Using Pictorial Story Based English to Improve English Words Underachievers Learning in Remediaal Teaching

Shyi-Ching Liang  
Visiting Professor  
Beijing Normal University  
Taihong, 41349, Taiwan, R.O.C

Yu-Chien Chen  
Department of Information Management  
Chaoyang University of Technology  
Taihong, 41349, Taiwan, R.O.C

Tzu-Chuen Lu  
Department of Information Management  
Chaoyang University of Technology  
Taihong, 41349, Taiwan, R.O.C  
telu@cyut.edu.tw

Abstract—This study aimed to explore whether or not the “Pictorial Story Based English” applied in remedial English teaching improve the learning effectiveness of underachievers’ word learning and explore the attitude of remedial teaching students towards English teaching. The research participants include underachievers of fifth grade English classes in four elementary schools in Changhua County, a total of 39 students. During the 14-week remedial teaching period, the students attended the word teaching class through the “Pictorial Story Based English” once a week, a total of 10 sessions, and five English words were given each time, a total of 50 words. The students that participated in the remedial teaching answered five “fill in the blanks” questions in the pre-test and took the post-test after the teaching. After the first teaching, a retention test was conducted before the teaching. On the fourteenth week, the general test for English word learning effectiveness consisting of 50 questions and the questionnaire survey for learning attitude were conducted. The results show that: (1) The students showed improvement in the number of correct answers in the pre-test and post-test of English words; (2) At the end of the remedial teaching, the students showed improvement in the general test for English word recognition; (3) The students showed improvement in attitude performance, specifically in “active learning,” “attention” “interests” and “self-confidence.” The above results indicate that the “Pictorial Story Based English” applied in the remedial teaching of English words indeed improve the fifth grade underachievers’ word recognition and spelling proficiency, which in turn had a positive impact on their learning method and learning attitude. Hence, the results in this study shall serve as a reference for English remedial teaching applied in English word teaching.

Keywords—Game-Based E-Learning; Learning Effectiveness; Pictorial Story; Remedial Teaching

I. INTRODUCTION

The Ministry of Education fully implemented the “Program of Remedial Teaching in Elementary and Junior High Schools” to ensure the basic competence of each student in elementary and junior high schools, and to prevent the decline in the basic competence of junior high school students as a result of the absence of promotion examinations from 2013. In the current “Project for the Implementation of Remedial Teaching,” English Language remains an optional subject in the elementary level, with each school having the right to deciding for themselves whether to offer remedial English courses. Take the introduction of remedial English teaching in Changhua County as an example. There is a total of 176 elementary schools in Changhua, in 2011, the number of schools introducing remedial English instruction totaled 37; in 2012, 42; in 2013, 87; in 2014, 115; in 2015, 123; and until the first term of 2016, the number was 107. The trend shows that the number of participating schools has been on the increase yearly, which indicates the degree of importance the schools have increasingly attached to remedial English teaching. From the above, changing the current methods of remedial English teaching and providing methods different from general English instruction, like learning material packages, computer-assisted learning courseware, and individualised instruction, are ways that can be adopted to enhance students’ learning effectiveness.

The Ministry of Education points out in the “Current Situation and Results of the Implementation Plan for Remedial English Instruction in Elementary and Junior High Schools” that among the students receiving remedial English instruction, fifth graders are the group that have made the greatest progress (Taitung Website of the Results of English Instruction Experiment, 2017.) The above study shows that the fifth grade is the critical time for learning English. Thus, this study takes fifth graders as its subjects, and develops a remedial instruction program for English letters and words by applying the memory model of English pictorial stories, and devises an instructional course suitable for students for carrying out remedial English teaching. This study employs multimedia images to present English letters and words, and students, through the mode of interacting with images, construct a unique learning method for themselves.

This study hopes that the remedial instructional course in English words cannot only enhance the effectiveness in learning English, but also help students to develop their self-learning ability and enhance their memory. These students in this study were fifth graders from Changhua Elementary School where the researcher is working, and three other elementary schools nearby. They were students whose English results were at the lower rung in class and recommended by their class teachers. Altogether, there were 39 students from 4 schools.
For reasons of time and manpower, this study is only confined to the fifth graders of the school where the researcher is working and three other schools nearby; their English results were at the lower rung in class, and they joined the course of English pictorial story memory teaching on their own volition. The course was conducted during lunch time (12:40-13:20), totaling 40 minutes, from Monday to Friday in each school once a week, with a total of 14 courses.

II. LITERATURE REVIEW

A. Remedial Teaching

Remedial teaching is a component of learning counseling. It is a diagnostic teaching that students should receive when they encounter difficulties in their learning.

The remedial teaching conducted by this study refers to the second-tier group remedial teaching in the support system of the three-tier learning system, designing a remedial course different from normal class for underachievers or students with learning difficulties in class. The intention is to reduce the learning obstacles faced by underachievers, by pulling out underachievers from their original classes to form another remedial learning group of students with similar learning difficulties; or by preparing different instructional materials to help in their understanding; or by lowering the volume and level of difficulty of learning, with a view to enhance their learning achievements. This means introducing an experimental remedial teaching that teaches “memory methods,” “reduces learning content,” and “increases extra time” according to the principles of remedial teaching proposed by the above scholars and in response to the characteristics and needs of the students in the group.

B. Learning Difficulties of English Underachievers and Remedial Teaching Strategies

Miss Lu Chen-Ying of the English Section of the Central Counseling Group, Ministry of Education, pointed out that English underachievers is deficient in alphabet knowledge, and they have difficulties in recognizing and reading, spelling, identifying, and pronouncing words, sentences, common expressions, and conversations. The above learning difficulties of elementary English underachievers are summed up as (1) identifying letters and words; (2) spelling letters and words; (3) speaking and reading letters and words. In light of the difficulties of English underachievers, this study adopted a remedial instruction content that focused on words, and applied the enhanced image memory; and through actual practice, and providing effective assistance that encouraged students’ independent, it seeks to help to them recognize and read, spell, and identify letters and words.[5][6]

C. Dual-coding theory

The dual coding theory was put forth by Paivio. It postulates that the mode of memory operation in handling external messages is affected by verbal and non-verbal stimuli. In the operation of handling cognition, the sensory system is also divided into two learning subsystems that receive stimuli, the verbal system that is responsible for oral stimuli, and the nonverbal system that handles images, as shown in Fig. 1.

The dual-coding theory holds that in the message reception during students’ learning, different forms of messages like words and images are received and handled by two cognitive systems in the brain respectively, which then construct connections between them so that both verbal and imagery codes can cross-reference each other and improve the memory effect.[2] Mayer pointed out that “the teaching effect of simultaneously using both words and pictures is better than those of only using verbal teaching.”[3][4]This study applied the principles of the dual-coding theory, and in the use of teaching materials, the 26 English letters were encoded anew with pictures, which turned purely phonetic English letters into “pictograms” and “pictures”, extending “auditory” sensory learning to “visual” sensory learning.[7]

Memory include (1) Sensory Memory, (2) Short-Term Memory, (3) Long-Term Memory. In every memory stage may be forgotten.[1]

Image memory techniques include (1) the linking method, (2) the story method, (3) the peg method, and (4) the system method.

This study encoded the English letters in pictures using the image method, and then the linking method and story method were used to exaggerate and animate the words to increase memory key points for assisting access to memory.

D. E-Learning

E-learning refers to the use of information technology and media to construct different learning modes to enable teachers and students to interact through different information and technologies. E-learning courses refer to the learning mode undertaken by learners, who, with information-communication technology as media, integrated online and off-line learning strategies and activities by making use of digital teaching materials and teaching methods. E-learning courses have the following characteristics: (1) no restriction on qualifications, (2) no tempo-spatial restrictions, (3) learning can be under one’s control, (4) instantaneity of contents, (5) highly interactive media, (6) low cost, and (7) can link up with the world.

The foundation of game-based e-learning is games; whose definition is as below:
Games are a voluntary control system; Games possess an interactive structure with endogenous meaning; Games are a closed and ordered system (Changhua Review System for Primary and Junior Secondary Course Plans, 2017.)

III. RESEARCH METHODS

This section will explain the research design and framework, research subjects, research tools, research steps, and data processing below.

A. Research Design and Framework

In investigating the effects of “the memory model of English pictorial stories” on the increase in the vocabulary size of English underachievers, in order to obtain sufficiently valid research materials, this study conducted remedial teaching based on the “the memory model of English pictorial stories” through the experimental instructional design and pretest and protest non-equivalent group design, with fifth grade English underachievers as its subjects.

Prior to the teaching of words each time, this study conducted a word test and another test after the teaching. Since the third time, a keep the test had been added for analyzing the teaching outcomes prior to it. In the final session, a total test was conducted. The research design of this study is shown in TABLE I.

TABLE I. THE EXPERIMENTAL DESIGN OF THIS STUDY

<table>
<thead>
<tr>
<th>Class Time</th>
<th>Keep Test</th>
<th>Pre-test</th>
<th>Experimental Treatment</th>
<th>After Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Letter Image Matching Teaching</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>O1</td>
<td>X1</td>
<td>O2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>O3</td>
<td>O4</td>
<td>X2</td>
<td>O5</td>
</tr>
<tr>
<td>4</td>
<td>O6</td>
<td>O7</td>
<td>X3</td>
<td>O8</td>
</tr>
<tr>
<td>5</td>
<td>O9</td>
<td>O10</td>
<td>X4</td>
<td>O11</td>
</tr>
<tr>
<td>6</td>
<td>O12</td>
<td>O13</td>
<td>X5</td>
<td>O14</td>
</tr>
<tr>
<td>7</td>
<td>O15</td>
<td>O16</td>
<td>X6</td>
<td>O17</td>
</tr>
<tr>
<td>8</td>
<td>O18</td>
<td>O19</td>
<td>X7</td>
<td>O20</td>
</tr>
<tr>
<td>9</td>
<td>O21</td>
<td>O22</td>
<td>X8</td>
<td>O23</td>
</tr>
<tr>
<td>10</td>
<td>O24</td>
<td>O25</td>
<td>X9</td>
<td>O26</td>
</tr>
<tr>
<td>11</td>
<td>O27</td>
<td>O28</td>
<td>X10</td>
<td>O29</td>
</tr>
<tr>
<td>12</td>
<td>Review 1-25words, homework1-25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Review 26-50words, homework26-50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>English Words Total test,</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the above research design, the research framework of this study is shown in Fig. 2.

B. Research Subjects

A survey by Professor Chen Zhao-Ming of the English Department of the National Chengchi University has discovered that the critical time for students to receive remedial English teaching is the fifth grade. If students’ confidence and learning ability cannot be developed at this stage, their future English learning will be a waste of time. Therefore, this study selected the fifth graders from four elementary schools in Changhua County (see TABLE III.) as its subjects. These fifth graders were recommended by their class teachers and their English results were at the lower rung in class; they also joined on their own volition this memory model of teaching creative English pictorial stories.

TABLE II. WORDS

<table>
<thead>
<tr>
<th>one</th>
<th>two</th>
<th>three</th>
<th>four</th>
<th>five</th>
</tr>
</thead>
<tbody>
<tr>
<td>six</td>
<td>seven</td>
<td>eight</td>
<td>nine</td>
<td>ten</td>
</tr>
<tr>
<td>red</td>
<td>orange</td>
<td>yellow</td>
<td>green</td>
<td>blue</td>
</tr>
<tr>
<td>purple</td>
<td>pink</td>
<td>brown</td>
<td>gray</td>
<td>black</td>
</tr>
<tr>
<td>house</td>
<td>bathroom</td>
<td>bedroom</td>
<td>garage</td>
<td>garden</td>
</tr>
<tr>
<td>kitchen</td>
<td>living room</td>
<td>street</td>
<td>office</td>
<td>store</td>
</tr>
<tr>
<td>light</td>
<td>seat</td>
<td>telephone</td>
<td>window</td>
<td>television</td>
</tr>
<tr>
<td>bus</td>
<td>taxi</td>
<td>car</td>
<td>scooter</td>
<td>bike</td>
</tr>
<tr>
<td>season</td>
<td>spring</td>
<td>summer</td>
<td>fall</td>
<td>winter</td>
</tr>
<tr>
<td>hot</td>
<td>warm</td>
<td>cool</td>
<td>cold</td>
<td>freezing</td>
</tr>
</tbody>
</table>

Fig. 2. Research framework.
### TABLE III. BASIC INFORMATION OF THE SCHOOLS IN THIS STUDY

<table>
<thead>
<tr>
<th>School</th>
<th>A School</th>
<th>B School</th>
<th>C School</th>
<th>D School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale</td>
<td>Large</td>
<td>Medium</td>
<td>Small</td>
<td>Small</td>
</tr>
<tr>
<td>Total Students</td>
<td>539</td>
<td>267</td>
<td>120</td>
<td>113</td>
</tr>
<tr>
<td>Number of Class of 5 Grades</td>
<td>4 class</td>
<td>2 class</td>
<td>1 class</td>
<td>1 class</td>
</tr>
<tr>
<td>Students of 5 Grades</td>
<td>97</td>
<td>50</td>
<td>28</td>
<td>20</td>
</tr>
</tbody>
</table>

10 fifth graders from each school participated in this experimental course, with 4 schools and 39 students. (see TABLE IV.)

### TABLE IV. NUMBER OF EXPERIMENT STUDENTS (UNIT: PERSON)

<table>
<thead>
<tr>
<th>School</th>
<th>A School</th>
<th>B School</th>
<th>C School</th>
<th>D School</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>Female</td>
<td>5</td>
<td>267</td>
<td>120</td>
<td>113</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>39</td>
</tr>
<tr>
<td>Remarks</td>
<td>1 leave</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### C. Research Tools

The purpose of this study is to change the present monotonous traditional way of class attending in the classroom so as to provide another lively option for remedial teaching. With the model of memorizing stories through English pictures, which, taking the class materials designed by Start Memory as reference, was designated the “memory model of teaching English pictorial stories,” it invited the fifth grade teachers of the experimental schools to recommend research subjects that needed remedial English teaching for carrying out remedial English word teaching.

The research tools of the study will be explained below, beginning with the building of class environment, then creative stories, and finally assessment of English word learning outcomes.

1) **The Setup of Class Environment**

- **Computer:** with sound output and can be connected to interactive electronic whiteboard.
- **Digital projector:** connected to computer for projecting computer images.
- **Interactive electronic whiteboard:** this study selected the electronic whiteboard with software of PGM EZpen as the operating tool.

In the first period, the software developed by Smart Memory was used to produce 26 corresponding patterns of the 26 letters, and give them pictographic association, as shown in Fig. 3. Through pattern pasteurization, abstract letters were transformed into patterns; and lively and cute patterns helped generate in the students an “association of shapes.” Each student was given the chance to come to the stage to operate the software, and through the simple game of pairing, the participants in the remedial English teaching could quickly revise the English letters. Each time when the students tapped on the pattern, the software would give out the pinyin (phonetic transcription) of the letter to be paired, and give an affirmative sound stimulus. In the teaching of letters, three kinds of games were used in combination for the students to play the pairing game. When the students succeeded in pairing the letter with the pattern, the computer would give the correct pinyin of the letter; when they failed, the computer would sound out a surprise for the wrong answer, and the pattern would return to its original place until the pairing was successful. The purposes were to make the students not to be afraid of failure, and to convince them that they would definitely acquire successful experience through operating so as to encourage them to come up to take the challenge and enhance their desire to learn.

![Fig. 3. Letter Correspondence.](image)

From the second period, by using the software developed by using the software developed by Smart Memory, the words for remedial teaching were organized into the themes of “Number,” “Color,” “House,” “Furniture & Vehicles,” “Role,” and “Season,” as shown in Fig. 4.

![Fig. 4. The example of “Number.”](image)
2) **Teaching aids**

- General table of letters and patterns: the students could do pairing review at any time while in lesson.
- Letter cards: Along the dotted line, the letter patterns were cut into cards that the students could handle, and they were also laminated. Each student was given 2 sets of letter cards, which were packed in transparent sealed bags and could be brought home. In the classroom, when it was not their turn to operate the Start Memory software on the stage, the students could arrange the letter cards into words.

3) **Creative Stories**

- English word series diagrams: For each English word, there was a concrete picture to assist the students in learning it. The letters of each word were linked up with patterns, and students were to learn the English words through the process of organizing and linking up each letter pattern in creative stories.
- Creative stories: Every word could be broken up into a series of patterns. The key to helping the students to memorize was the creative stories that organized and linked up the letter patterns. From the dynamic situational scenes, the students formed in their minds auxiliary story learning. as shown in Fig. 5. The key points in making up creative stories lay not in the storyline, but in the action to link up the word patterns. Take the creative story of “one” as an example. Put a slice of orange on a piece of “toast,” and before long, to anyone’s surprise, from the “toast” emerged a “tadpole.” The “put” and “emerged” in the story emphasized the verbs between the letter patterns and patterns, making use of the interesting dynamic scenes produced by “actions” to attract the attention of the students. When the students were dragging the letter patterns on the electronic whiteboard, they would follow the action clues of the story to give the correct sequence in the arrangement of the letters.

![Fig. 5. English word series diagrams and creative stories.](image)

Creative stories could be regarded as the soul of this experimental teaching. Right from the beginning of the course, the teachers demonstrated the mode of making up a story, then asked the students to make up their own and encouraged them to give free rein to their imagination.

4) **Remedial Teaching Activities based on the Model of English Pictorial Stories**

“Remedial Teaching Activities based on the Model of English Pictorial Stories” included the teaching of pairing English word patterns in the first week, and the teaching of words based on the model of English pictorial stories from the second week onwards. In the main teaching activities, while the teachers led the students to operate the Smart Memory software, they also used creative stories to guide their memory. The word pictures were first scattered, then while dragging the letter patterns, the students at the same time told the creative story. When a word was correctly spelled, the software would read out the English word, and the word and series diagram would appear in the top left-hand corner. At this stage, the teacher decoded them one after the other by pairing up the letters with the letter patterns.

D. **Research Results and Analysis**

This study aims to investigate the training effects of the “remedial teaching activities based on the model of English pictorial stories.”

From the sectional diagram of the average number of questions correctly answered in the pretests and posttests of the 4 schools (Fig. 6), it can be seen that each underachiever who received remedial English teaching has made progress in light of their performance in class, and the pretests and posttests.

![Fig. 6. The sectional diagram of the number of questions correctly answered in the pretests and posttests of the 4 schools](image)

Fig. 6. The sectional diagram of the number of questions correctly answered in the pretests and posttests of the 4 schools.

Then, from the comparison between the posttest and retention test performed before class a week later, it is found that there was forgetting phenomenon in the English word performance of all the underachievers of the 4 schools receiving remedial teaching (Fig. 7) However, a further analysis of the average number of questions they forgot shows that it was around 1 question (A School, 0.8 question; B School, 0.8 question; C School, 1.2 questions; and D School 1.1 questions.)

![Fig. 7. The sectional diagram of the number of questions correctly answered in the posttests and retention tests of the 4 schools.](image)
In the general test for learning outcomes held in the last week of remedial teaching, 50 multiple-choice questions were used to test the students’ memory of the English words. From Fig. 8, it can be seen that the number of questions the remedial students answered correctly fell in the intervals of high number of questions (41-50, 31-40, and 21-30,) while no students fell in the intervals of low number of questions (0-11, and 11-20.)

Fig. 8. Figure Percentage of number of questions answered correctly in the general test for overall learning outcomes of the 4 schools.

IV. CONCLUSIONS AND RECOMMENDATIONS

This study seeks to investigate the training effects of the “remedial teaching activities based on the model of English Pictorial Study, and its conclusions are summed up by the researcher below:

A. Learning Outcomes

Teaching based on the “model of memorizing stories using English pictures” helps to enhance English underachievers’ memory of English words and their learning outcomes. The English underachievers of the 4 schools showed progress in the English word pretest and posttest each time after they received training in the “teaching activities based on the model of English pictorial stories.” Also, the general test on the 50 English words held after the end of the remedial teaching showed that they have made progress. This indicates that the overall learning and retention effects of using “the remedial teaching activities based on the model of English pictorial stories” are good, and that these activities can help students memorize English words much longer.

B. Learning Attitude

Teaching based on the “model of memorizing stories through English pictures” can improve students’ attitude in “active learning,” “attention,” “interest,” and “self-confidence.” Teaching based on the “model of memorizing stories using English pictures” can improve students “active learning” attitude. This can be seen from the 62% homework recovery rate that the students had a better active learning attitude. Among the 4 schools, D School had the highest homework recovery rate, reaching 90%; and in the learning attitude scale, 59% of the students chose “strongly agree” in the question of consciously aware of being more diligent than before, and 18% chose “agree,” with an average value of 4.36. This shows that the “model of memorizing stories through English pictures” can indeed improve students’ active learning attitude.

As the “model of memorizing stories through English pictures” of this study employed interactive media teaching equipment for the students to operate, they regarded that the use of stylus pen to link up English pictorial stories could help them in learning English words and enhance their attention and interest. With respect to “self-confidence,” the research results of teaching based on the “model of memorizing stories through English pictures” show that the confidence of the underachievers has also increased in light of the data of the three questions of “becoming simpler,” “having greater self-confidence in learning,” and “keeping up with the progress of the class.

REFERENCES