Lecturers’ questions and student perception of lecture comprehension

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Abstract
Master's programs held in English have become normal practice in most universities in Finland. When the possibility of using English as the lecturing language at a technological university was first discussed with students, many were against such a change. However, all master's level courses at several departments of this university are now lectured in English, mostly by non-native speakers of English, and in English as a Lingua Franca (ELF) situations. In this paper, the students' perception of lectures in this master's program is reviewed. Twenty-two lectures were videoed and a total of 212 paper-based feedback questionnaires were returned by the students after attending these lectures. The questionnaire feedback was used to determine those lectures which students perceived most comprehensible and least comprehensible. Three lectures in both categories were transcribed and analyzed to find any common features among those in the same category and differences between those in different categories. The lectures perceived most comprehensible revealed a notable presence of interactional features in them. This study focuses on the use of questions in these lectures and explores how their use influences comprehension. It is shown that the use of questions tends to improve comprehension of lectures.

1 Introduction

Many universities in countries where English is not an official language aim at becoming more international and attracting more international students. Their objective is also to prepare their students for a global industries and scientific community. The motivations for changing study programs to be instructed in English are clear. Teaching through English has raised interest also among researchers. Lectures and especially lecture comprehension have been studied increasingly. Many studies are concerned with comprehension of lectures (e.g. Hellekjær, forthcoming, Mulligan and Kirkpatrick 2000, Jones 1999, and Richards 1983) while others focus on the actual contents of the lecture (Flowerdew 1994). Use of repetition in lectures is the focus of Mauranen’s (2009) study which explores how rhetorically effective repetition was used with apparent success in basically very similar ways by native speakers and English as a Lingua Franca (ELF) lecturers. These studies indicate how important it is for lecturers to understand what takes place during lectures and how lectures can be structured in order to increase their comprehensibility. However, most previous studies have focused on non-native students' comprehension of native speaker lecturers' English. The comprehension is usually tested with questions on the lecture content. Student perception of lecture comprehension on ELF lectures has not been investigated.
Helsinki University of Technology (TKK), as of 2010 Aalto University School of Science and Technology, has upheld the internationalization objective as part of their strategy for over ten years, and several departments have offered English medium courses during that time. When the idea of complete master's programs to be taught only in English was raised, it created much debate despite the scientific world’s extensive use of English in other forums. The lecturers, who were mostly non-native speakers of English, the majority of them Finnish, were faced with the monstrous task of re-developing their teaching material in English and of preparing lectures and lecture notes in English. Some of these lecturers had been lecturing for decades at TKK in their native language. Finnish students were also worried about the language change since they had started their studies in their native language. Now they were to study complex technical context in English with lectures held by non-native speakers of English. How was this new situation going to change their studies, would they understand the lecturers and the lecture notes and, perhaps most importantly, would they be able to pass the courses taught in English? These were the concerns at the university as a whole. When the English master’s program was introduced in the Forest Products Technology Department in the spring of 2005, the change created similar concerns and even the Department Student Guild was involved in these discussions. Regardless of their commitment to the university strategy, the administration was also interested in how the English program would influence the academic achievements and the course results.

Due to the issues raised, the department agreed on several guidelines regarding the English master’s program (L. Hauhio, pers. comm.). These include providing students with for example vocabulary and lecture materials in the course homepage prior to lectures, having supplementary material (e.g. references, links, journals) regarding the topic, and even allowing Finnish students to use Finnish in the exams and during lectures if the examiner/lecturer is fluent in Finnish. This type of concessions for the Finnish students was deemed necessary because of the students’ strong objection to the English-medium program. However, these concessions also add to the demands on the lecturers: since there are international students present during lectures, if a Finnish student uses Finnish, the lecturer has to immediately translate the student’s speech to the rest of the group. However, if all students in a specific lecture are fluent in Finnish, the lecturer may choose to lecture in Finnish, even if the lecture notes and slides are in English.

English-medium lectures are *English as a Lingua Franca (ELF)* situations, that is, situations where English is used for communication in situations where the participants’ do not share a native language (e.g. Seidlhofer 2005). Similarly Firth (1996) states how ELF is used between people who do not share a native language or a culture and who have chosen to use English as the means of communication. This definition is also met by the lectures in question as the lecturers are Finnish and the students come from 17 different countries, in addition to Finland.

The aim of this study is to shed light on how students evaluated their lecturers’ English immediately after lectures held in English by different lecturers, and how students perceived those lectures in terms of comprehension. Furthermore, the objective is to identify to what extent questions in the lectures influence their comprehensibility and to show how questions manifest themselves in the lectures.
2 Lectures and interaction

Lectures are an established academic genre. Genre is described by Swales (1990) as conventionalized text types used by specific discourse communities. In addition to genre being social action, he focuses on the communicative goal of genre and sees that the discourse community is defined by a mutual goal of that community. Swales (1990) states that an academic lecture group does not necessarily qualify as a discourse community, unless it is a group of advanced students with prior knowledge of the community and its goals. This would classify the lectures in this study as a discourse community since the focus is on master's-level students despite their varied backgrounds. Mauranen (1993: 15) suggests that “it is the genre which defines or selects its user group rather than the other way round.” Being a member of an academic community is realized through participating in academic genres. Based on these definitions, lectures in this study are seen as their own academic genre.

Since lectures are such a central aspect of tertiary education, researchers have investigated them extensively. The overt purpose of a lecture is to convey information to an audience of varying size. In this study lecture audiences are quite small varying from eight to 30 students due to the department size and the fact that lecture attendance is not obligatory. Even when there are less than ten students present, the lecturer holds the lecture, mostly in what Dudley-Evans (1994) calls the “conversational” style of lecturing. The lecturers usually have either slides or other notes they use as visual aids while speaking and some also use the blackboard to deliver additional information. In the present data, the number of students in the audience did not change the nature of the lecture or influence the amount of interaction during the lecture. Lectures also have covert objectives, such as socializing students into academia (Miller 1984). Despite this, the lecturer is a controlling factor during a lecture and guides the students through what s/he sees pertinent to the lecture. There is a degree of power difference (Hofstede 2001) which takes lecture genre close to other monologues, such as a priest’s speech during a church ceremony. It relates to the narrative tradition as well, as in the days before modern technology, people used to enjoy sharing stories by the campfire. According to Bhatia (2004), as with any texts and language conventions, genres reflect cross-cultural variation, and this cultural influence manifests itself even in lectures (see also Mauranen 1994).

Despite their monologic nature, interaction is present in lectures in various forms. First we can see the features which are common in all spoken interaction, such as, turn-taking and cooperation (Sacks et al. 1974). In lectures, turn-taking is controlled by the lecturer who holds the floor, but more natural turn-taking can be seen in dialogues, which are present to a certain degree in most lectures. Cooperation and interaction may be present even when lecturers continue their monologue. They may ask questions and answer them themselves and take non-verbal responses from the audience as responses and signs of cooperation. In addition to general interaction, such as the dialogue, there are also lecture-specific aspects to interaction. Lecture organization can be seen as another interactive device in lectures as Young’s (1994) study indicates. Several studies have also defined lectures and their interactivity through the number of student-lecturer dialogues (see, e.g. Csomay 2002, Morell 2004). All these studies view interaction in a fairly narrow manner, but I argue that a lecture can be seen as interactive even when there is less actual dialogue between lecturer and students. In this study, interaction is defined as the use of linguistic
devices, especially those which enhance the speaker-audience relationship. These types of devices include, among others, use of questions and personal pronouns (e.g. Bamford 2005, Crawford Camiciottoli 2004, and Sinclair and Coulthard 1992). The present paper concentrates on questions, while other interactive features will be analyzed in Suviniitty (in prep.).

3 Methodology

As the aim of this study was to investigate students’ perception of their lecturers’ English as well as to see how questions influence comprehension of lectures and how they manifest themselves in lectures, both questionnaires and videoed, transcribed material were studied.

3.1 Data

Since much concern had been expressed about the shift to English-medium instruction, I decided to investigate this situation in detail. One lecture of each non-native English lecturer in Forest Products Department, twenty-two in all, was recorded. The size of audience in these lectures varied from 6 to 35 students, but for the sake of simplicity, they all are called lectures as they were organized in lecture style rather than in seminar-type discussions. The students were able to comment on the lectures by filling out a paper-based questionnaire immediately after the lectures. This data was collected in order to determine what the students thought about the lecturers’ English and whether they had problems with comprehension. The questionnaire included four-level Likert scale questions, open-ended questions, and space for general comments. The questionnaires were anonymous and in English. Finnish students were told they could use their native language to respond to open-ended questions and to write comments in the space provided in the questionnaire. The material thus includes twenty-two videoed lectures together with 212 feedback questionnaires from the students who attended those lectures. Since the purpose of the questionnaire was to investigate whether the students found problems with lecture comprehension, they are used mainly to provide a general view on how students, at the beginning of the English medium master’s program, viewed their lecturers’ English as well as other aspects of the lectures.

3.2 Methods

After data collection, the questionnaire responses were analyzed and the three lectures the students found most comprehensible and the three which they found least comprehensible were transcribed. Because the lecture groups were small, a statistical analysis was deemed unnecessary. Percentages were computed in order to compare the lectures. Lectures which had less than eight students present were excluded from transcription and the more detailed analysis leading to it, but were included in questionnaire response totals. The number of these small groups was six.
The lectures were analyzed by methods drawn from genre analysis (e.g. Swales 1990 and Bhatia 1993) and discourse analysis (e.g. Schiffrin 1994). A functional perspective was foregrounded with focus on discourse features and their manifestation in the ELF lectures.

Since the analysis in this article focuses on questions, the methods drew on previous studies on questions in discourse, particularly Stenström (1984), Sinclair and Coulthard (1975, 1992), McCarthy (1991), and Thompson (1998). Stenström, among others, has studied questions and their meaning in conversations. According to her, questions are mainly tools for finding more information, but she also mentions various other uses of questions in conversations, such as openings, cooperation and supports. To analyze classroom discourse, Sinclair and Coulthard (1975, 1992) formulated a model based on the basic teacher–student interaction: ask – answer – comment, which was further developed into opening move, answering move, follow-up move and is known as the “Birmingham Model”. McCarthy (1991) based his model of initiation – response – follow-up on the Birmingham Model and used it to analyze classroom discourse. This model identifies typical “teacher talk” which, according to McCarthy, should be balanced with “real communication” (1991: 18). Questions are also used as organizers. Thompson (1998) has looked at questions in academic monologues and has found they have two orientations: audience-oriented, where one may expect a response, and content-oriented, where no response is expected. Audience-oriented questions are further classified into ‘information checking’ and ‘evoking response’, which is also referred to as ‘didactic elicitation’ in classroom talk. Content-oriented questions, which are more rhetorical, are classified as those which raise issues and introduce information.

Combining essential elements from the previous studies on questions, the questions in this study were classified into two general categories. For one, genuine questions, where a response is expected, and for another, rhetorical questions, where a response is not expected from the audience, but the lecturer may provide it. Genuine questions are further divided into information seeking or checking and into didactic elicitation where the lecturer keeps asking and reformulating the questions until s/he is able to prompt a response from the audience. Rhetorical questions are also further divided into two categories: focusing and organizing. Focusing rhetorical questions guide students to focus their attention to a specific issue during the lecture while organizing ones lead students from one issue to the next. Thus, rhetorical questions in this study are seen as having a specific function in guiding the students through the lecture by either focusing or organizing the lecture. The categories are illustrated in Table 1.
As Table 1 indicates, there is no difference in form between genuine and rhetorical questions. The interrogative form was used to locate all questions which were distinguishable through form. In addition to finding questions, it was essential to explore the questions in their contexts and to view what took place before and what occurs after the question is presented. The material was also reviewed for questions which did not conform with typical question form. Thus, it was not enough to use the text analysis software (Wordsmith Tools, Scott 1998) to simply identify and locate the questions through searches with question words and lexical strings typical for questions. After the questions were located and quantified, a qualitative analysis followed to supply contextual information on their use. Genuine and rhetorical questions were distinguished from each other through the qualitative analysis. When the lecturers indicated they expected a response, that is, paused and directed their gaze at the audience and/or repeated the questions, sometimes several times, those questions were determined as genuine ones. When lecturers responded the questions themselves without repeating the question and without showing they wanted their audience to respond to the question, the questions were deemed as rhetorical ones. It is necessary to mention that some of these overlap, since in most situations functional language defies definite categorization.

4 Results and discussion

The analysis began by looking into the three best comprehended and the three less comprehended lectures as rated in the student questionnaires. Table 2 below displays lecturers’ level of English as perceived by students of these six lectures.
Students viewed English in lectures L03 and L06 very similarly; however, lecture L03 was deemed as well-comprehended while L06 was less-comprehended. When the well-comprehended lectures were reviewed in comparison to the less-comprehended lectures, certain differences began to surface. The first noticeable one was the number of questions. Most of those lectures the students found easier to comprehend contained more questions by the lecturer than those which were found less comprehensible. It was interesting to discover that the students did not pose any questions to lecturers in any of the recorded 22 lectures. Table 3 below indicates the distribution of lecturers’ questions and the questionnaire responses regarding lecture content comprehension.

The less-comprehended lectures L04-L06 received “somewhat disagree” responses to the statement “I understood the lecture well” while the well-comprehended lectures L01-L03 only included “agree” and “somewhat agree” responses. As illustrated in Table 2, especially lecturers in L02 and L03 present many
questions during their lectures. There are other interactive features which can be used during lectures, and lecturer in L01 used, for example, directives and repetition during the lecture. Lecturers in L04 and L05 used questions, but notably less than lecturers in L02 and L01 and these lectures were found more difficult to comprehend. This may also pertain to the topic of the lecture or the students attending the lectures. If the lectures related to issues discussed during the previous lecture and a student was not present at that time and did not review the lecture materials outside the lectures, naturally the topic would appear more difficult. Lecturer in L06 posed only four questions and the response percentages also indicate that the students were not able to follow the lecture to their satisfaction. Since this is a qualitative study, these numbers were used as guides to provide a means to categorize the lectures into these two groups: well-comprehended and less-comprehended.

4.1 Questions

As discussed in section 3.2, genuine questions were distinguished from rhetorical ones. Table 4 below repeats the categories used in this study providing the numbers in each of the lectures.

Table 4 Questions and their appearance in lectures

<table>
<thead>
<tr>
<th></th>
<th>L01</th>
<th>L02</th>
<th>L03</th>
<th>L04</th>
<th>L05</th>
<th>L06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genuine Questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>1</td>
<td>18</td>
<td>17</td>
<td>4</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>seeking/checking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Didactic elicitation</td>
<td>0</td>
<td>56</td>
<td>34</td>
<td>13</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>Rhetorical Questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Focusing</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Organizing</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>In Total</td>
<td>4</td>
<td>80</td>
<td>56</td>
<td>24</td>
<td>36</td>
<td>4</td>
</tr>
</tbody>
</table>

The question excerpts are given for each category to show how the different question types manifest themselves in this study.

4.1.1 Genuine questions

Questions which expect a response from the audience were classified as ‘genuine questions’ as explained in Section 3.2. The first sub-category of this type is “information seeking/checking”, which is used to find information from the audience. This may be used by the lecturers to find the level of the students’ knowledge on a specific topic and whether there is a need to review certain issues. Genuine questions may also be used for group administration, such as in forming teams or scheduling presentations or for other similar functions.
Information seeking/checking

There are several reasons for information seeking or checking during lectures. Sometimes the lecturer needs to find out what the audience remembers or knows about the topic in question. At other times there may be a specific situation where information is searched from the audience. The extract below (1) provides an example of how the lecturers seek for information from their audience.

Extract 1

<S1>/…/ concerning this process water treatment ,er and last week you have , lecturer who was given by , by <NAME> is it true </S1>
<S2>yes </S2>
<S1>and what was the topic then . </S1>
<S2>sludge treatment , and . <FINNISH> siis tällane [niinku] </S2>
(S‘i mean this kind of’)²
<S1>[okay] </S1>
<S2>yleinen niinku hyväkskäyttö näitten jätteitten </FINNISH> </S2>
(‘general i mean utilization of these wastes’)
<S1><FINNISH> joo </FINNISH> okay , solid waste handling i think so sludges and er . would you remember what topics from that subject . how , how you can utilize those sludges . no . okay /…/

The need to elicit information from the audience may partly result from another lecturer having held the previous week’s lecture. Since questions occur at the beginning of the lecture, it may also be an attention-getter to activate the audience and to indicate the beginning of the lecture. As mentioned before in Section 1, the lecturers have agreed to allow Finnish to be used by students in the lectures. This poses a translation task for the lecturers, since the audience includes international students who do not understand Finnish. In Extract 1, the lecturer first interacts with the student in Finnish and then proceeds to translate the student’s response to the others. After the second question, the lecturer accepts that no one admits to remembering how sludges can be utilized and continues based on that.

Didactic elicitation

The second sub-category of genuine questions is didactic elicitation. These types of questions are used in classrooms from elementary levels of schools all the way to the tertiary level (Sinclair & Coulthard, 1975, 1991; Crawford Cambictioli, 2004).

Excerpt (2) shows how, when the student responds and does not volunteer full details in the response, the lecturer (S1) elicits them from the student (S3):

Extract 2

<S1>/…/ okay you can use the basic settlement systems or what else . er okay I put another one away er what is the purpose of mechanical purification . we talk about different kind of impurities what is the main purpose of mechanical purification . </S1>
<S3>to remove the bigger particles </S3>
yeah it is to remove the bigger particles which er which have to be removed using what force .</S1>

gravity </S3>

gravity yes that’s true , okay er before this chemically purifying we have this mechanical system we have taken those particles away after that what we have left we have organic and colloidal particles er <SIC> colloidal</SIC> colloidal er impurities /…/</S1>

It appears that the lecturer assumes the student knows the answers and keeps up a dialogue with him to clarify the purification type discussed. The questions are very detailed and after the basics of mechanical purification are clear, the lecturer continues to explain where to go from there. Note also the pauses after each question; it should be clear to the audience that the lecturer is expecting a response from them. The lecturer also directs his gaze at his audience after each question to see whether anyone would be willing to help the student who is interrogated.

4.1.2 Rhetorical questions

Rhetorical questions, as explained in Section 3.2, are questions which do not expect a response from the audience. The main distinguishing feature between genuine questions and rhetorical questions is the pause: after a genuine question the lecturer pauses while after a rhetorical one there is no pause, or a noticeably shorter one than in situations where a response is expected. No gaze at the audience is apparent after these types of questions. Usually the lecturers respond to the rhetorical questions themselves either by giving a direct answer to them or by explaining in more general terms what the question entails. In this study rhetorical questions are divided into two sub-categories, focusing and organizing. Focusing rhetorical questions aim at directing students’ attention to a particular topic in the lecture so that they will realize it is of importance and useful to remember. Organizing rhetorical questions operate as devices which shape and structure the lecture when moving the lecture from one topic to the next.

Focusing

Lecturers provide plenty of information during their lectures and some may even side track at times. Focusing questions, such as the one presented below in Extract 3, are a useful manner to keep the audience alert to the topic at hand while also helping the lecturer return to the topic from the possible side track:

Extract 3

/…/ it can't put any water in lumen any free water in lumen, all the water comes inside the wood after it's dry, it's always bound water and there, so the moisture content of any given piece of wood is always going up or down or is it no there is a balance er this hydrosopic balance and it's called equilibrium moisture content , EMC . EMC , the whole moisture content as i
already told you depends on relative humidity of air and the temperature of air
/…/</S1>

As the lecturer discusses moisture and wood and the various issues regarding it, when she gets close to the main point of this discussion, she seems to aim at focusing her audience’s attention and uses the tag-question as a rhetorical question and answers it immediately after she asked it.

Organizing

The organizing rhetorical questions somewhat defy categorization since at certain situations they could be seen as genuine, information seeking questions. However, as the following example indicates, the lecturers use this type of questions to move from one topic to the next and, though allowing questions at the transition, do not necessarily expect them. The most common way to indicate a topic change to students seems to be “Do you have any questions…” All of this type of questions were classified as organizing questions. Also those questions which are followed by a topic change were included in this category. An interesting aspect of these questions is that students rarely ask anything when this type of question is posed even with a longer pause after it.

Extract 4

/S1>/…/ first however they will be contaminated by used bleaching chemicals or additives there so they will be changed from neutral to the alkaline or from neutral to the acidic, do you have any questions concerning this bleaching.

okay, okay then we talk about precipitation control and what you have to know when you come to the exam you have to understand how the precipitate form and what factors affect it and of course you have to understand/…/</S1>

The lecturer explains final details on chemical additives in bleaching and then asks whether the audience has any questions. He does pause, but not for as long as he does when he is really expecting a student to respond. In this case, he would be likely to allow the audience to take the floor but does not necessarily expect them to do so; however, he glances at his audience to ensure everyone is ready to move on. This lecturer also typically repeats his question when he is seeking an answer from the students. Repetition can thus, in this case, be seen as a distinctive feature between genuine and rhetorical questions. Since there are no questions from the audience, the lecturer moves on to discuss another topic.

3 Conclusions

This paper has discussed the use of questions in lectures in relation to their comprehensibility. Since English was not the first language of the lecturers and there were international students present during the recorded lectures, they are considered
ELF situations. This may have an influence on comprehension of lectures where the use of interactive devices, such as questions, are used to help students follow the lectures. Questions not only enable the lecturers to investigate what the students know about a particular topic and allow students to indicate their understanding, but are also used as organizing devices and to punctuate the matter at hand. This provides students more space to their already strained concentration.

We have examined the differences between the most and the least comprehended lectures and have found that the main difference was the use of questions which were discussed in detail in this paper. Especially those two lectures, L03 and L06, which received nearly identical evaluation regarding English used in them, raised interest. In L06, hardly any questions were asked and students found the lecture more difficult to comprehend. In L03, the lecturer asked many questions, especially genuine questions and the students found the lecture one of the easier ones to comprehend. Naturally, there are other aspects that influence comprehension of lectures from the topic to the time of the lecture.

This study has explored how interaction is used in an English medium master’s program. These features structure the lecture and to offer information to students in comprehensible sections. Through becoming socialized into the university lecturing style, students are more able to benefit from these types of devices during lectures, which usually pertain to fairly abstract and complex issues and which are offered in a foreign language. This also increases their perception of comprehension.

This study has shown that the way language is used in lectures is crucial to comprehension. The pedagogical implications, then, are that increase of interactional features, such as questions, enhances comprehension of lectures. Even when the perceived English skills of the lecturer may be at the lower end of the scale, use of questions enables students to comprehend the lecture. It appears that the more interaction there is during lectures, the easier students perceive them to be and the more comprehensible the students think they are.

Notes

1 The transcribed lectures were identified with numbering: L01, L02, etc. These identification codes are used throughout the text in the examples provided.

2 English translations of the code-switches are given in brackets below the corresponding lines in the transcriptions.

Transcription conventions

The transcriptions use the ELFA corpus transcription guide (http://www.helsinki.fi/elfa/ELFA_transcription_guide.pdf). Special symbols used in the text are explained below. Speaker codes (<S1>, <S2>, etc.) are used to refer to specific speakers in the lectures.

<S1> </S1> Utterance begins/ends
References


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