Practice and Evaluation of a Web Bulletin Board Monitoring in Distance Teaching Assistant Program

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Abstract: The aim of this research tries to design a learning support model that includes a teacher who gives a lesson in a school and distance teaching assistants (Distance TAs) who asynchronously support group learners, who are engaged in problem-solving activities in a learning support environment and develop Distance TA's learning support methods and some tools used in this model. In addition, we aim at designing a Distnce TA's program in which he/she acquires the ability of distance learning support. In this paper, we describe a framework of the distance learning support model and then explain a function to monitor and activate Web bulletin board among Distance TAs and learner. Furthermore, we describe an educational practice and an evaluation result that used this function.

1. Introduction

With the rapid development and spread of Web and network technology, the use of ICT in education and learning brings about a big change in learning environments. In these environments, the tools and applications to support learners according to various learning styles are needed. Many such tools which could be used in an e-Learning environment have by now been studied and developed[2]. In these environments, we need to explore learning models of the next generation in the knowledge society. At the same time, it is desirable to meet challenges to the new pedagogy (e-Pedagogy) in learning and education in the e-Learning environment [4].

One of the features of the e-Learning environment is the open-ended environment available through the Web, which makes possible not only synchronous but also asynchronous typed support. From the viewpoint of learning support, it is possible that learners will be concerned with supporters such as learning companions, other teachers, domain experts and learners who have already studied the subject matter as well as teachers providing face-to-face lessons in the environment. Therefore, a learning support model needs to include some tools to provide these support functions. In addition, education in corporations and universities and lifelong learning have requested support for learning and communication on the Web[1]. For these requests, the distance learning support model that includes roles and methods of coordination and facilitation has been studied.

Considering the background of our study, the aim of this research tries to design a learning support model that includes a teacher who gives a lesson in a school and distance teaching assistants (Distance TAs) who asynchronously support group learners, who are engaged in problem-solving activities in a learning support environment and develop Distance TA's learning support methods and some tools in this model[3]. In addition, we aim at designing a Distance TA's program in which he/she acquires the ability of distance learning support.

In this paper, we first describe a framework of the distance learning support model, and then explain a function to monitor and activate the Web bulletin board among Distance TAs and learner. Furthermore, we describe an educational practice and an evaluation result that used this function.

2. Distance Learning Support Model

In elementary and secondary education, one of the key points for success in problem solving based learning is the support given by a teacher for a learner's positive learning activities. There are various ways that such support can be given. It is difficult for one teacher to support the problem-solving typed practice of about 40 learners. Therefore, teachers need a teacher support environment where the time given to instruction and support is spent on the essential aspects of the learning objectives. However, one subject in teacher pre-service training is how to increase an university student's practical learning ability. As for the ability of the learning support in the class that used Web and the Internet, it seems essential for teachers in the future.

To create a framework which solves this problem, we designed a model in which university students take part asynchronously in problem solving based group learning as TAs. One teacher teaches about 40 learners in a face-to-face environment. A distance TA has the role of supporting the teacher by offering learning support to a group through a Web bulletin board. Figure 1 shows a distance learning support model that includes Distance TAs for problem solving based group learning. The purpose of this model for learners, the teacher and Distance TAs is as follows.

- To support for improving the problem-solving ability of learners
- To help and support the teacher in a lesson
- To bring up the learning method and manner of the learner in the learning environment with the Internet
- Support in the distance learning environment for improving the learning support ability of Distance TAs
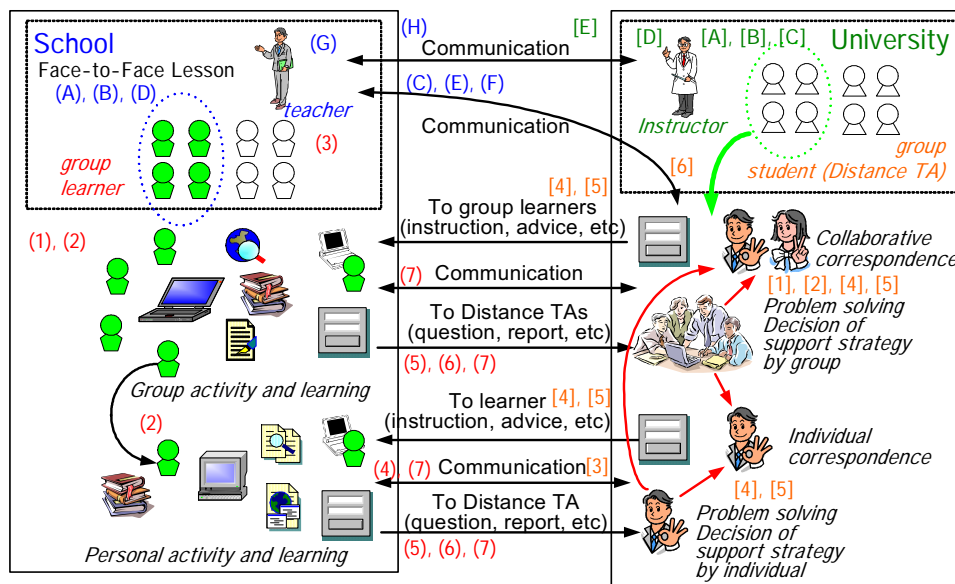
Figure 1: Distance learning support model included Distance TAs

On the side of university, an instructor explains the distance TA program to Distance TAs and then explains the purpose of the Distance TA to university students. Each group examines what kind of support strategies and support methods exist in the restricted communication environment of the Web bulletin board. Then, according to the support strategy and method, the Distance TA performs his/her role.

On the school side, a teacher divides learners into various groups and gives a subject. Then, the teacher tells the Distance TAs the subject and explains their roles in the Distance TA program. This program provides a "Web bulletin board" where learners and Distance TAs communicate with each other and a "work record tool" where each group attaches the record of group and individual work. After an introduction, the teacher gives instruction and support to the learners in the face-to-face lesson. Then, each group or student asks questions and reports on the progress of their work through the Web bulletin board to the Distance TAs, who can reply to questions. If a Distance TA is unable to recognize the state of progress of the group work, she/he requests it from the group or learner. Moreover, a Distance TA may give various kinds of support for problem solving such as work proposals and methods of learning activity. According to the support situation, Distance TAs consider the support strategy and method by communicating with group and give advice, suggestion and so on.

3. Educational Practice in Distance TA

The educational practice of Distance TA program was carried out in subject "information education" for the twelfth grader in high school. This practice involved 33 high school students as learners and 39 university students as Distance TAs. Six learner groups (Group A ～ Group F) which consisted of 4-7 persons were made in the high school side. The Distance TA group which consisted of 5-10 persons supported each learner group. In the university side, the students who attended this university class supported a high school teacher as Distance TA. In

addition, the Distance TA performed asynchronous distance learning support for a learner group on the Web bulletin board.

The subject for each group was a design of the school excursion that a high school student wanted to perform. For the period of the school excursion that they planned, it was set for three days (From December 17, 2007 to December 19). In addition, we imposed the following limitation condition for the design.

- The destination is limited to the domestic.
- The budget is cheaper as possible.

The learner who experienced a school excursion performed the planning of it based on the experience of each learner last year. Furthermore, on the last day of the class, each learner group performed the presentation of the school excursion plan for the principal. Each learner group set a learning theme not to become the simple trip plan and aimed at the making of the plan adopted for the school excursion of the next year. For this problem solving typed learning, it was necessary for Distance TA to perform four following supports.

- To support the setting of learning theme
- To support the design of the school excursion
- To support the presentation for the principal
- To support the improvement of computer skills

In the setting of the learning theme, it was necessary for the Distance TA to support it so that the school excursion plan did not become the travel plan, because this learning theme becomes the grounds to gives a learner feedback. Therefore, this is the point of the distance learning support for the Distance TA. Also, in presentation support, the Distance TA does not support how to use the presentation software to learners, but constitution and contents of their presentation.

In the lesson of the university, high school teacher explained the situation of the class, the motivation of
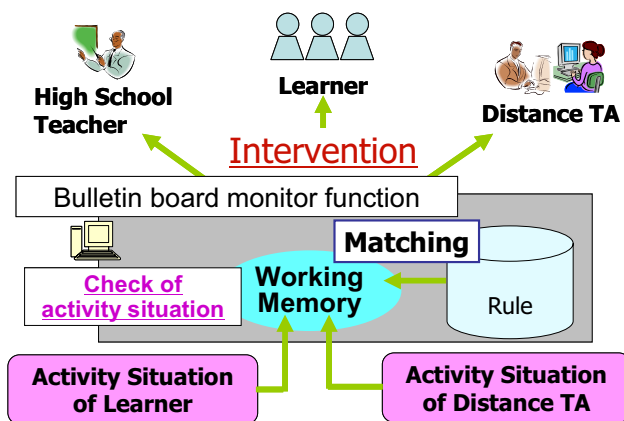
Figure 2: Configuration of Monitor Function

learners and the understanding situation for the subject matter before carrying out this distance TA program. While this program was carried out, the class was performed for four times for one week in the high school, and the lesson was performed for one time for one week in the university.

4. Function to intervene in Web bulletin board to let Distance TA activate

Through the practice result of the past Distance TA program, we had some problems, for example, to be lacking in activity of the Distance TA. These problems are given by following three causes.

- In a questionnaire of the Distance TA program, there was a description that Distance TA forgot the activities.
- The Distance TA read two bulletin boards (⌐Dialog pattern-based Web bulletin board ⌐ and ⌐Meeting bulletin board among Distance TAs ⌐), but there was the case that Distance TA did not perform the positive note on them.

- Collaborative supports with Distance TAs (intentional learning support by plural Distance TAs) are not performed for the learners.

To solve this problem, we introduce a function to check the activity of the Distance TA and the learner, and let the activity of the Distance TA activate. The purpose of the function to check these bulletin boards is as follows;

- To not let Distance TA forget the distance support activity
- To let two bulletin boards ("Dialog pattern-based Web bulletin board" and "Meeting bulletin board among Distance TAs") activate
- To let Distance TAs rouse the discussion about the collaborative support method in the "Meeting bulletin board among Distance TAs"
- To give Distance TAs and learners motivation

The bulletin board monitor function is designed as structure of a production system that can express the recognition - action cycle. We show the structure in Figure 2. We prepared for some rules to intervene in the activity of the Distance TA and learner while checking the bulletin board. We extracted the non-activity situation of the bulletin board and the needed activity of Distance TA or learner to achieve the purpose of this function. Then, we describe their rules in a form of IF-THEN rule. In the function to check the bulletin board, the condition part of each rule is matched by the activity situation's change of the Distance TA or the learner, the change of time and so on. Moreover, a procedure (for example, transmitting e-mail which presses Distance TA for activity) described the action part of the rule is carried out. This function was carried out according to a rule by a person.

As a result of this practice, we found that the bulletin

Table 1 : Examples of intervention rules, targets and content of intervention

Intervention Rule	Target (Method)	Content of Intervention

When A do not comment for $$$ week(s)…	Distance TA (e-mail)	One week: Let's participate in "Meeting bulletin board among Distance TAs".
		 Two weeks: Let's participate in activity of the Distance TA.
		 Three weeks: Let's talk with other Distance TA about activity of the Distance TA.
		 Four weeks: If you carry out the activity of Distance TA in the whole group.
		                        the activity situation of the learner is improved.
		 Five weeks: Is the meeting of the Distance TA favorable?
		                        Let's participate in "Meeting bulletin board among Distance TAs" positively.

When the work diary of Group $$$ is not updated by Friday…	High school teacher (e-mail)	A work diary for this week of Group $$$ is not submitted. Please think about a method to let Group $$$ submit the work diary. Of course, you may use Distance TA.
When learner does not ask you a question for one week, or make a note…	Distance TA (e-mail)	Let's think about a method to let "Dialog pattern-based Web bulletin board" activate.
When Web bulletin board is not used for one week…		The Web bulletin board is not used. Is the work of the high school learner favorable?
When a question and a topic of the learner are not solved for two weeks…		You have the problem that is not solved. Let's try the solution of the topic.
When a learner does not agree the suggestion and the opinion of the Distance TA more than five times…		Why does not the learner group agree? Please think about the reason.
When learner does not ask the Web bulletin board a question for one week, or make a note	High school Teacher (e-mail)	Group $$$ does not seem to use the Web bulletin board. Please promote the use of the Web bulletin board.
When learner does not ask the Web bulletin board a question for one week, or make a note	Learner (e-mail)	Do you have any questions or some report? The Distance TAs wait for your questions and opinions.

board is activating by the intervention with this function and collaborative discussion occurs. In addition, we found that Distance TA who the activity lacked make its own active situation by receiving an e-mail from this function.

5. Conclusion

In this paper, we described the purpose and the method of the distance learning support model with Distance TAs. Furthermore, we explained the Web bulletin board monitor function to let the activity of the Distance TA activate.

At present, the information that we can get in the Web bulletin board is limited. And the activity correspond to those acquired information is limited, too. In the future, we are going to arrange information related to activation of the Distance TA. Moreover, we are going to implement the bulletin board monitor agent and expand the act of the agent.

Acknowledgments

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