

# Interaction patterns and knowledge construction using synchronous discussion forums and video to develop oral skills



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This study evaluates the effectiveness of using streaming video and synchronous discussion forums to provide feedback to a presenter in an oral skills tutorial. A pilot online tutorial was trialled with a group of 13 students enrolled for English Proficiency at the Nanyang Technological University. A survey was administered to collect information on the participants' perception of their learning. Discourse threads created on the discussion forum were also analysed to evaluate the effectiveness of the online activity. Students felt the forum supported their learning and enhanced their understanding. The findings also showed a high level of student involvement in the oral activity. The quality of knowledge in the form of the feedback constructed by students was a significant finding in this study. The feedback jointly constructed by students was found to be accurate and insightful without requiring much involvement from the moderator or tutor. Synchronous discussion forums and streaming video were found to be effective tools for teaching oral skills.

Keywords: synchronous discussions forums, streaming video, oral skills, knowledge construction, interaction pattern

## Background

### The need for a technological solution

Tutorials for the module HW001, English Proficiency (EP) were restructured to maximise effective deployment of staff resources in the Language and Communication Centre (LCC) of the Nanyang Technological University (NTU). This resulted in a decrease in face-to-face contact time with students enrolled for this module. In order to ensure students' learning outcomes were not compromised by this reduction, the Centre of Educational Development (CED) was approached for a technological solution that could convert some of the content taught in a traditional face-to-face environment onto an online environment.

The oral component of HW001 was chosen to be trialed in an online environment during the eLearning Week of March 2007. A faculty developer from CED worked closely with the EP coordinator to provide the necessary support and training for the development of this online tutorial.

### The implementation of the online tutorial

Prior to the commencement of the online tutorial, the faculty developer briefed students on the instructions for the oral activity posted online.

On the designated date and time of the tutorial, 13 students met online instead of face-to-face for their oral skills lesson. Based on the schedule in Figure 1, students began the session by listening to the speech of one of their classmates using an online video conferencing tool, AcuLearn. The student who delivered the speech talked on 'Mass Media', a topic of her choice.

After listening to the speech, students provided individual feedback on the presenter's speech according to criteria identified in each of the 3 separate forums within the course site in the learning management system. Figure 2 shows a sample question posted in one of the 3 discussion forums.

Announcements

Course Information

Cycle 1

Cycle 2

Cycle 3

Discussion Board

My Writing Lab

Expressways Website

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Tools

Communication

Course Tools

My Portfolios

Course Map

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Control Panel

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Refresh

Detail View

**Oral Skills**

**Final Online Practice for Oral Presentation**

- Listen to the recorded speech (10 minutes)
- Give your feedback on areas identified. (30 minutes)
- Do a peer review with the person assigned to you. (30 minutes)
- Tutor will review your feedback and give final comments. (20 minutes)

Please refer to the sample schedule below to arrange the timing for your tutorial group's synchronized oral activity.

**Sample schedule**

3.30 pm to 3.40 pm	listen to the presentation
3.40 pm to 4.10 pm	give individual feedback
4.10 pm to 4.40 pm	review assigned partner's feedback
4.40 pm to 5.00 pm	tutor will review and provide final feedback

**(Optional): Questions from Self Access Work**

**From 5.00pm to end of the week:** As this will be your final session before the exam, you could use the discussion board to ask or clarify any doubts you may have of work completed in any of the self-access tutorials.

**Figure 1: Discussion forum schedule**

Display Order	Forum	Total Posts	Unread Posts	Total Participants
1	<a href="#">Feedback on Structure &amp; Content</a>	35	22	15
<p>Please provide feedback on the structure and content of the presenter's speech. Let her know if she had provided enough information and if her speech was well organised according to a clear rhetorical pattern. Suggest how she can improve.</p>				

**Figure 2: Sample of a question posted on the discussion forum for students to respond**

After 30 minutes of providing individual feedback (Part 1), 6 pairs of students were given another 30 minutes to review an assigned partner's comments (Part 2). At the end of the discussion, the moderator reviewed the comments produced to summarise and give final comments.

This study aims to evaluate the effectiveness of using discussion forums and streaming video to teach oral skills. Findings from this study will help faculty determine the potential of discussion forums and streaming video to teach oral skills which are traditionally taught in a face-to-face environment.

## Literature review

### Online learning tools and knowledge construction

The combined strengths of the discussion forum and video streaming are exploited in this study to stimulate student interest and encourage communication in order to influence learning in a positive manner.

According to Dewey (1913) and Rutter (1984), computer-based lessons which include social cues – such as facial expressions or human voices, tend to be more favourable among students as they communicate better, increase student interest in the lessons and enable them to learn better. This potential of the video to air a face with expressions and a human voice is exploited in this pilot study to provide a means for students to practice their speech before an online audience.

In addition, online collaborative tools such as the discussion forum are said to provide a platform for students to actively engage in constructing knowledge with their peers and instructor (Roschelle, Pea, Hoadley, Gordin, Douglas & Means, 2000, p79). This online tool is used by students in this study to jointly construct feedback for the presenter.

This joint construction allows students to experience a greater level of understanding of the subject matter (Kafia and Resnick, 1996). This is because learners must construct their own knowledge in order to learn

truth (Tam, 2000) and “create a personal view of the world” which becomes constructed knowledge of their own (Jonassen, Davidson, Collins, Campbell, & Haag, 1995, p. 11.). According to Knowlton (2001), “knowledge construction is best accomplished through collaboration” using tools such as discussion forums.

## Models used to evaluate online learning

Two models cited in Hew & Cheung (2003) were found to be relevant to this study which aims to evaluate the effectiveness of the online tutorial. The two models are seminal frameworks for addressing evaluation issues in online learning communities. They are Henri’s (1992) interactivity framework and Gunawardena et.al’s (1997) phases of knowledge construction.

Henri’s (1992) framework evaluates the extent to which learners respond to one another (learner-learner interaction) in an online learning community. In his model, messages by learners are classified into (1) independent messages reflecting new statements containing ideas not connected to other participants and (2) explicit messages reflecting review statements or responses to someone else’s message. The proportion of explicit statements made by participants indicate how engaged participants are in the learning activity. A high level of engagement reflects that participants feel involved in the learning community. Moderators can use this information to promote participant engagement in an activity if the level of involvement is found to be low (Hew & Cheung, 2003).

The Gunawardena et al (1997) model evaluates the extent to which knowledge is constructed among learners. The model comprises 5 phases through which the active construction of knowledge progresses. The phases reveal the mental functions of learners (Phase I being the lowest) and the level of knowledge creation attained by them. Only 3 of these phases were found to be relevant to evaluate the construction of knowledge in this study. In this study, construction of knowledge involved jointly constructing effective feedback for a presenter’s speech. The comments given in the feedback were categorised into the first 3 Phases of Gunawarden et.al’s (1997) framework. They are statements of agreement (Phase I), questions and answers for disagreements (Phase II) and negotiation or clarification of meaning or identifying areas of disagreements (Phase III).

## Methodology for data collection and analysis

The two sources of data analysed for this study came from 13 questionnaires and the analysis of 34 discussion threads from one discussion forum (Fig 1). The discussion or feedback threads comprised of messages and responses produced by 13 students.

The 13 questionnaires administered were analysed for (1) student-student interaction, (2) usefulness of feedback to enhance understanding and (3) usefulness of the discussion forums to enhance learning. The discussion forum message postings were analysed for (1) level of interaction among participants, (2) level of knowledge constructed and (3) quality of knowledge constructed

The unit of analysis used to analyse interaction patterns was the message comprising of comments and responses. The units of analysis used to analyse knowledge constructed was the thematic unit ie. a single thought unit or idea that was considered relevant to providing critical feedback to the presenter (Hew & Cheung, 2003).

## Findings

### Interaction patterns in Part 1 and Part 2 of the oral activity

The data in Table 1 shows that all 13 (100%) participants made individual comments, 10 (77%) participants made explicit comments in their replies and 3 (23%) did not make replies.

**Table 1: Analysis of students’ participation in one discussion forum**

Activity carried out by students	Number of students (%)
Post individual comments	13 (100%)
Reply to classmates’ postings	10 (77%)
Did not reply to classmates’ postings	3 (23%)

A closer analysis of the responses of the 10 participants who made explicit comments showed that 3 of these students (30%) replied to more than one other participant and 1 (33.3%) of them referred to the comments of the whole class in his reply.

The findings suggest that the online discussion forum was **highly effective in engaging** students to participate in the learning community. There was a high level of individual student involvement in the activity. There were also some students who ventured beyond the requirement to respond to more than one other student. The results also suggest that the online forum activity was able to **motivate and engage students in the learning process**. A high level of learner satisfaction would increase persistence in the discussion because students feel involved (Tinto, 1993).

### Phases in the construction of knowledge

A total of 39 phases were coded within the 34 message postings analysed for the 6 pairs of student participants (Table 2). As mentioned in the Literature Review, the 3 Phases in the construction of knowledge in this study were identified according to phrases in the message postings that were (1) observations, opinions (Phase I), (2) disagreements, questions and answers (Phase II) and (3) clarifications and negotiations (Phase III).

**Table 2: Phases in the construction of knowledge**

Pairs of Participants	Phase I (observation, opinion)	Phase II (disagreement, question, answer)	Phase III (negotiating, clarifying)
1	3	1	0
2	4	2	2
3	1	4	0
4	1	3	2
5	5	3	0
6	0	4	4
Total	14 (35.9%)	17 (43.6%)	8 (20.5%)

The data in Table 2 shows that 14 (35.9%) comments were observations and opinions (Phase I level). 17 (43.6%) stated disagreements, asked and answered questions (Phase II level) and 8 (20.5%) displayed clarification and negotiation of knowledge (Phase III level).

Of significance to this study is that the highest percentage of 43.6% are clarification comments. There are 7.7% more critical comments (Phase II level) comments than observations and opinions (Phase I level) suggesting that the online forum has been effective in engaging students to critically reviewing their peers' feedback on the presenter.

In addition, the 20.5% Phase III level comments, though small in number suggests that the forum activity has enabled some students to try to achieve greater understanding of the knowledge constructed. Through exercising higher mental functions such as negotiating or clarifying, they have tried to process and construct more accurate feedback to presenters.

The findings **support the use of discussion** forums to construct joint feedback in online oral skills tutorials. The findings on levels of knowledge constructed also suggest that discussion **forums promote the construction of critical feedback**. These findings support Knowlton's (2001) claim that tools such as discussion forums facilitate knowledge construction through collaboration.

### Evaluating the quality of knowledge constructed in the oral activity

While the previous two sections of the findings evaluate the effectiveness of the online tools for teaching oral skills, this section evaluates the content of the phrases identified as the 3 levels of knowledge constructed. This additional content analysis will explain the significance of the comments made in each of the levels. It can provide information to tutors on the students' level of understanding of the content they are discussing, as well as for this study provide evidence for the quality of the feedback constructed by students.

Effective content in the feedback given to the presenter includes (1) identifying the rhetorical pattern (RP) or the structure used to organise information in the paragraph of the speech (2) identifying features such as examples used in the paragraphs of the speech and (3) identifying the Topic Sentence (TS) or the opening sentence that determines how information in a paragraph should be organised. With this

information students will be able answer the forum question by deciding if the paragraphs of the presenter (1) had no clear structure, (2) had a process structure, (3) had a classification structure or (4) had a compare-contrast structure.

Two extracts of discourse from the selected forum were analysed. Tables 3 and 4 show the details of the analysis of the 2 discourse extracts.

**Table 3: Quality of knowledge constructed in Discourse Extract 1**

Time (hours)	Comment by students	Student ID	Notes on knowledge constructed	Phase of knowledge Construction
1619	"Basically she uses <b>compare and contrast</b> "	A7	<b>Opinion</b> about RP	Phase I
1630	"Can you <b>give example</b> "	A2	Identifying possible dissonance on suggested RP and <b>asking</b> for supporting examples	Phase II
1654	"She provided some <b>advantages and disadvantages</b> "	A7	<b>Answer</b> to request for support to justify choice of RP.	Phase II
1656	"... <b>does it mean</b> she used compare and contrast? ...what is the <b>topic sentence</b> ?"	A10	Identifying possible dissonance on suggested RP and <b>asking</b> a further justification. Student wants to know the TS which will help indicate the RP.	Phase II

The comments made in Discourse Extract 1 (Table 3) are effective in helping students progress toward constructing the answer to the type of RP used by the presenter. Questions by A2 (asking for examples) and A10 (asking for the TS) will help the class determine if the RP is 'compare and contrast' as suggested by A7.

**Table 4: Quality of knowledge constructed in discourse extract 2**

Time (hours)	Comments by students	Student ID	Notes on knowledge constructed	Phase of knowledge construction
1709	"... many different opinions... three common opinions... <b>classification,compare contrast, process</b> " "... <b>I don't think</b> ... Process... Adv/Disadv is the way we use compare/contrast" " <b>But</b> it was said...classification <b>I'm not sure</b> ..." " <b>Does anyone know what the TS is?</b> "	A10	Student is <b>clarifying</b> reasoning based on earlier comments by the other classmates.  Student is <b>asking</b> this <b>key question</b> on TS for the second time.The answer to this question will inform students of the correct RP used.	Phase II / Phase III
1723	"..And,the body of the paragraph is <b>positive and negative,so X</b> use the <b>compare and contrast</b> to build the structure"	A2	Student is <b>clarifying reasoning</b> by providing examples to <b>justify</b> the RP of the speech	Phase III
1734	<b>The TS</b> is " <b>While</b> there are many <b>positive developments</b> with the Internet, there are <b>also</b> certain <b>fears and concerns</b> "	Presenter	The presenter <b>answers</b> the earlier question on TS.This provides the <b>clarification</b> to <b>justify</b> that the RP is indeed compare – contrast.	Phase II / Phase III

The comments made in Discourse Extract 2 (Table 4) are insightful and accurate in helping the students identify the RP used by the presenter. The students jointly arrive at the RP used by the presenter. In Discourse Extract 2, A10 leads the class to the desired answer by clarifying conflicting reasoning ('I don't think so', 'is the way we use', 'but I'm not sure') and questioning (TS is asked for the second time).

Both A2 and the presenter clarify the answer to the RP by providing justification. A2 uses examples of 'positive and negative' used in the speech while the presenter highlights the phrases ('positive developments', 'fears and concerns') in the TS. Both the examples and TS lead the students to the conclusion and agreement that the RP used by the presenter is indeed 'compare-contrast'.

The findings show that discussion forums **promote understanding and learning** among students as they jointly process feedback through the various phases of knowledge construction. This enables them to **improve the quality and accuracy** of their feedback.

### Students' perception of level of interaction, learning and understanding

The findings from the message postings analysed correlate with students' perception of their learning and interaction experience using discussion forums and streaming video. The high level of learner-learner interaction pattern among students correlates with the survey feedback mean of 3.46 for interaction pattern. The high quality of knowledge constructed correlates with the survey feedback means of 3.46 and 3.38 for improved understanding and learning among students respectively. The results strongly support the use of discussion forums and streaming video for the teaching of online oral skills.

## Discussion

This pilot study shows that discussion forums and streaming video are effective tools for teaching oral skills. The findings of the message analysis show that there is high level student interaction as well as engagement in the discussion. Discussion forums and streaming video also facilitate joint construction of feedback to the presenter. Most importantly, the quality of the feedback students jointly processed was accurate and insightful. Of interest also is, students themselves felt they interacted well in the discussion, improved their understanding from peer review and enhanced their learning using this platform.

One significant discovery in this study is that the discussion forum is able to capture evidence of students' understanding of concepts. The forum provides an avenue for instructors to capture students' 'hidden' knowledge. For example, a student's question on the TS of a paragraph when trying to decide on the RP displays their understanding of the relationship between TS and the way a paragraph is organised (RP).

This pilot study has shown that synchronous discussion forums and streaming videos provide a viable alternative to the traditional face-to-face environment used for teaching oral skills.

The findings of this pilot study can be confirmed by conducting it on a larger scale using data from a larger variety of tutors and classes. The study could also include a comparison of the online and face-to-face mode for teaching oral skills. This will help faculty teaching HW001 to determine if oral skills tutorials should be taught (1) using the online mode, (2) completely using the online mode or (3) using a blend of online and face-to-face modes.

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