Cloze Information Gap Tasks with Print-Based Digital Content Interfaces

John Brine¹, Kamen Kanev¹, Thomas Orr¹ and Deborah Turk²

University of Aizu, Aizu-Wakamatsu, 965-8580 Japan,
¹{brine, kanev, t-orr}@u-aizu.ac.jp, ²debstaroz@hotmail.com

Abstract

This paper reports on the use of digitally-enhanced print-based interfaces to support both individual and social information gap tasks. The interactive social nature of language learning can be supported through social scaffolding designed into instruction. Our current work focuses on a well-established information gap task referred to as cloze [9] used under three conditions: individual, dyadic, and whole class. This project investigates enhancing cloze with a patented Cluster Pattern Interface (CLUSPI®) [5]. CLUSPI allows digitally encoded information to be embedded in a layer of clustered graphical objects on printed documents and permits paper materials to link with language tools through a point-and-click interface.

1. Introduction

The project team aimed to design, develop and test a combined individual and social information gap task that required students to read and process complex authentic technical texts. Information gap task refers to a range of information sharing activities used in language education [8]. Two familiar examples are the jigsaw method [8] and cloze [9]. Our work is influenced by the literatures on reciprocal peer tutoring [7] and co-construction of meaning [3], which have been shown to support second language acquisition [2]. Information gap tasks provide a way to operationalize a shared task with clearly defined rules and roles. Our intention is to enhance such reading tasks using CLUSPI® technology in collaborative contexts.

2. Paper-based information gap task

Information gap tasks are widely used in language education. In their simplest social form, a pair of students completes a task by sharing information. In the unidirectional version of social information gap tasks, one student has all of the information, while in bidirectional gap tasks, both learners share information to complete the task. Bidirectional information gap tasks have been shown to result in more interaction than unidirectional information gap tasks [1]. The bidirectional form has the advantage of promoting learning through reciprocal peer tutoring and co-construction of meaning [3] and can be extended from pair use to include larger groups of students.

During paper-based trial, we found the Jigsaw task did not include all of the students, and this suggested that integrating a computer and a paper-based language task with CLUSPI® could help to systematize and guide both the individual and social modes of the cloze. Our trial also led us to a more precisely defined information gap task known as cloze [9].

3. CLUSPI® technology

CLUSPI® is a cluster pattern-based encoding scheme that has been designed to blend seamlessly with printed document content. In the CLUSPI® system, a carpet of graphical objects, e.g. dots, squares, etc. is scattered transparently across a print surface [6]. Any position on a CLUSPI®-enhanced page can be read, and its location subsequently deciphered, by a small handheld image acquisition device (IAD) (i.e., a small USB camera) thereby activating the digital content or tools associated with the text (e.g., websites, video clips, translations, concept-mapping tool) through a simple point and click action. Further information can be found in the CLUSPI® patent documentation [5].

4. Using CLUSPI® with cloze

According to Steinman, “cloze is a procedure in which every nth word of a passage is deleted and the reader is asked to supply the missing word” [9]. In a typical cloze passage, words are deleted from an original text and replaced by gaps. The deletions can be random (every nth word), or rational (a particular part of speech). The gaps are equal in length, and readers must read beyond the immediate sentence to understand the context. If multiple-choice answers are used, cloze tasks are easier to answer, and to score, since responses are controlled. A single correct
multiple-choice answer is unambiguous, and thus easier to score and analyze.

In our CLUSPI®-enhanced cloze activity, the teacher selects a text appropriate for the reading requirements of students and this is printed on CLUSPI®-enhanced paper. Following the standard practice for cloze exercises, the first and last sentences of the text are retained and the teacher chooses gaps on either a random or rational basis. Students do not make any marks on the paper. Each CLUSPI®-enhanced page can be read and deciphered using an IAD. The entire process must be mediated through a server and consists of three modes: 1) individual, 2) dyadic, and 3) whole class.

In the individual mode, students are given a cloze passage to gain familiarity with a text. Pointing and clicking the page with the IAD registers the page owner. Each student reads the cloze text, and then, one by one, clicks on each gap in the text followed by a click on a word from the cloze gap fillers below the text. Thus, when a student has selected a word to fill a gap, the IAD is used to register the match. If necessary, students can access supplementary information, tools, questions and activities that correspond to the word and context. Students are not permitted to write on the page, but must hold the text “in memory” as when reading. Only one correct answer is possible per gap and a penalty score increases with the randomness of the selections. Timing, order, and location data are collected for analysis.

In the dyadic mode, each student in a pair receives a page with the identical cloze activity. Students discuss the text and complete it with equal exchanges between the two participants. The students complete the entire cloze activity together as a pair. Student A selects a gap on his or her own page and then selects a match from the list of words at the bottom of student B’s page. Only then can student B make a choice from student A’s page to compete a gap on his or her own page. After each completion, the turn changes. A penalty is applied for random guesses. Timing, order, and location data are collected for subsequent analysis.

In the whole class mode, each person again receives the same cloze text and no writing is permitted on the page. Each individual, having previously encountered the text twice, now ranges around the class asking a new person for each turn. Each individual is restricted to pairing with a new partner for a single gap selection, as in the dyad mode, but without repetition. If all possible partners have been formed, the process begins again until all of the gaps have been completed. Difficulty can be increased or reduced by varying the complexity and length of the text, and by varying the gaps (which can be either random or rational). A penalty is applied for random guesses. Timing, order, and location data are collected for subsequent analysis.

After completing each of three modes, each student encounters the same text under three social conditions. The data collected will allow us to identify differences between students and to adjust instruction.

5. Limitations and future work

We are still identifying the implications and constraints of its use. The potential for trivial uses by indiscriminate clicking with the IAD can be reduced by making final scores a function of measured variables such as number of students contacted, time taken, clicks registered, randomness, and score improvements.

Using CLUSPI® for cloze tasks permits reading in individual, dyadic, and whole class social configurations, both inside and outside of the classroom. This provides classroom teachers with many options for organizing instruction to match student learning needs. Our work will continue to look at how CLUSPI® can be used to systematize individual and social reading, to provide alternative learning environments, and to evaluate the benefits of innovative social learning practices.

6. References