

## Long-Distance Education System Development-based on a Mentor

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**Abstract.** The purpose of this study is to design a learning support model to enhance interaction with a mentor, as a learning method which is able to fill the regional and economic gap between rural communities and cities. For this study, the continuous interaction with a mentor was made using digital technology such as telephone. As a result, the students were able to have significant learning improvement. According to the results, the following implication is suggested; Distance Learning program should be designed, which is able to support the remote learning. In this paper, it is described how a remote learning support model works and how mentor monitors the learners. Additionally, the educational practices and outcomes is followed.

**Keywords:** Long-Distance Education, Mentor, Rural communities, Education System.

### 1 Introduction

With the rapid development and spread of Web and network technology, the use of ICT in learning brings about a huge change in learning setting. In these settings, the tools and applications are needed, which are able to support the learners according to the various learning styles. Many such tools have by now been developed and studied, which could be used in e-learning environment [3, 4]. E-learning can be made, following the teaching plan which was designed in advance. Elementary and secondary school students have difficulty learning in e-learning, because young learners are not able to have independent learning ability. That's why students get private lessons. It is possible to make interaction with a tutor. Considering the economic situation in the rural communities, e-learning may be a sole solution. However, students in rural communities also have difficulty learning in e-learning. Therefore, a learning model with e-learning is needed, which can make mutual communication using a mentor [1]. For these requests, a distance learning support model has been studied, which includes roles and methods of coordination and facilitation, makes it possible to have mutual communication. Considering the background of this study, the aim of this study tries to design a learning support model and develop some tools in the model which is able to support asynchronously

the teachers giving a lesson in a school and group supporters engaging in problem-solving activities on the basis of learning supporting with a mentor [7]. Additionally, it is targeted that a mentor-based program can be designed, which is able to provide Distance Learning Support. In this study, it is described what the framework of Distance Learning Support is, and what the functions to monitor the learners and activate the interactive communication are. Furthermore, an education practice and an evaluation result is explained.

## 2 Mentor-based Distance Learning Supporting Model

In elementary and secondary education, one of the key points for success in a mentor-based learning is the teacher's support for a learner's positive learning activities. However, in rural communities, it is difficult for one teacher to support the learners in various grades. In this situation, the use of e learning contents can help various graded learners as a complementary learning. However, young learners are so hard to regulate themselves since they are in lack of self-control ability [9, 10].

Therefore, a mentor supporting environment is needed, in which it is possible to monitor the learning process and assist learning. Also, there is a lack of care for the students in rural communities. Care is the key element for young learners to learn. For the purpose of solving the problems, a learning model was designed, in which a mentor not only assists learning but also carries out caring the learners at the same time [5, 6]. In order to create a framework which solves this problem, a model was designed in which university students take part in problem-solving as a mentor. One mentor plays a role as an assistant who monitors 10 students at least, offering learning assistance with interactive communication. [Figure 1] shows a Distance Learning Support Model for learning based on a mentor. The purpose and definition of the model are as follows. A learner is referred as an elementary student in a rural community. A teacher serves as a manager to manage students in an elementary school. A mentor is the one who manages learning process and carries out TAS( Teaching Care Assistance) at the same time.

The purpose of this model for learners is as follow.

First, help the learners improve their self-initiative learning abilities. Second, assist teachers in class. Third, care for students through after- school activities supports. Fourth, support the distance learning environment to improve learning support ability of TCA.

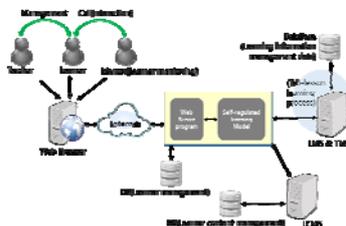


Fig. 1. E-learning system configuration diagram

In this study, LMS and LCMS were applied in order to carry out learners' efficient learning of an elementary school in rural communities. A learning model was configured in the process of learning on-line using Tablet PC, in which a mentor took part as a distance learning manager. TMS (Teaching Management System) was implemented in LMS system so that it made it convenient to support a mentor and manage learners [Figure 1]. TMS system's roles are as follows.

First, monitor learner's situation. Second, input the analysis results in DB. Third, monitor and record mentor's work process. [Figure 2] shows how a mentor-based distance learning support model works as a learner and a mentor according to the step-by-step procedure. A mentor applies SRL (Self-regulated Learning) strategy which is able to analyse the current situation and solve the problem after consulting a student. SRL strategy is composed of 4 elements, which are cognitive regulation, meta-cognitive regulation, motivational regulation and behaviour regulation [2, 4, 11]. The procedures of mentor-based distance learning support model are classified as follows [Figure 2].

## 2.1 Learning monitoring & diagnosing, forecasting

Students carry out e-learning called 'EBS Edumore Tabgang' using tablet pc.

[Figure 2] shows as follows.

- ① A student starts the first learning step.
- ② A student carries out learning activities.
- ③ The history of learning activities are recorded in LMS DB.
- ④ Learning Attitude and assessment scores are recorded in LMS.
- ⑤ A mentor monitors the learning results in the LMS system.
- ⑥ A mentor inputs the problems which are analysed
- ⑦ through learning attitude diagnosing and learning evaluation based on the monitoring the results.

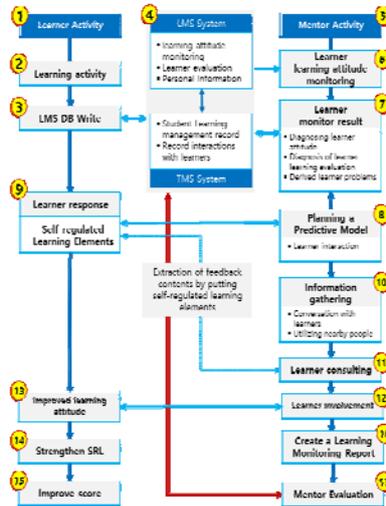


Fig. 2. Mentor-based remote learning support model

## 2.2 Interaction with a Learner

⑧ A mentor forecasts the current situation through telephone (or video telephony, and ⑨ analyses the details of response. Then, a mentor asks questions needed for establishing SRL strategy, which is able to solve the anticipated questions.

## 2.3 SRL Involvement

⑩ A mentor gathers information available in neighbourhood, in order to comprehend the learner exactly, for example, gathers additional information from teachers, parents, and friends. ⑪ A mentor carries out feedback process for the learner with an element among SRL strategies based on the learner's learning results. ⑫ A mentor carries out the procedures from ⑧ to ⑪, when is necessary.

## 2.4 Evaluation and Reinforcement

⑬ The results are as follows. Learning attitude was improved, ⑭ learner's SRL ability was strengthened and learner has improved grade due to feedback from a mentor. ⑯ A mentor input the analysis data derived from ⑧ to ⑪, ⑰ analysed the input details and evaluated a mentor's activities.

### 3 Application and Analysis

This study conducted feedback on 457 elementary students with 10 mentors for 6 months. A mentor monitored and interviewed 10 to 15 students a day. A student communicated with a mentor over telephone 2 to 3 times per week. A mentor supported the students when it was needed, in spite of not teaching the student directly. Students learned through 'EBS Edumore Tapgang' every day. When the learning process was finished, evaluation was carried out. A teacher served as a manager about any activities in school. In the case of a school event or poor learning activities, teachers and a mentor adjusted the learning schedule in advance. For the sake of reliability, learning tests were conducted 28 times. [Figure 3] shows the results after the 28th learning activities. There was an overall learning improvement, though, there was a case that learner had little learning benefit due to learner's characteristics. According to the results, it is suggested that interaction with a mentor has effect on learning and makes it possible for students to have self-directed learning, not to have dependent learning with a tutor. These results have such a implication that e-learning can be a solution to solving the problems.

### 4 Conclusion

In this paper, the purpose and method of the distance learning support model with a mentor were described. Also, the strategies of SRL elements were explained in order to activate e-learning. A distance support learning model suggested in this study not only made learners study but also played a role as a care-giver instead of parents and teachers. Previous e-learning contents had no effect on young learners like elementary students because young learners are in lack of SRL abilities. In order to solve the problem, a mentor gave feedback with the relevant SRL elements needed, analysing the learner's learning situation, rating scores, and psychological, environmental states.

In other words, this study is to design a kind of distance learning support method, in which the interaction with a learner has been considered the most. 457 students took tests 28 times and the most of them had improvement on average grades. Further studies are needed to investigate the information about how mentor can be activated. In addition, it is desirable to analyse big data about LMS and TMS system in order to identify how SRL strategies had influenced on SRL ability of learner through interaction.

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