratory, then implanted into the mouth where they would grow into teeth, the American Association for the Advancement of Science was told yesterday. Paul Sharpe, of the Dental Institute, King's College, London, told the Seattle conference that his team had successfully implanted a tooth from a mouse embryo into the mouth of an adult mouse and had watched it grow. "This has never been done for any organ," he said. The breakthrough was part of important advances in "regenerative dentistry". The studies of mice showed that "tooth rudiments" could be grown from stem cells, in the body which have the ability to develop into other cell types. Prof Sharpe said teeth grew from two basic cell types and the team had already managed to replace one of them by using stem cells from an adult. When the second type was added from an embryo and nourished with a blood supply, what resulted was a tooth surrounded by bone. "This is the first test where this technique works," he said. The team is now trying to replace the second tooth cell type, which forms tooth enamel, using stem cells. In parallel, the team has investigated how to use stem cells to grow teeth in the mouth. Prof Sharpe said the tooth the team had implanted from the mouse embryo contained both cell types. "We are proud to be part of this radical step forwards in dental research," he said. "The results we are unveiling today provide evidence that understanding and controlling the processes that form teeth is leading to a whole new approach to dentistry."

Please read the dental article above carefully and answer the following questions—

1. Write down 3 key words from the article and the meaning in English.
2. Write down the 3 key points of the article. Try to use your own English, rather than direct copying.
3. Write down 3 questions that you have about the article. Make each question at least 7 words long and use a variety of question types, (for example—tag-questions, wh-ques-

tions).

4. Write down your opinion of the topic.

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