Mobile Learning System Using the ARCS Strategies

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Abstract

The development of education in a long distance is transforming its learning forms from distance education to education through electronic devices and mobile devices. Recent web-based teaching and learning programs are being developed using strategies to stimulate and maintain learner's learning motive. Mobile learning programs using mobile terminals also need strategies to stimulate and maintain learner's motivation appropriately. This study aims to suggest the methods to stimulate and maintain learner's motivation appropriately in mobile settings providing mobile learning system using ARCS strategies.

1. Introduction

With the rapid development of mobile technologies and its expansion of user brackets, Students' use of mobile devices is also increasing. Furthermore, with the help of development of technologies regarding mobile contents and user interfaces, many studies on the possibility of educational application of mobile devices are making progress.

Since Keller's ARCS model presents motivational strategies for designing of educational software, mobile learning system designed with the model might be possible to implement more effective learning programs than the conventional mobile learning systems.

As wireless Internet settings are restricted in terms of the availability of mobile terminals unlike conventional web environments, I consider learning programs themselves can't be available for complete teaching and learning programs. However, if we limit it to the supplementary method for face-to-face classes, it is attractive enough to stimulate and maintain learner's motivation.

Therefore, this study suggests the method to stimulate and maintain learner's motivation providing mobile learning system using the ARCS strategies in mobile settings.

2. Learning Motivation and the ARCS Model

There is always motivation behind all human behaviors and achievement. Human being's learning is substantially affected by such motivation. The type of motivation to lead human beings to learning is called learning motivation [1].

According to the studies on learning motivation, learning motivation can be explained with the three concepts of intrinsic and extrinsic motivation, characteristics and states, and affective and intellectual areas. This theological diversity of motivation can help understanding of the dynamics of motivation. However, teachers and instructional designers in order to design learning environments more motivationally stimulating, they need the concepts of learning motivation to observe the changes of learners with their treatment, to make other teachers and instructional designers more understandable, and to make available for operationalized treatment. Through the ARCS model, Keller conceptualized the motivation as observational strength and direction, which is affected by the affective and intellectual experiences without the differentiation of intrinsic or extrinsic discussion, or characteristics or states.

That is, according to Keller, the strength and direction of motivation is determined by the interaction among attention, relevance, confidence, and satisfaction. Thus, learning motivation based on the ARCS model can be defined as strength and direction of learning activities explained in the aspects of attention, relevance, confidence, and satisfaction. If they include strategies to stimulate and maintain these four factors, teachers and instructional designers are able to design more motivational learning environment.

Four factors have each sub category. Attention include perceptual arousal, inquiry arousal, and variability, and relevance include goal orientation, motive matching and familiarity, and the sub categories of confidence are learning requirements, success opportunities, and personal control, and the sub category of satisfaction are natural consequences, extrinsic rewards, and equity[2].

3. Design of the system

In this study, the contents of mobile learning system using the ARCS strategies were constructed with reading related contents and the subjects were elementary school students. The main screen included book guide, the figure from books for this month, the book of my recommendation, boards, visitor's notes and mailing. With this, students would recommend good books one another and stimulate their reading motivation.

Additionally, it was designed to include factors such as Table 1 utilizing the ARCS model.

Table 1. Utilizing the ARCS model

Motivation Factors	Program Factors
Attention	-The use of image -The Question and Answer boards - Different appearance of the same characters
Relevance	- Unified learning areas - Awarding points
Confidence	- Presenting the numbers of books students have been read - Selection of the starting point with optional button - Encouragement by recommendation
Satisfaction	- Making a graded list - Rewarding on offline

The screens of learners' mobile phone terminals were designed considering the factors as follows:

First, the structure of the screen should be simple and keep consistency. Second, to reduce operational errors, the names of the buttons of mobile phone were used with familiar names such as 'up' and 'home' instead of new or unfamiliar ones. Third, for user-friendly operation without specific manuals, all left buttons on the screen should be allotted to the menus for mode changes such as selection or log in, and the right buttons to the menus for moving back to the first or start screens. Forth, the images should be simple for the small screens.

Regarding the overall structure of the program, showing from Figure 1, the Internet server to operate supplementary learning program through the Internet was constructed, and the server was designed to share the database between the learner's wireless sites developed with WML and ASP and the teacher's wired sites created with HTML and ASP.
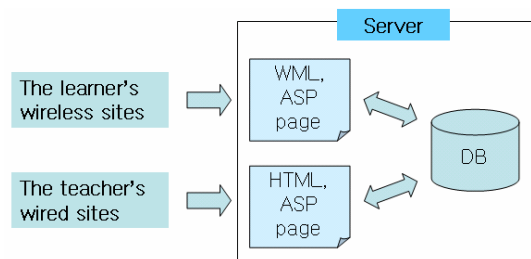

Figure 1. Structure of the program

4. Implementation of system

The start up screen of the system was constructed for learners to feel familiar with the contents using characters, text images, and melodies instead of simple texts. The main screen included the book guide, the figure from books for this month, the book of my recommendation, boards, visitor's notes and mailing. Menus could be reached by direction keys or an enter key or moved by directly pressing the number buttons of the menus.

Figure 2. Implementation of system

The board moving together with wireless and wired shows the manager's mode, when learners posted the questions on the board, teachers could answer them right away on the wired board without accessing the wireless contents.
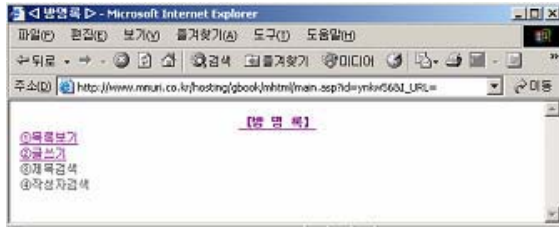
Figure 3. Implementation of system

5. Conclusion

The mobile learning system proposed by this thesis constructed the wired and wireless Internet server and shared the database between the wired sites and the wireless sites so that learners were able to log on the server and take part in provided learning through their mobile phone terminals whenever and wherever they were available, and they could post their questions on boards and read teacher's answers and also they could answer other student's questions. Teachers could manage boards answering the students' questions and posting announcement through the websites.

Each factor of the program was selected from the strategies of the ARCS model considering the motivation factors to stimulate and maintain learner's motivation. The expecting effects of the study were as follows. Through the convenience of carrying and the immediacy of the access to information of mobile phones, learners could have opportunities to learn whenever and wherever they needed and get updated reading information continuously using their mobile phones, and they could attain their learning goals more easily through the active interaction with other students.

6. References

[1] Keller, J. M. & Song Sang-Ho, "Attractive instructional design," Kyoyook Book, 1999.

[2] Yeon, Je Hee, "A Design and Implementation of Wireless Internet Based Learning Program Applying Motivation Strategy of ARCS Model", Thesis for Master Degree, Korean National University of Education,2005.