In the Artificial Society of E-learning enhances the learning effect

RONG-JYUE FANG¹, * HUA-LIN TSAI² CHI-JEN LEE³, CHIEN CHENG-WU⁴,
¹Chair Professor, Department of Information Management, Southern Taiwan University of Technology, Taiwan
²³PHD, Department of Industrial Technology Education, National Kaohsiung Normal University, Taiwan
⁴Graduate Student, Department of Information Management, Southern Taiwan University of Technology, Taiwan

*No.188, Zhong yi St., Fengshan City, Kaohsiung County 830,Taiwan,
rxf26@mail.stut.edu.tw
*kittyhl@gmail.com
mickeylee@gmail.com
n99y0022@webmail.stut.edu.tw

Abstract: : At present, In the Artificial Society students receive a large number of messages with the progress of science and technology. Simple traditional study has been already unable to meet student's demands in the past. Thus, the teacher needs to change some teaching methods to attract students. E-learning is one of new teaching methods. The teacher can utilize E-learning to let the student love to study.

Keywords: - E-learning, Learning style, Artificial Society

1 Introduction

The regular meeting met the bottleneck on some teachings that were taught in the past. Those old teachings were unable to reach smoothly the good teaching goal that was often set up in advance. In recent years, a lot of scholars utilize the advantages of E-learning to solve the shortcoming of teaching in the past[1] [2].

2 Literature review

2.1 The digit is studied

The shortcoming of traditional teaching is apt to ignore student's characteristics of studying habitually practiced in the course of studying. Because of the innovation of flourishing development and science and technology of the internet network, learning becomes easier and easier[3]. E-learning which differs form traditional teaching studies lies in combining the computer, audio-visual media technology and network communication to achieve the purpose of study at the same time. Moreover, E-learning possesses the merit which all can study anytime and anywhere, and it is getting more and more widespread in the nowadays educational environment [4]. the present student studies? Hence, the teachers have already realized the importance of integrating digital

That the interdynamic E-learning can appear abundant and multimedia information teaching material content will enhance the interest of student's study and offer a more plural study way to students. In addition, the emphasis of E-learning is to train the ability which the learner explores and studies voluntarily. This is one of ten basic abilities which are the purposes of Grade 1-9 Curriculum[6].

The connotation of good E-learning system has the following four key elements: content, adviser, learner, science and technology. Their relations are very close. That learners and advisers make a good use of digitization teaching material with digital technology tools will meet the study needs of more models. The connotations of E-learning include four key elements. The source of the materials: Quote it from [7]

The definitions of E-learning quoted by some literature are showed as follows(Tabulation depended on times):

<table>
<thead>
<tr>
<th>Scholar</th>
<th>Definition of e-Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hall (1998)</td>
<td>E-Learning is a teaching way of spreading through Internet</td>
</tr>
<tr>
<td></td>
<td>or Intranet, utilizing</td>
</tr>
</tbody>
</table>
Web browser to carry on the access of the materials.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Study the national plan of science and technology in digit (2002)</td>
<td>Study activities utilize digital tools to obtain digital teaching materials through the wired or wireless network.</td>
</tr>
</tbody>
</table>

The source of the materials: Quote it from [11]

In sum, the result of this research is that E-learning integrates traditional computer assistance study with internet network. The learners use digitizing electron resources media to transmit the digital materials to achieve study purpose. In study process, the learners also can choose the study content and control the study time. Going on study incessantly, it will enhance individual's skill and promote his whole ability.

Now models of E-learning are roughly divided into three kinds in accordance with proceeding activities:

a. Synchronous Learning: it is that the advisers and the learners get on line to make a study activity at the same time. Study methods such as video-information meeting and network chatroom let learners carry on the immediately two-way and interdynamic teaching way.[8].
b. Asynchronous Learning: Because digital teaching materials are manufactured in advance and then put in study websites, their merit is that the learners can study anytime and anywhere.
c. Blended Learning: it possesses the advantages of traditional teaching and asynchronous study. Teaching methods can be more diversified. It can adopt face-to-face teaching in the traditional classroom, or utilize the meeting way of video-information with E-learning to let the learners study a lot.

That E-learning develops fast is depend on the global E upsurge. More importantly, it can improve the shortcoming of the traditional entity teaching. The advantages of E-learning are showed as follows [10]:

a. Convenience: Because digital teaching materials are manufactured in advance and then put in study websites, their merit is that the learners can study anytime and anywhere. The learners can free allocate their own study plan and class time without restriction. That is the biggest superiority of E-learning compared with the tradition studies.
b. Timeliness: Differing from the traditional written teaching material, digitization teaching material is extremely easy obtained, and can also be renewed its content efficiently and immediately.
c. Fast Spread: Using E-learning, the staff will be required to surf the Net and study the necessary specialized new knowledge anytime and anywhere.
d. Self-progress determined by oneself: In E-learning, the learners can have the decision-making power of study. In other words, the learners can determine their study progress without limit.
e. High cost-efficiency: Because the digitization teaching material that is made in advance will not be decreased, it can guarantee that there are the same study contents in study, and have highly reusable characteristics. It causes cost-efficiency big enhancement.

We should realize that the position of E-learning should not only be a new study way. Parents, teachers and students should also face the times meaning and value of E-learning. If let the teachers realize E-learning that can supplement the shortcomings of traditional teaching, it will be more helpful to enhance the teachers' specialized accomplishment. In the process of E-learning, that raising students to have the ability of probe and the idea of lifetime study will train the students to be able to have a taking away ability. Integrating various fields of produce, government, schools and researches and investing the related software & hardware product of the e-learning will construct completely E-learning environment [12].

2.2 Learning Style
When the teacher is evaluating students' study effect, teaching process or student's factors will cause several results of students' study effect which are different from original anticipation.

Keefe (1979) thought the learning style played an important role in the study process, and the diagnosis of the learning style made the individualizing education have the reasonable foundation.

Put scholar's definition to the learning style in order as follows in the following.

<table>
<thead>
<tr>
<th>Define the orientation</th>
<th>Researcher</th>
<th>Define</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study the situation orientation</td>
<td>Hunt (1979)</td>
<td>The education condition or situation is the likely most successful for the learners. Describe students how to study, but don’t what they have learnt.</td>
</tr>
<tr>
<td>Manner orientation</td>
<td>Kolb (1976)</td>
<td>The behavior performance four study stage for the learners is in &quot; concrete experience &quot;, &quot; react observe &quot;, &quot; form abstract concept &quot;, &quot; obtain new experience take action, &quot; four behavioral behavior to study stage.</td>
</tr>
<tr>
<td></td>
<td>Charles (1980)</td>
<td>Individual who the individual represented in studying the situation studies the way.</td>
</tr>
<tr>
<td>Tactic orientation</td>
<td>Pask (1968)</td>
<td>Individual's partiality to a certain study tactics.</td>
</tr>
<tr>
<td></td>
<td>Bennett (1979)</td>
<td>The tactics influencing individuals to use oneself to like or be good at in studying the situation and unique behavior.</td>
</tr>
<tr>
<td></td>
<td>Keefe (1982)</td>
<td>Individual has a partiality for study produced of stimulus of various fields such as physics, the environment, society and physiology.</td>
</tr>
</tbody>
</table>

Can be found from the literature of the above form. Can receive different meanings if different scholars are annotated the Learning Style by different study style orientations. The exposition that the researcher defines to Learning Style is: Learning Style is learner's special partialities or inclination of study habitually practised in the course of study, it will receive the influence of factor reciprocation such as cognition, the affection, society, physiology, to steady a lasting unique behavioral behavior to study way that information processing reflects, achieve the goal of studying in order to solve the problem.

Learning Style theory of Kolb is that experience that he puts forward of since the development studies the way. The learner is being carried on the course of study to deem the study cycle of four stages of one included two literary composition surfaces in this course of study: One is way in which materials of learner forming in vertical axis deal with, include and prove and think deeply and observe voluntarily. Another one is the partiality way in which the message of learner that a horizontal axis forms receives, include concrete experience and abstract concept. So these two literary composition surfaces form learners in an intact study, from Kolb Learning Style concept picture the source of the materials: study circulation at four stages.

Following these four stages of studying prove the summary is as follows:

<table>
<thead>
<tr>
<th>Study the step</th>
<th>Concrete experience</th>
<th>Observation that thinks</th>
<th>Abstract concept</th>
<th>Initiative verification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whom characteristic experience carefully again hear</td>
<td>value</td>
<td>think</td>
<td>carry out again</td>
<td>Whom characteristic experience carefully again hear</td>
</tr>
<tr>
<td>Embodiment practise</td>
<td>personal experience</td>
<td>speak face to face</td>
<td>personal idea</td>
<td>summary</td>
</tr>
<tr>
<td>Teaching method</td>
<td>Experiment, demonstrates, exercise, speaking face to face, viewing and emulating</td>
<td>Panel discussion</td>
<td>Speech, documents and materials</td>
<td>The group designs in order to solve the problem</td>
</tr>
</tbody>
</table>

The source of the materials: Quote it from[13]

Kolb thinks that it is different to handle ways in information consciousness and materials that different Learning Style has a partiality for. Studying experience way can distinguish out four kinds of study type attitudes, including persons who disperse, persons who assimilate, persons who disappear are with adjusting the right ones:

a. Diverger: Learning Style of this kind person is mainly constructed the surface to make up with pondering over and observing two kinds of study by concrete experience.
b. Assimilator: Learning Style person partiality that message receive of type way abstract concept. And information processing way is to think that is observed, good at summing up and deducing and setting up the ability of the theory structure, assimilate different materials and form the theory, it is the reliable and accuracy to pay attention to the information source, Suitable for, engaged in the work of research properties such as information and scientific work.

c. Converger: Learning Style person partiality that message receive of this kind way abstract concept.

d. Accommodator: Learning Style person partiality that message receive of this kind way concrete experience.

Learning Style type summary of Kolb is as follows.

<table>
<thead>
<tr>
<th>Type</th>
<th>Study and is fond of</th>
<th>Advantage</th>
<th>Characteristic</th>
</tr>
</thead>
</table>
| Diverger | (1) Like asking why, finds out the reason or reason.  
(2) Show loving care for the use of the reason and knowledge behind knowledge.  
(3) Fond of the lessons way with higher enlightenment, or bring out the story of the motive.  
(4) Communication or discussing in groups of the applicable two-way type.  
(5) Fond of observing, believe the sense organ intuition. | Absorb and find out the general rule with the inference, changeable in mood, bigoted in many ways | Imagine strength good |
| Assimilator | (1) Like asking what if, supposes the possible answer.  
(2) It is too open to stipulate exercise and experiment of the topic or model answer to like.  
(3) Like appearing on the stage in the | Pay attention to operating ability | There is practical experience |
| Converger | (1) Like asking what, which kind of theory to find out, can sum up, produce.  
(2) Like the oral account law of the abstract expression such as traditional teaching.  
(3) Like reading the textbook to ask for knowledge or see the teacher solves a problem.  
(4) Think deeply in good logic. | Can find the answer rapidly in the face of the challenge | Can understand the logic knowledge |
| Accommodator | (1) Like asking how, finds out the real method to handle problem.  
(2) Like making mathematical calculations the exercise by oneself or do the experiment personally.  
(3) In order to solve and solve the rational problem voluntarily. | Do not like practical apply | Do not like practical application |

Can know the learners of different Learning Style types from the above form, the receiving in the message and processing way are not all the same, The teacher can be by understanding studying the style then improving teaching tactics and method of students, to improve educational quality.

Quite a lot participate in Learning Style and several and study relevant results of study in education in recent years, the summary is as follows.
Can be found with studying the research of the effect by the above-mentioned Learning Style, most learners' study style will influence the effect of studying. Probe into, implement as to research this to different primary school pupil of Learning Style E-learning, study effect display difference at in their, have offered the strong basic theoretical foundation.

3 Study Design and Implementation

3.1 Experimental Design

This study is quasi-experimental design and one-group pretest-posttest design. After the implementation of digital learning, it explores different learning styles of fifth-grade students effectiveness through quantitative statistical analysis.

Before the experiment in teaching, it conducts pre-test subjects, including the learning style scale, the computer academic achievement. Learning Style Inventory is in order to classify the students. Student academic performance computers can understand academic performance of students in the computer case.

After the pre-test, it conducts an eight-week e-learning courses. The end of teaching, we have the object of research in computer learning ability test. By quantitative analysis, it can understands the teaching-learning research objects of different learning styles of students in the academic achievement of the computer.

Table 3-2 different learning styles, type of research sample distribution of summary

<table>
<thead>
<tr>
<th></th>
<th>Diverger</th>
<th>Assimilator</th>
<th>Converger</th>
<th>Accommodator</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>35</td>
<td>32</td>
<td>21</td>
<td>35</td>
<td>123</td>
</tr>
</tbody>
</table>

3.2 Research tools

In order to understand the learning style type of study, the researchers used in 1985, as amended by Kolb Learning Style Inventory developed. Business and education in the United States is the most frequently used Kolb's Learning Style Inventory. In this study used the learning style scale, the Department of quoted Lee Chi-jen (2007), the network self-learning Style Inventory.

In the letter rating, it uses Cronbach $\alpha$ value and the split-half reliability of the scale factors to test internal consistency. Cronbach $\alpha$ coefficient was .864. Therefore, the scale was rated as good reliability.

In the context validity, the scale factor analysis method used to test the construct validity scale. Four factors explain the variance of 34.471%, 44.064%, 51.939%, 45.321% and factor loading each contributed .410 above. The questionnaire is to achieve construct validity. Therefore, the scale was chosen as the study of learning style scale.

Academic achievement test was composed by researchers. The subject of a formal test is 25 questions. The average difficulty index for the total scale was 0.648. Three sub-scales of the average difficulty index were 0.583, 0.647, 0.712. The average differential for the total scale was 0.431 degrees. Subscale average differential index were 0.471, 0.436, 0.388.

Point two series of correlation coefficient (Questions of internal consistency) at various items and the total scale score correlation scores for each question, the items are up to a high degree of positive correlation.

The scale item difficulty is moderate, differential degrees of good internal consistency of a good examination questions.
3.3 Hypothesized
According to motive, purpose, pending the results of that question and the literature analysis presented academic achievement scale assumptions, and validation.
H1-1 After the implementation of digital learning in different learning styles of elementary school children was no significant difference in academic achievement.
H1-1-1 After the implementation of digital learning divergent learning styles of elementary school children was no significant difference in academic achievement.
H1-1-2 After the implementation of digital learning assimilated learning styles primary school children was no significant difference in academic achievement.
H1-1-3 After the implementation of digital learning convergenced learning styles primary school children was no significant difference in academic achievement.
H1-1-4 After the implementation of digital learning Accommodated learning styles primary school children was no significant difference in academic achievement.

4 The results and analysis
After a few e-learning academic achievement, Table 4-1 by a single covariate adjustment after the comparison with the assimilation of those who were significantly better than the divergence and convergence of those learning styles are. And the adaptation and assimilation of those who were learning styles, there is no significant difference between them.

Table 4-1 after the academic achievement of different learning styles Comparison Chart

<table>
<thead>
<tr>
<th>Learning Style (I)</th>
<th>Learning Style (II)</th>
<th>Mean difference (1-2)</th>
<th>Standard error</th>
<th>Significance difference 95% confidence interval Lower Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverger</td>
<td>Assimilator</td>
<td>-1.221*</td>
<td>0.545</td>
<td>-1.421 - 1.039</td>
</tr>
<tr>
<td></td>
<td>Converger</td>
<td>-0.227</td>
<td>0.620</td>
<td>-0.106 - 0.106</td>
</tr>
<tr>
<td></td>
<td>Accommodator</td>
<td>-1.496*</td>
<td>0.530</td>
<td>-2.346 - -0.645</td>
</tr>
<tr>
<td>Assimilator</td>
<td>Diverger</td>
<td>1.221*</td>
<td>0.545</td>
<td>0.207 - 2.235</td>
</tr>
<tr>
<td></td>
<td>Converger</td>
<td>1.448*</td>
<td>0.625</td>
<td>0.608 - 2.022</td>
</tr>
<tr>
<td></td>
<td>Accommodator</td>
<td>-0.274</td>
<td>0.545</td>
<td>-1.211 - 0.765</td>
</tr>
<tr>
<td>Converger</td>
<td>Diverger</td>
<td>-0.227</td>
<td>0.620</td>
<td>-0.106 - 0.106</td>
</tr>
<tr>
<td></td>
<td>Assimilator</td>
<td>-1.448*</td>
<td>0.625</td>
<td>-0.106 - 0.106</td>
</tr>
<tr>
<td></td>
<td>Accommodator</td>
<td>-1.723*</td>
<td>0.619</td>
<td>-2.346 - -0.997</td>
</tr>
<tr>
<td>Accommodator</td>
<td>Diverger</td>
<td>1.496*</td>
<td>0.530</td>
<td>0.207 - 2.235</td>
</tr>
<tr>
<td></td>
<td>Assimilator</td>
<td>2.74*</td>
<td>0.545</td>
<td>1.085 - 3.353</td>
</tr>
<tr>
<td></td>
<td>Converger</td>
<td>1.723*</td>
<td>0.619</td>
<td>0.207 - 2.235</td>
</tr>
</tbody>
</table>

A summary of Table 4-2 and found that the average academic achievement of students in learning prior to the study showed a significant negative after the gap. After several e-learning, the four learning styles in academic performance is better than pre-academic achievement.

Table 4-2: Different learning styles digital learning elementary school children before and after T-test analysis summary table

<table>
<thead>
<tr>
<th>Learning Style</th>
<th>After studying the average pre-study (I)</th>
<th>The average (II)</th>
<th>difference (S-I)</th>
<th>Standard deviation</th>
<th>t Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverger</td>
<td>20.09</td>
<td>18.66</td>
<td>-1.429</td>
<td>2.048</td>
<td>-4.127</td>
</tr>
<tr>
<td>Assimilator</td>
<td>17.88</td>
<td>20.78</td>
<td>-2.906</td>
<td>2.545</td>
<td>-6.461</td>
</tr>
<tr>
<td>Converger</td>
<td>17.24</td>
<td>18.90</td>
<td>-1.667</td>
<td>3.104</td>
<td>-5.461</td>
</tr>
<tr>
<td>Accommodator</td>
<td>18.60</td>
<td>21.54</td>
<td>-2.943</td>
<td>2.209</td>
<td>-7.882</td>
</tr>
</tbody>
</table>

*** p < 0.001

5 Conclusions and recommendations
References:
Basis for research purposes and development of research proposals made to write the final
conclusion as teachers to upgrade teaching and learning effectiveness of the reference.

5.1 Found
The total number of student subjects were summarized for the 123 students who completed this study learning styles scale. Types of the digital learning styles tend to adjust by 35 persons, accounting for 28.45% the total number of subjects. Types of the digital learning styles tend to diverge by 35, accounting for 28.45% the total number of subjects. Types of the digital learning styles tend to assimilate to 32 persons, accounting for 26.02% the total number of subjects. Types of the digital learning styles tend to converge to 21 persons, accounting for 17.08% the total number of subjects.

The digital learning styles of students tend to emphasize feeling and all things concerned about things like the uniqueness and complexity. There is no partial views of the participants with new learning activities suitable to specific experience to learn the characteristics of rich imagination and creativity. Fewer students prefer to take the initiative to validate and abstract takes to learn. Rational thinking and problem-solving of the students are the least.

5.2 Conclusion
The study found e-learning model to enhance different learning styles of elementary school children have a positive effect on academic achievement. In the K12 school learning platform digital environment, the student learning process are clearly present on the platform and teachers can keep abreast of the learning information. Through discussion area and chat room functions, teachers and learners, or learners with the learners raise the problems encountered in the learning process, and obtain assistance in a short time. Digital audio-visual materials rich and varied features than the traditional materials give learners a more positive attitude in learning. Therefore, the researchers believe that the different learning styles of elementary school children through a number of e-learning, to enhance the academic achievement has a positive benefit.

After the implementation of digital learning academic achievement of different learning styles of elementary school children, adaptation and assimilation of those who were much better than divergence and convergence of those. Adaptation and assimilation were no significant differences between those.

References:
[8]Michael G. Moore ; Greg Kearsleym, "Distance Education - A systems Veiw". 1999