Challenges for the Enhancement of Learning Activities on Electronic Discussion Forums: with Tools and Educational Programs

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Abstract

For fruitful learning activities throughout electronic discussion forums, learning designers might offer appropriate reflections from the learning environment.

In this paper, the author introduces two challenges with enhancement of activities on electronic discussion forums. One is to assess communication among learners in the CSCL. The method proposed in this paper is to visualize discussions by focusing on the relationship between topic keywords and each learner using a correspondence analysis. The correspondence map made by the analysis could represent topic parts and learners’ commitment in the learning community. The other is to design science educational programs dealing with emerging science and technology. The programs promote collaborative learning activities that research and examine emerging science and technology through interfacing between middle and high school students with volunteers via websites. Providing the reflection of their own activities from different approaches, tools and educational programs, reveals important focus that both cognitive modes of educational support are meaningful for complementary progress to learners [1].

1. Promotion of Self-assessment for Learners in an Online Discussion

The study of Computer Supported Collaborative Learning (CSCL) is a challenge with regard to producing an environment that is conducive to mutual learning among learners who use computers. At present, the importance of promoting communication among learners via Computer-mediated communication (CMC) is rapidly increasing. However, there are some difficulties faced by learners in mutually recognizing the status of a learning activity in the CSCL environment—this constitutes the most important research issue [2] [3].

In order to address this issue, the author propose a method to self-assess the online discussions in electronic forums or Bulletin Board Systems (BBSs) [4]. The proposed method of content-wise visualization of the communication produces a mapping of coordinates, which indicates how strongly each learner relates to each keyword in his/her messages. Mapping reveals the entire structure of communication in the learning community—the manner in which each learner participates in the communication and the organization of group communication.

In order to examine the validity and usefulness of the proposed method, the author developed a software referred to as “i-Bee,” (Bulletin board Enrollee Envisioner), which can visualize the relationship between learners and keywords in online messages in real time based on the analytical result by Correspondence Analysis (CA) [5]. This software also provides snapshots of past discussions and animations, which display the trajectory of change from a given period. Thus, i-Bee aims to enable learners to have a perception of their discussion in its entirety and to encourage them to assess their discussion. With regard to learners’ self-assessment, this study primarily focuses on and discusses the experience of learners in order to recognize and improve a discussion using i-Bee. i-Bee is a plug-in tool that works with discussion forums of exCampus and its databases, which is an e-learning module developed and distributed free of charge by the National Institute of Multimedia Education in Japan [6].

The features of i-Bee are discussed in the following section. i-Bee has four features: (1) the visualization of the relationship among keywords and learners in real time, (2) the visualization of a time-series trajectory and snapshots of certain past periods, (3) the visualization of the recent levels of participation of learners and of the frequency of keywords, and (4) the location of messages containing corresponding keywords, depicted as flowers, to be clicked by a learner on i-Bee.

2. Building Virtual Learning Community with Exploratory Activities

Many trials with exploratory learning activities and educational programs via CMC are proceeding. For
instance, trials of up-to-date science and technology topics are widely besought [7].

Though professionals' works are very challenging and absorbing, high disciplinary and the lack of information inhibit people from understanding science and technology researches.

The author had tried to develop and evaluate educational programs about such emerging science and technology. The programs promote collaborative learning activities that research and examine emerging science and technology through interfacing between middle and high school students with volunteers via websites [8]. In these programs high school students with a curiosity and interest in emerging science and technology and involved in related school club activities engaged in such activities as studying the latest trends though resource materials, produced ideas through research activities including theoretical and laboratory experimentation, and considered the significance of emerging science and technology and its various problems. The goal was a high level of authenticity in the learning experience derived from developmental and pragmatic sources of knowledge attained through the medium of an online collaborative learning environment. This study discusses more appropriate educational content and recommendations in teaching methodology. Such activities can be understood as an aspect of science communication [9].

From this viewpoint on the subject of science education, we conduct a project that sets a final target on developing a new way of management of the educational program in science museum for stimulating learning activities.

We administer a website (Mus.edu.jp) for the program. Using the web, science museum volunteers provide learning resources related to current topics on science and technology, and learners comprehend current situation and find their interesting topics to look into by further online collaborations with volunteers as experts.

One of the main features of this educational program is to improve the understanding of emerging science and technology through science museums. A group of volunteers was formed to interface with students. We held lectures and discussions to exchange opinions for the sake of those technical specialists with limited pedagogical experience. The science museum volunteers from specialized emerging technological and scientific fields formed the community that interfaced with high school students as scientists and technicians.

In this program students were able to speak without trepidation to science museum volunteers they had never met before. Rather, the adults were the ones who were worried that they “would not be able to adequately transmit the information.”

Beginning with the prepared questions based on what the learners had researched through club activities, information was exchanged using the limited tool of a web BBS. The explanations and counter questions of the volunteers waiting online provided them with needed information, which was ultimately employed in such activities as presentation making.

References