Using Moodle to Build an E-Learning Platform for the After-class Learning Activities of Taiwanese Language

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Abstract: - Through the participation of teachers, we construct a Moodle platform for teaching Taiwanese to the students in their third year in primary schools. By using the multimedia on the Moodle platform, we created an interactive and lively learning environment, which largely increased students’ interest in learning. In the future, we will apply more multimedia technology in the platform and integrate games in the teaching activities so as to lead students to be an active learner.

Key-Words: - Moodle Platform, E-learning, Multimedia, Course Management System, Teaching Methods, Primary School

1 Introduction
The advance of the information technology (IT) has inspired the application of IT to the teaching activity. The shortcomings of traditional teaching method can be compensated for by using the multimedia and the Internet.

How to apply the Internet for the life-long learning has become an important issue in the modern education. In this report, we introduced a student-centered learning system, which is a web-based system for learning listening, speaking and reading in Taiwanese. The sample of this research was a group of students in their third year in a primary school. The purpose of our study was to improve students’ interest in learning Taiwanese and compensated for the shortcomings of traditional teaching materials.

2 Background
Following the trend of IT movement, e-learning has been promoted in the education system. The development of e-learning has enriched the teaching materials on the Internet, which have made learning activities more enjoyable for students in primary schools.

Despite this trend of e-learning, there has not been enough websites designed for learning Taiwanese. Therefore, we developed an e-learning system which is targeted on students in primary schools. After consulting with school teachers to identify the needs of teaching activities, we designed our e-learning platform as a teaching tool for assisting learning Taiwanese. In addition, the platform could be used after class so that students were able to do more practices after class.

3 Objectives of the Research
In this research, we built an e-learning platform by using Moodle. This platform was designed to assist students to improve their learning Taiwanese. The learning materials, including listening, speaking, reading and writing, were presented in terms of multimedia. By using the online community, students were encouraged to study more, therefore reducing the teaching burden of teachers.

Teachers regularly provided supplementary materials, which were uploaded to the platform to increase students’ interest in learning Taiwanese.
The Moodle platform could be used to trace the records of students’ learning activities and achievement. The platform was also the main resource for the after-class practices.

4 Literature Review

The advance of the computer has reached the level that the multimedia has been one of the routine functions of a computer. Hence, there have been an increasing number of people who apply the IT facilities to teaching, in the vision that the enriched content provided by the multimedia will increase learners’ interest in learning. The computer-based training has been a trend of teaching activities for a long time [6].

The modern IT not only can increase the satisfaction and the participation of learners, but also enhance learners’ acquisition of knowledge. The fact that the computer-assisting teaching can outperform the traditional teaching activities is a consequence of the interaction between the web-based learning and the development of IT [4][5]. This development is itself a case of interactive learning model. The application of IT can enhance the timely interaction between learners, thereby breaking the limit set by time and space. Furthermore, all the learners in this learning mode will all be the main characters in their learning activities.

4.1 Traditional Learning

In the traditional learning, teachers or instructors deliver a set of materials to the whole class of students. Several sessions will be arranged for students to do their own individual practices. In other words, a teacher will be in charge of teaching a subject to a class of students and the learning achievement will be assessed periodically by examination.

In our research on the class of learning Taiwanese, the teaching activity is as follows: (1) the teacher verbally teaches students Taiwanese; (2) students will repeatedly practice pronunciation by following the teacher’s guidance and gradually learn the correct pronunciation.

4.2 E-Learning

E-learning means that the learner and the teacher can interact without the limit of space and time by using the Internet. Through the e-learning system, the teacher can modify the teaching progress depending on the learner’s progress. In this way, the teaching/learning activities will progress as if this is an one-on-one activity. The e-learning can be done with or without the connection to the Internet since the materials are downloadable.

4.3 Moodle Platform

Moodle is the abbreviation of Modular Object-Oriented Dynamic Learning Environment. It is an open-source free software and a set of course management systems, designed by Martin Dougiamas based on the principles of teaching [7]. Moodle was designed to help educators and learners to develop e-learning tools. Everyone can download codes of Moodle to create his or her own platforms.

4.4 Learning Achievement

Learning achievement means the degree of a learner’s mastery of a subject he or she has been learning. The objective assessment of learning achievement should be categorized into two dimensions: (1) objective effects and (2) subjective gains.

Objective effects include the result of an examination, the time needed for completing a program, average marks for a semester, etc. Subjective gains include satisfaction of learning, achievement, preference, etc.

5 Research Methods

5.1 The Structure of the Research

Fig. 1 The structure of research
Table 1 Experimental Design

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test</th>
<th>Intervention</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>O1</td>
<td>X1</td>
<td>O2</td>
</tr>
<tr>
<td>Control</td>
<td>O3</td>
<td>X2</td>
<td>O4</td>
</tr>
</tbody>
</table>

O1 & O3: the experimental group and the control group received the test of “the scale of digital learning achievement” (pre-test).
X1: the experimental group received an 8-week e-learning program.
X2: the control group received a 8-week traditional teaching program.
Q2 & O4: the experimental group and the control group received the test of “the scale of digital learning achievement” (post-test).

1. Dependent variables: participants’ performance on the dimensions of e-learning.
2. Co-variables: our research was a quasi-experimental design. The unit of teaching activity is based on a class, not an individual student. Hence, the random sampling could not be carried out for the research. We used the pre-test results as co-variables for statistical control.
3. Controlled variables: in addition to the statistical control, we also controlled other confounding variables by experimental design. The controlled variables include the following:
   (1) teaching materials, teaching progresses and teaching hours;
   (2) when choosing the control group of classes, we controlled the characteristics and marks of students so as to match the quality of the experimental group. We interviewed with the teachers combined with the data of pre-test in order to reduce the difference in terms of students’ characteristics between two groups.

5.2 Procedure

Based on the literature review, first, we hired teachers who were willing to participate in using Moodle platform for teaching activities and acquired the right from the publisher for using teaching materials in this research. We then built a Moodle platform for Taiwanese lessons.

Based on teachers’ teaching materials, teaching strategies, teaching activities and the development of assessment tools, we developed an outline of a semi-structured interview. After the modification by professionals, we carried out pre-test interview.

After the hired teachers used the Moodle platform in practice and familiarized themselves the environment of the platform, we carried out three consecutive interviews in order to understand the teachers’ internal journeys during the course of practicing the function of the platform. Then, we carried out the teaching program based on our experimental design. Finally, we analyzed the effectiveness of the Moodle platform for learning Taiwanese based on the results of the post-test. The flowchart of the procedure is shown in Fig. 2:

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Literature review
Hiring participating teachers
Developing the course content, teaching strategies, teaching activities and examination of achievement for the Moodle Platform
Developing the outline of the semi-structured interview
Pre-test
Executing the program which was designed to improve e-learning of students in primary schools by using the Moodle platform
Post-test
Analyzing the effectiveness of the Moodle Platform which was designed to improve students' learning Taiwanese in primary schools
Analyzing the factors of the Moodle Platform which was designed to improve students' learning Taiwanese in primary schools
Proposing the analysis of the effectiveness and the model of improve the e-learning of students in primary schools by using the Moodle platform
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5.3 Participants

The hired teachers participating in this research were from Fu-Shin Primary School in Tainan, Taiwan. The two classes of the students chosen for the experimental group were from the classes taught by hired teachers.

All the teachers shared the following characteristics: (1) mastering listening, speaking, reading and writing in Taiwanese; (2) having good performance in their teaching in the subject of...
Taiwanese; (3) being enthusiastic about education; (4) being willing to learn through participating this program; (5) being willing to give long time for this program; (6) being willing to participate in interview; (7) teaching in primary schools in Tainan.

5.4 Equipment
1. The outline of semi-structured interview for the focused group
   We created the outline for the semi-structured focused-group interview. The content is for three-consecutive interviews. The purpose of the interviews is to check teachers’ understanding of the Moodle platform, their practice of applying Moodle platform and their internal journeys during the course of research.

2. Questionnaires
   The questionnaires include two parts: (1) four dimensions regarding personal background, which school the participant studied, which grade, which class and gender; (2) the effectiveness of the Moodle platform, including the degree of acceptance, degree of motivation to learn, and learning effectiveness.

3. Moodle platform for teaching Taiwanese
   The Moodle platform was mainly managed by the participating teachers and the researchers. This platform provided students an environment for reviewing the materials after class. The content was presented according to the categories of classes. Students were able to choose the courses according to the progresses of classes in their schools.

6 Demonstration of the System
   The research focused on the students in their third year in primary schools. The content of the Moodle platform included mainly the teaching materials of Taiwanese for this level. The following sessions will demonstrate the Moodle platform page by page.

6.1 First Page
   After entering the account name and the password, the use will get into the first page. The first page indicates the course the student is taking, which includes the name of the course, teaching materials used, the publisher, the version and target students.

6.2 Outline of the Courses
   In this page, the student can click on any item to assess the course.

6.3 Content of the Course
   After clicking on one of the item in the previous page, a new window will pop out, which presents the content of the teaching materials. The student can study him- or herself by following the method taught in the classroom.
6.4 Supplementary Materials
This page was designed according to the materials provided by participating teachers.

Fig. 6 Supplementary materials.

6.5 Idioms, Quizzes, Poems and Games
We create animations according to the teaching materials and asked students to help record the pronunciation of Taiwanese materials. We designed this multimedia resource to increase students’ interest in learning.

Fig. 7 Idioms

Fig. 8 Quizzes

Fig. 9 Poems

6.6 After Course Assessment
This page was created to understand users’ learning performance. The user can enter this page according to the school he or she was studying.

Fig. 10 After course assessment

6.7 On-line Examination
There are ten questions for the examination. It will take ten minute to complete. It is done after the student answers all question in sequence and submit it.

Fig. 11 On-line examination

6.8 Inspection of the Exam Result
After doing the examination, the student can see the result immediately and the answers of the questions.

![Exam Result Inspection](image)

Fig. 12 Inspection of the Exam Result

7 Conclusion
The computer and the Internet have been popular in families. Introducing the Moodle platform into the courses of Taiwanese language is new, and interesting, to many students in primary schools.

Because of the rigidity of the traditional teaching materials, many students lack the interest in learning. By using the computer as a tool to assist learning, many materials can be transformed in the format of multimedia and games, which can gain the higher acceptance from students, thereby increase the motives to study after class. In addition, through the weekly guidance from school teachers and their tracking of students’ learning progress, the Moodle platform can largely increase the effectiveness of pupils’ study.

References: