CLUSPI® Support for Collaborative Learning in a Dynamic Group Environment

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Abstract

We propose a method for enhancing the development of student dialogue, text manipulation and reading comprehension skills. The method is applicable to classes of all sizes and ensures work at individual level, group level and class level. Digitally enhanced teaching materials with Cluster Pattern Interface (CLUSPI®) direct point-and-click functionality are used to enhance skill development. The educational process takes place in a computer-assisted environment, which supports direct interactions with printed materials and instant access to diverse multimedia content. While this method was developed for English language teaching, it could be feasibly employed for any educational discipline in which students are required to read or interact with printed materials.

1. Introduction

Teaching students, individually and in groups, to read and interpret authentic texts is a challenging task for any course instructor. When classes consist of large numbers of students at varying levels of ability, with different individual and cultural learning styles, different purposes for learning and with differing levels of motivation to learn, then scaffolding the learning process can present an even greater ongoing challenge for teachers. In this context technological support for streamlining and more efficient management of class activities becomes a powerful tool, especially when collaborative learning is promoted through dynamic groups.

2. Computer-assisted teaching and learning in collaborative environments

Computer-assisted collaborative teaching and learning methods have a restricted ability for taking account of the differences between class sizes, teaching styles and objectives, learner preferences, cultural practices and administrative constraints [1,2]. This demonstrates the need for a more flexible collaborative teaching system that could be easily modified by teachers to suit their teaching constraints and objectives, the types of activities and the groups of students learning with the system. The activities offered should also be multi-dimensional to incorporate individuals, groups and whole classes of students within the activity design.

In an attempt to address this, we have developed a Dynamic Group Environment for Collaborative Learning (DGE/CL) that uses digitally-enhanced paper materials [3,4] to provide a flexible organizational structure, additional learning content, multi-dimensional learning activities and a reason for students to discuss the content with each other. A structural diagram of the DGE/CL is shown in Figure 1.

Figure 1. A structural diagram of the Dynamic Group Environment for Collaborative Learning (DGE/CL)

Three main goals of the DGE/CL are:
- to provide reading assistance on the basis of individual need,
- to help students to understand content, genre and text features, and
- to provide a dynamic group environment which engages students in the reading activity.

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The DGE/CL consists of a content database, a task assignment interface for teachers and the CLUSPI® print-based interface.

2.1. Content database

Educational content database may contain a wide range of information entities beginning with unrelated individual pieces of information and expanding up to fully developed integral texts. Database information entities are associated with specific topics that serve as keys for extracting targeted content for task assignments.

Database content organization and management functionality should be designed with the support of various activities designated by the teacher in mind. Special attention should be paid to encouraging group activities, and we believe that multimedia and especially multiple view representations of information entities could significantly assist in this process [5].

2.2. Task assignment interface

Using the task assignment interface, the teacher sets the parameters for the activity and assigns the appropriate content variables, chooses a learning objective of the task assignment and determines the content and activities, which will be available at each stage of the task. This leads to one of the following class partitioning schemes defining student interactions:

- **Teacher-determined** – groups are determined by the teacher and the content is disseminated according to these specifications. Specific types of activities would be completed in pre-determined groups. This feature would be used if teachers wanted students to remain always with the same group members.

- **Content-determined** – the teacher specifies a number of students with non-identical CLUSPI®-enabled activity sheets that contain both identical, and non-identical pieces of information. To complete a component of the task, students have to interact amongst class members to find the non-identical information required to complete the task.

- **Student-determined** – the teacher specifies a task in which the content does not direct the grouping of students. Defined groups are either not necessary or can be self-assigned by the students.

The parameters and variables set by the teacher in the Task Assignment Interface will dictate whether groupings will occur within a small pre-determined subset of students, or randomly within the entire class.

Conditions, which the student is required to meet in order to progress to the next stage of the task, could also be defined. For example time limits, specific sequences of clicks and/or a designated number of attempts allowed to complete each activity can be selected as conditions of task progress.

2.3. The CLUSPI® print-based interface

The teacher specifies whether each CLUSPI® device can access information on different pages. The use of the CLUSPI® device is determined by the content and the activity, which has been assigned. The teacher decides whether the activity requires students to click on information available on different printed sheets, or whether they can only have additional content access for their own printed sheets. We would certainly like to provide each and every student with an individual portable CLUSPI® device in which case an obvious direct student-to-device mapping could be easily established. At present however several students have to share a single CLUSPI® device so they need to identify themselves explicitly through other means.

3. Conclusions and future work

In this work we have discussed collaborative learning in a dynamic group environment mainly from organizational and teacher perspective. We believe that for the success of this new method a thorough study of the language learners’ view of the system and particularly the CLUSPI®-based interactions from the user perspective would also be required. In this context, we would be more than happy to discuss possibilities for collaboration with any potentially interested parties.

References