Collaborative Online Learning Using Multimodal Analysis Software

Marissa K. L. E$, Sabine Tan$ and Kay L. O’Halloran$^c$

$^a$Centre for English Language Communication, National University of Singapore
$^b$Department of English Language and Literature, National University of Singapore
$^c$School of Education, Curtin University of Technology

$^a$Corresponding Author’s E-mail: elcmekl@nus.edu.sg

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EXTENDED ABSTRACT

Introduction
Advancements in digital and internet technologies have facilitated an accelerated interest in the use of such technologies, customized online tools and social media to support the endeavours of online education. As a result, educators and educational institutions have gained access to a global audience beyond the physical classroom. The individuals that make up this audience, from various locations around the world, are not confined to being mere spectators and receptors of information. They are very much active participants as they leverage on various social media and online tools that facilitate interactive teaching and learning.

In this presentation, we present research conducted as part of Multimodal Analysis ONLINE project undertaken in the Multimodal Analysis Lab at the Interactive & Digital Media Institute at the National University of Singapore, which aimed to develop a web-based software application for annotating, analyzing and interpreting text, images and videos in collaborative project work with the view to developing evidence-based accounts of students’ acquisition of 21st century competencies, including information and communication skills, critical and inventive thinking, global awareness and cross-cultural skills. For this purpose, real-time learner data was gathered using existing desktop software, Multimodal Analysis Image and Multimodal Analysis Video and social media to investigate the following phenomena:

(a) How students understand, analyze and interpret multimodal texts (with language and image components)
(b) How students understand, analyze and interpret videos (with language, image and audio components)
(c) How teachers can automatically assess the project work and individual student’s contributions and learning style
(d) How a systematic approach to multimodal analysis contributes to students’ analytical and critical thinking about information encountered on a daily basis

As part of this presentation, we also describe the research design, data analysis and preliminary findings.

Research Design
The aim of the project was to develop integrated web-based software which students can use to analyze and interpret how language, images and other resources construct different perspectives of issues of interest and relevance to the school curriculum in collaborative project work. The online environment was simulated using Multimodal Analysis Image and Multimodal Analysis Video software and social media technologies Google Plus and Google
Hangout. In this way, students could use chat and screen-share facilities to work together remotely to undertake collaborative analysis of multimodal documents and videos.

Four Singapore schools were involved in the project: one primary school, one secondary school and two junior colleges. Prior to data collection, workshops were conducted to familiarize and train teachers in the use of Multimodal Analysis Image or Multimodal Analysis Video and Google Hangout. From this pool of teachers, one teacher was chosen by the respective school to deliver and conduct a lesson on a topic in their syllabus which they felt would be enhanced from the inclusion and use of such software and social media applications.

Based on student numbers provided by each school, Google Hangout accounts were created to allow each student to interact via the Google Hangout interface, which has both synchronous chat and screen-share facilities. Students were grouped into teams of four members or less, and each group was assigned an Annotator, who was responsible for inserting, amending or deleting annotations using facilities in Multimodal Analysis Image and Multimodal Analysis Video, based on discussions which took place in the ‘live’ group interaction. All group members could view this analysis via the screen-share facility on Google Hangout, but only the Annotator had direct access to the multimodal analysis software to undertake the analysis.

Logs of the synchronous chat were collected using a chat logger developed in-house (MMA Chat Logger) as a Google Chrome extension. In addition, screen captures of the screen-share session were recorded on video from the Annotator’s computer using the screen capture software Camtasia to capture the process of annotation and analysis in real-time for data processing and interpretation.

Data Processing
The various chat logs were coded according to an analytical framework for collaborative computer mediated conversation (CCMC), adapted from Eggins & Slade (1997), Martin & Rose (2007) and Sinclair & Coulthard (1975). In this framework, task-orientated generic stages were classified as sub-phases for ‘on-task’ and ‘off-task’ entries, with sub-classifications to describe the various turns, functions and moves in the interactions. The number of on-task chat entries was divided by the number of annotations to derive the average number of utterances which accompanied each annotation. The general assumption was that a lower estimate would mean fewer utterances needed to accomplish an annotation, and a higher estimate would indicate more utterances needed to accomplish an annotation. Such a relative comparison, while reflective to some degree of group efficiency, cannot be interpreted without examining other variables:

(i) the actual chat which takes place, whether the annotations made were a consequence of the collaborative chat, or the annotator’s own initiative in isolation from the group chat;
(ii) the annotator’s familiarity with the research design and software capabilities;
(iii) the annotator’s dexterity with regard to manipulating the on-screen interface incorporating both Google Hangout and either Multimodal Analysis Image or Video; and
(iv) the nature of task the students had to complete.

We examined these issues to develop a profile of the most efficient and least efficient groups in each of the three schools.

Conclusion
Our research findings revealed that the groups which had a specific strategy for undertaking the analysis produced the most effective results. Our research findings also demonstrated the
need for an integrated online platform for multimodal analysis that facilitates collaboration among students, particularly as issues of dexterity, familiarity with and ease of adaption to software have been shown to affect group performance. The next phase of this research will be undertaken at Curtin University in Perth, Western Australia.

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2. Multimodal Analysis Image software:
   http://multimodal-analysis.com/products/multimodal-analysis-image/

3. Multimodal Analysis Video software:
   http://multimodal-analysis.com/products/multimodal-analysis-video/

4. Contact Kay O’Halloran: kay.ohalloran@curtin.edu.au

References

