Implementing Situated Learning Theory into E-Learning: Vocational Special Education Students' Learning Outcomes

Yoau-Chau Jeng  
Dept. of Industrial Education & Technology  
National Changhua University of Education, Taiwan

Shu-Chuan Lu  
Dept. of Industrial Education & Technology  
National Changhua University of Education, Taiwan

Hong-Min Lin  
Dept. of Industrial Education & Technology  
National Changhua University of Education, Taiwan

Abstract

The purpose of this study was to explore the learning outcome of vocational special education students with the teaching strategy of "Combining Situated Learning Theory with E-learning", as well as the opinions of experimental group students toward E-learning. Using the class as a unit, the students were divided into two groups: the experimental and control group. Students in both groups took the pretest and posttest about learning achievement and motivation. After 8 weeks of the experiment, the data collected was statistically analyzed with pretest score as covariance and conducted a one-way ANCOVA analysis. Finally, the researchers conducted the questionnaire survey to determine the opinions of the experimental group students on the combination of situational learning and E-learning. The results indicated that using the teaching strategies for "Combining Situated Learning Theory with E-learning", the achievement and motivation were significantly better than with traditional teaching methods. Students had good results in retention after E-learning. At the same time, the experimental group students positive attitude toward E-learning.

Keywords: Distance education, Improving classroom teaching, Post-secondary education, Teaching strategies
1. Introduction

Due to progress in computer technology, the concept of computer-aided instruction has become much more common in recent years. Use of the Internet and E-learning are the most important developments in recent domestic and international education movements. E-learning has had a significant impact on teacher-student interaction, teaching structure, and the nature of education. In the modern learning environment, making the best use of information technology and blending various teaching materials and media into curricula and teaching methods present both a challenge and an opportunity to the teacher (Rosemberg, 2001). With the advent of assistive technology, participation in E-learning for people with physical and mental disabilities has become a reality (Tseng, 2004). E-learning can help students with disabilities to learn more effectively (Chen, 2003). In general, E-learning is integrated, interactive, user-friendly, non-linear, and prompt (Li, 2004; Khan, 1997). During the innovation wave for special education, one of the key reforms focused on letting people with physical and mental disabilities participate in general education and increasing their learning effectiveness (Chen, 2003). E-learning provides a multi-sensory learning approach to the learners by using words, pictures, sounds, animations, and images to achieve multiple intelligence learning objectives (Clark & Mayer, 2003). Therefore, educators cannot resist the trend of applying E-learning to their classrooms. Teachers have to face the new challenge.

While designing E-learning curricula, scholars should emphasize using learning concepts to implement the computerized environment instead of letting computerization control E-learning (Mauger, 2002; Uden, 2002). Choosing a suitable teaching strategy can improve learning outcome. Situated learning simulates a true environment. Through active participation, learners can gain knowledge by interacting with the environment. Situated learning emphasizes facts, social interaction, and authenticity (Chiou, 1996). While employing Situated Learning theory into E-learning, teachers should encourage learners to integrate their knowledge with the actual experience of the learning situations so that students can observe, imitate, and learn basic knowledge and skills and then gain more advanced knowledge in real situations (Shaw, 2001). Situated learning emphasizes that learners should learn knowledge and skills from practical activities via interaction in real situations and should establish a reasonable and meaningful
explanation to the knowledge acquired (McLellan, 1996). Sometimes traditional classroom teaching cannot provide real situations for learning. Computer technology can be used to make up for the deficiency of the classroom learning environment (Lee, 2000). Although computer technology cannot present the real world, it can provide virtual reality to the learners for them to participate in the simulated activities. It can facilitate the learners to apply knowledge at the right moment and to learn new knowledge (Hsu & Liao, 2002). E-learning is the best way to realize individual instruction for situated learning. Through computer simulation and active participation of the learners, educators can use lively activities to present their teaching strategies to reach the teaching goals.

The main focus of this study is to explore the learning effectiveness of the “E-learning with situated learning” teaching strategy which combines E-learning with Situated Learning theory on students in vocational high school special education classes. In this study “Traffic Rules” was the content of the teaching materials. Situated Learning theory was used to develop suitable E-learning for special needs vocational high school students to understand the curriculum materials. The educator attempted to bring the concepts of situated learning into the E-learning process in order to help these students apply what they have learned to their daily lives.

2. Method

2.1 Research Structure

The learning effectiveness of vocational high school students with special education needs may vary with different teaching strategies. Students’ basic ability, teacher’s ability, and teaching materials may also have direct or indirect influence on the effectiveness. In accordance with the research structure, three variables are discussed below. Control variables are those variables that are held constant so as not to influence the experiment outcome. The control variables in this study are students’ basic ability and teacher’s ability. The purpose of this study was to explore the learning effectiveness of the “E-learning with situated learning” teaching strategy on students in vocational high school special education classes. The students were divided into an experimental group and a control group. Dependent variables for this study were students’ learning achievement and learning motivation.
2.2 Participants of the Study

This study used a class as the sampling unit. The participants of this study were 28 students in two special education classes from a national vocational high school. This school only admits one class of special education students per year and there are a total of 3 such classes. In order to achieve similarity in the samples, two classes were randomly drawn for this research. Fourteen 12th grade students were in the experimental group and fourteen 12th grade students were in the control group.

2.3 Research Design

This research used quasi-experimental design with two groups in the study, an experimental group and a control group. Each group was given a pre-test and a post-test in order to evaluate the participants’ learning outcome. The experimental group was taught using the “E-learning with situated learning” teaching strategy. The control group was taught using the “traditional narration” teaching strategy. The content was “Traffic Rules”. The study lasted for eight weeks for a total of 16 hours’ teaching time. The experimental design is shown in Table 1.

Table 1  Experimental design model

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test</th>
<th>Treatment</th>
<th>Post-test</th>
<th>Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>(Y_1)</td>
<td>(X_1)</td>
<td>(Y_2)</td>
<td>(Y_5)</td>
</tr>
<tr>
<td>Control group</td>
<td>(Y_3)</td>
<td>(X_2)</td>
<td>(Y_4)</td>
<td></td>
</tr>
</tbody>
</table>

\(Y_1, Y_5\): Pre-test

\(Y_2, Y_4\): Post-test

\(Y_5\): Follow up

\(X_1\): “E-learning with situated learning” teaching strategy

\(X_2\): “Traditional narration” teaching strategy

2.4 E-learning System

The E-learning system includes three different interfaces for students, teachers, and managers. Because this is a teacher’s E-teaching platform, the teacher is also the manager.
2.4.1 Students’ interface

The curriculum was displayed by a website on the Internet. The students could watch both motionless and dynamic course materials. The system provided multimedia animation for aiding the understanding of the difficult parts in the content. The students not only used the system for viewing motionless teaching materials, course information, news updates, personal performance information, and learning situations, but also for watching dynamic programs and performing online tests and online practice sessions. In addition to the above functionalities the system also provided electronic notes and course discussion sections for interactive learning between teachers and students (see Figure 1).

![Students' interface: information section](image)

2.4.2 Teacher’s interface

The teacher’s interface provides three main functions: course management, materials management, and online interaction. The course management function enables teachers to build databases to correct or query students’ information and to record students’ test scores as a performance management system. The materials management function provides various ideas for teachers to make online teaching materials, work sheets, and answer sheets. The online interaction
function provides electronic notes and course discussion sections for teachers to communicate with students asynchronously. In addition, the students’ performances were recorded for the online tests that can be used to trace students’ learning efficiently (see Figure 2).

![Teacher's interface: teaching materials management](image)

**Figure 2** Teacher’s interface: teaching materials management

### 2.5 E-Learning Material Design

The teaching strategy of this research is combined situated learning and the teaching materials design principles are based on the Learning Environment Method proposed by Chiou & Jhong (1993). The design principles are described as follows.

**Practical situation principle.** Curricula are organized by practical situations for students to control, explore, and re-assemble knowledge.

**Real activities principle.** The learning activities should be practical. This raises learning motivation and learning transfer.

**Active learning principle.** In active exploration and active problem solving processes, the learners will gain practical knowledge that can be applied to real life.

**Marginal participation principle.** Learning is a participative method that gradually moves from the margin to the core. Situated learning emphasizes that learning starts from the easy-to-digest knowledge and becomes progressively harder. That is to observe, imitate and learn simple knowledge and skills, and then to gradually learn advanced knowledge and skills.
The E-learning materials of this research included four teaching units: traffic signs, traffic markings, traffic signals, and traffic regulations. The teaching activities design focused on the followings.

A. Core concepts

The goal of these teaching units was to help students understand traffic signs, markings, signals, and regulations. The “E-learning with situated learning” materials, discussion section, and online practices aimed to help students perceive the meanings of these traffic signs, markings, signals, and regulations.

B. Teaching materials design principle and methodology

a. The design was to motivate the students to learn using films. It then simulated the films and pointed out the common traffic signs, markings, signals, and regulations. (practicality)

b. Next, the design used self-made films shot in the cities to explain the meaning of each traffic sign, marking, signal, and regulation. (reality) (See Figure 3)

c. Next, the design asked the students to discuss common traffic signs, markings, signals, and regulations using the online discussion section. (active)

d. Students practiced online. (participation) (See Figure 4)

Figure 3  Introduction to traffic markings
2.6 Research Tools

The research tools of this study included digital materials and the following four instruments: basic ability scale, E-learning achievement test, learning motivation scale, and opinion questionnaire regarding the teaching strategy after completing the curriculum.

2.6.1 Basic ability scale

Based on the Traffic Rules established by the Ministry of Transportation, the basic ability scale was divided into four components: "traffic regulations", "traffic signs", "traffic signals", and "traffic marking". The researcher designed the basic ability questions for these four components in proportion to the teaching time and curriculum relevance. The validity and reliability of this scale were checked by special education teachers as well as by scholars in this area.

2.6.2 E-learning achievement test

The experiment teaching followed the Ministry of Transportation’s traffic rule standards. The teaching units were designed to follow the teaching goals, materials, and teaching hour proportion of the standards. The E-learning achievement test was developed based on the teaching units. The pertinence of these E-learning achievement questions were checked by special education teachers and experts in this area.
2.6.3 Learning motivation scale

The learning motivation scale was based on the learning motivation scale used by Keller (1987) and Chiou (2003). Six scholars in the field were consulted to revise the scale and to improve its’ validity. 100 vocational high school special education students were given the scale as a pilot study, and 85 of the pilot tests were usable. The effective return-ratio was 85.00%.

Item analysis and factor analysis were performed on the scale and the reliability of the reserved questions was analyzed. The overall scale Cronbach $\alpha$ coefficient was .932. “Attention” level of $\alpha$ coefficient was .797; "relevant" level of $\alpha$ coefficient was .743; “confidence" level of $\alpha$ coefficient was .706; and “meet" level of $\alpha$ coefficient was .825. The factor analysis using principal component analysis of common factors with direct rotation to determine Eigen values that are greater than 1 with the factor loading greater than .30 as an indication of significant loading found that the total variance cumulative was around 59.045 %.

2.6.4 Opinion questionnaire regarding the teaching strategy

This questionnaire was used to understand the perceptions and opinions of the students in the experimental group on the teaching strategy of “E-learning with situated learning". This questionnaire was based on the document discussed by Su (2002), "Development of situated teaching website questionnaire" as well as professional opinions from scholars.

2.7 Experiment Procedure

The teaching experiment of this research included five stages: preparation, pre-test, experimental teaching, post-test, and retention effectiveness test. They are explained as follows.

1. Preparation

Literature reviews were done for extensively collected domestic and foreign documents regarding learning theories and E-learning. The information was analyzed and summed up to form the theoretical foundation, structure, and experiment basis of this research. Then the basic ability scale, learning achievement test, learning motivation scale, and post-learning questionnaire for this research were developed. Communication and coordination with the head of the Special Education Program and the teachers were done before the experimental teaching to ensure smooth research progress.

2. Pre-test

Basic ability and learning motivation pre-tests about the motorcycle driver's license written test
were given to the students in two special education classes of a national vocational high school. The purpose of the pre-test was to understand the basic ability and learning motivation of the students in these two groups and to exclude the influence of the basic ability and learning motivation so that these two groups were assessed at the same starting point.

3. Experimental teaching

There were two groups in this study, an experimental group and a control group. The control group was taught using the “traditional narration” teaching strategy and the experimental group was taught using the “E-learning with situated learning” teaching strategy. The teaching lasted for eight weeks for a total of 16 hours.

4. Post-test

To understand the influence of different teaching strategies on the students' learning achievement and learning motivation, the learning achievement and learning motivation tests were applied to both the control and experimental groups on the subject of the motorcycle driver's license written test. The experimental group was surveyed by questionnaires after the experimental teaching in order to understand their opinions of the “E-learning with situated learning” teaching strategy.

5. Retention effectiveness test

The questions of the retention effectiveness test were the same as those of the post-test. The only difference was the order of the questions. The retention effectiveness test was given to the experimental group to understand the retention effectiveness of the students in the experimental group two weeks after the experimental teaching.

2.8 Data Processing

This study processed data as follows.

1. For the basic ability scale, data was analyzed by means of an independent sample t test.
2. To explore the “learning achievement” difference of students from different ways of teaching, this study used a single-factor analysis of covariance (ANCOVA) and pre-test scores as the variables.
3. Paired t test analysis was used to explore the retention effectiveness of the students in the experimental group.
4. To explore the “motivation” difference of students from different ways of teaching, this study used a single-factor analysis of covariance (ANCOVA) and pre-test scores (scores of motivation) as the variables.
5. A descriptive table expressed percentages of student outcomes on the "post-teaching questionnaire" completed by the learners after the experimental teaching.

The above statistical methods take the first and second type errors into consideration. The statistical significance level for the first type error was .05.

3. Results

3.1 Analysis of Effect of Different Teaching Strategies on Learning Achievement

3.1.1 Basic ability (pre-test) analysis

Table 2  Basic ability (pre-test) independent sample t test analysis summary

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>14</td>
<td>84.286</td>
<td>10.894</td>
<td>0.600</td>
</tr>
<tr>
<td>Experimental</td>
<td>14</td>
<td>81.429</td>
<td>14.098</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 is the descriptive information for each group of students in the basic ability (pre-test) scale. The data did not show statistical significance (t=0.600, p> .05). That is, there was no significant difference in the average score of the basic ability test between these two groups. In other words, the basic backgrounds of both groups of students had no significant difference.

3.1.2 Learning achievement analysis for different teaching strategies

Table 3 and 4 summarize the regression homogeneity test and ANCOVA respectively for both teaching strategies in the learning achievement assessment.

Table 3  Summary of regression homogeneity test for both teaching strategies in learning achievement assessment

<table>
<thead>
<tr>
<th>Sources of variance</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between (regression-coefficient)</td>
<td>0.104</td>
<td>1</td>
<td>0.104</td>
<td>0.002</td>
</tr>
<tr>
<td>Within (error)</td>
<td>1138.233</td>
<td>24</td>
<td>47.426</td>
<td></td>
</tr>
</tbody>
</table>
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According to Table 3, the regression-coefficient homogeneity test did not show statistical significance (F=0.002, p>.05). This means that these two teaching strategies have the same slope and conform to the fundamental assumption within regression-coefficient homogeneity.

Table 4 Summary of ANCOVA for both teaching strategies in learning achievement assessment

<table>
<thead>
<tr>
<th>Sources of variance</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between (group)</td>
<td>774.060</td>
<td>1</td>
<td>774.060</td>
<td>17.000**</td>
</tr>
<tr>
<td>Within (error)</td>
<td>1138.336</td>
<td>25</td>
<td>45.533</td>
<td></td>
</tr>
</tbody>
</table>

**p<.01

The ANCOVA results in Table 4 exclude the influence of basic ability (pre-test). The two teaching strategies in the student learning achievement assessment indicated a statistical significance (F=17.000, p<.01).

Table 5 Test averages, SDs (standard deviations), and adjusted means for both teaching strategies in learning achievement assessment

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Adjusted mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>14</td>
<td>66.250</td>
<td>12.662</td>
<td>64.795</td>
</tr>
<tr>
<td>Experimental</td>
<td>14</td>
<td>73.929</td>
<td>16.014</td>
<td>75.383</td>
</tr>
</tbody>
</table>

Table 5 lists the test averages, standard deviations, and adjusted means for both teaching strategies after excluding the influence of basic ability (pre-test). It shows that the experimental group (adjusted mean=75.383) was obviously better than the control group (adjusted mean=64.795) in learning achievement.

Table 6 Learning achievement t test of the experimental group students in tracing stage

<table>
<thead>
<tr>
<th>Item (post-test trace)</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning achievement total score</td>
<td>0.714</td>
<td>7.431</td>
<td>0.360</td>
</tr>
</tbody>
</table>

Table 6 shows the experimental group students’ tracing examination score two weeks after the post-test. Compared with the post-test, the result showed no statistically significant difference (t=.360, p>.05). This means that the “E-learning with situated learning” teaching strategy had
good retention effects on the students’ learning outcomes.

3.2 Analysis of the Differences of Learning Motivation in Different Teaching Strategies

3.2.1 Analysis of the differences of learning motivation pre-test

Table 7  Summary of learning motivation pre-test t test analysis

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>14</td>
<td>3.804</td>
<td>0.696</td>
<td>1.393</td>
</tr>
<tr>
<td>Experimental</td>
<td>14</td>
<td>3.308</td>
<td>1.139</td>
<td></td>
</tr>
</tbody>
</table>

Table 7 shows descriptive data of the pre-test scores for both groups on the students’ learning motivation scale. The data shows (t=1.393, p>.05) no statistically significant difference. That is, the data indicates no significant difference between the two groups in learning motivation before the teaching.

Analysis of the differences of learning motivation with different teaching strategies applied

Table 8 and 9 summarize the results for the regression homogeneity test and covariance, respectively, of the post-test in the learning motivation assessment for both teaching strategies.

Table 8  Summary of regression homogeneity test for both teaching strategies in learning motivation assessment post-test

<table>
<thead>
<tr>
<th>Variable values</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups (regression coefficient)</td>
<td>3.620</td>
<td>1</td>
<td>3.620</td>
<td>16.615</td>
</tr>
<tr>
<td>Within groups (error)</td>
<td>5.230</td>
<td>24</td>
<td>0.218</td>
<td></td>
</tr>
</tbody>
</table>

According to Table 8, the scores of the regression homogeneity test did not reach the standard (F=16.615, p>.05). It means that these two teaching methods have the same slope. This matches the fundamental assumption of within regression-coefficient homogeneity.
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Table 9  Analysis summary of covariance for both teaching strategies in learning motivation assessment post-test

<table>
<thead>
<tr>
<th>Variable values</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups (group)</td>
<td>2.115</td>
<td>1</td>
<td>2.115</td>
<td>5.975*</td>
</tr>
<tr>
<td>Within groups (error)</td>
<td>8.850</td>
<td>25</td>
<td>0.354</td>
<td></td>
</tr>
</tbody>
</table>

*p<.05

According to Table 9, after eliminating the influence of the "learning motivation pre-test scores", the two teaching strategies applied achieved significant differences (F = 5.975, p < .05) in students’ learning motivation post-test.

Table 10 Learning motivation test means, standard deviations, and adjusted means for both teaching strategies

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Adjusted mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>14</td>
<td>3.804</td>
<td>0.696</td>
<td>3.717</td>
</tr>
<tr>
<td>Experimental</td>
<td>14</td>
<td>4.199</td>
<td>0.647</td>
<td>4.286</td>
</tr>
</tbody>
</table>

Table 10 shows the performance of these two teaching strategies in students’ learning motivation post-test after eliminating the influence of the "learning motivation pre-test scores". The results suggested that the “E-learning with situated learning” teaching strategy (adjusted mean= 4.286) was significantly better than the “traditional narration” teaching strategy (adjusted mean= 3.717).

3.3 Results of Opinion Questionnaire

The students in the experimental group were surveyed on their perceptions of the "E-learning with situated learning" teaching strategy after the experimental teaching. The study results are as follows. Most students preferred animation (71%, 10 participants) and film (50%, 7 participants) as a learning method. Most students (92%, 13 participants) learned traffic regulations, signs, markings, and signals from the study website. The knowledge that the students learned was in line with the teaching objectives of the researchers’ design. Most students (71%, 10 participants) thought E-learning was interesting, and they were able to learn a lot from it. The inability to leave messages on this E-learning website was the only shortcoming. On the other hand, five students
thought there were not any problems at all with E-learning. Overall, the majority of students (92%, 13 participants) indicated that they would like to use E-learning to learn in the future.

To sum up all students’ answers and thoughts, the students felt that they studied successfully with E-learning and had good learning outcomes. According to the students’ reactions, we can conclude that the “E-learning with situated learning” teaching strategy has positive effects on students’ learning.

4. Discussion and Conclusion

4.1 Analysis of Learning Achievement of Different Groups

The results indicated that the learning achievement performance in the post-test scores showed a statistically significant difference between the experimental group and the control group. The experimental group’s performance was much better than the control group. This result is in line with the previous research reports and it showed that E-learning promoted students’ learning achievement. Therefore, this research supports the previous research in this field.

The reason why the “E-learning with situated learning” teaching strategy is so beneficial may be because it can make difficult concepts easier to understand and students can visualize these principles more easily (Chen, 2003). Students can study using E-learning through sounds, pictures, and animations. Students who use E-learning can review their studies at any time. In addition, E-learning can enhance students’ memorization of the content that they have studied. This research discovered that the students in the experimental group increased their E-learning skills as a result of using different E-learning strategies as well as by the amount of time spent in using E-learning.

Another finding of this study was that the students of the experimental group had better knowledge retention. Because of the situated learning strategy, students understood new concepts more easily and they remembered them longer. Lin (2003) and Ciou (2003) both used the E-learning technique to teach different levels of people who had learning challenges. Both indicated positive learning effects.

To sum up, the “E-learning with situated learning” teaching strategy allows students to combine their learning with real life situations which makes learning more realistic. It can definitely improve vocational high school special education students’ learning performance. Even
though this research and the above mentioned research used different subjects and different methods, the unanimous conclusion is that there are positive results in learning effectiveness using E-learning with situated learning.

4.2 Analysis of Learning Motivation of Different Groups

The results indicated that the learning motivation performance in the post-test scores showed a statistically significant difference between the experimental group and the control group. The experimental group’s performance was much better than the control group. This result is in line with the previous research reports. Previous studies showed that E-learning promoted students’ learning motivation. Therefore, this research supports the previous research in this field (Lin, 2004; Chen, 2003). The learning motivation inspired by the Internet was higher than that by blackboard and slides. The reason may be that E-learning provides an interactive platform that enables students to be more involved in their learning. E-learning can provide sensory stimulation using attractive screens, texts, and sounds that can attract students’ attention and promote learning motivation. Also, E-learning provides immediate feedback and rewards accurate responses. Because E-learning provides corrections and instructions for students’ incorrect responses and minimizes any difficulty that students encounter, it increases the students’ learning motivation. Also, situated learning arouses students’ learning interest and motivation. Real circumstances help students gain practical knowledge increasing their learning motivation and learning transfer.

4.3 Conclusions and Recommendations

Based on the study results, the following conclusions can be drawn. The “E-learning with situated learning” teaching strategy showed much better student performance than the “traditional narration” teaching strategy when they were applied to teaching “Traffic Rules”. The “E-learning with situated learning” teaching strategy helps students retain the concepts after learning. The “E-learning with situated learning” teaching strategy showed significantly higher learning motivation than the “traditional narration” teaching strategy when they were applied to teaching “Traffic Rules”. Students were positive towards the “E-learning with situated learning” teaching strategy.

According to the conclusions, the researchers have the following suggestions. Because the “E-learning with situated learning” teaching strategy allows students to learn anytime and anywhere as long as they have a computer and Internet access, this strategy is highly flexible. The teaching
materials can also be used repeatedly. Therefore, we recommend this teaching strategy. In addition, we suggest using this teaching strategy for the special education classes in vocational high schools to promote students’ learning achievement and learning motivation. The majority of teachers use the “traditional narration” teaching strategy to teach different subjects. There is no doubt that there are advantages of the “traditional narration” teaching strategy. However, if teachers can implement the “E-learning with situated learning” teaching strategy when appropriate, it will help promote learning motivation and enhance learning effectiveness. Teachers should receive training classes on the “E-learning with situated learning” teaching strategy in order to enhance teaching effectiveness. Schools should hold workshops regarding the “E-learning with situated learning” teaching strategy by inviting experts and scholars to hold seminars and to observe classes in order to improve teachers’ knowledge on this strategy and to promote experience exchange. The “E-learning with situated learning” teaching strategy can improve participation, make students read on their own initiatives, and increase in-class responses and overall communications. Teachers should be well prepared in E-learning techniques and encourage students to exploit the E-learning activities. This will enable students to apply the knowledge acquired in E-learning to their daily lives.

5. References


Authors

鄭友超，國立彰化師範大學工業教育與技術學系，教授
Yoau-Chau Jeng is a professor of the Department of Industrial Education and Technology National Changhua University of Education, Changhua, Taiwan
Email:jengyc@seed.net.tw

呂淑娟，國立彰化師範大學工業教育與技術學系，博士生
Shu-Chuan Lu is a doctoral student of the Department of Industrial Education and Technology National Changhua University of Education, Changhua, Taiwan
Email:sllptl@yahoo.com.tw

林宏旻，國立彰化師範大學工業教育與技術學系，博士生
Hong-Min Lin is a doctoral student of the Department of Industrial Education and Technology National Changhua University of Education, Changhua, Taiwan
Email:hmlin@ms47.url.com.tw
情境學習理論應用於數位學習對高職特教班學生學習成效影響之研究

鄭友超
國立彰化師範大學
工業教育與技術學系

呂淑娟
國立彰化師範大學
工業教育與技術學系

林宏旻
國立彰化師範大學
工業教育與技術學系

專　　要

本研究旨在探討「結合情境學習理論之數位學習」教學策略應用於高職特教班學生之學習成效，以及瞭解實驗組學生對數位學習的看法。本研究採不等組前後設計，以某國立高職綜合職能科學生為研究對象，以班級為單位隨機分派一班為實驗組；一班為控制組。兩組學生均接受「學習成就」、「學習動機」前測、後測。經過 8 週實驗教學後，將實驗資料進行統計分析，以前測分數為共變數，對研究對象進行單因子共變數分析。教學實驗結束後兩週，再對實驗組學生檢驗保留成效。最後對實驗組學生進行學後問卷調查，了解實驗組學生對結合情境學習之數位學習的看法及意見。

研究結果顯示採「結合情境學習理論之數位學習」教學策略，在學習成就、學習動機方面，顯著優於傳統教學法，且學生在學習後有良好的保留效果。同時實驗組學生對於數位學習教學方式持肯定態度。

關鍵詞：遠距教育、改善班級教學、後中等教育、教學策略