Using a Paper-based Digital Pen to Support English Course in the Regular Classroom to improve Reading Fluency

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Outline

- Motivation
- A technology of paper-based digital pen
- A technique of repertory grid technique
- Analysis
- Conclusions & Discussion
Motivation

• A large number of students in Taiwan have ability of word recognition but fail to read.

Why?
• English teachers always focus on grammar / vocabulary.
• During reading, students used to check each unknown word with dictionary.
Motivation

- Five dimensions of reading
  - Phonemic Awareness
  - Decoding
  - Vocabulary Development
  - Reading Fluency
  - Comprehension Strategies
Motivation – Reading fluency

• Reading fluency
  – Fluency is the ability to read a text accurately and quickly with appropriate pacing and intonation.

• Repeated Reading strategy
  – Repeated reading is effective strategy to improve fluency.
  – Having students read and reread the same passages repeatedly.

• Many computer-assisted programs has been developed to support improving fluency.
A technology of paper-based digital pen

• There are many special features for paper-based learning.

• Paper-based digital pen
  – Using built-in camera to decode the special pattern on printed paper.
  – The pen can track exact absolute position on printed paper.
  – It can integrate digital functions into printed paper.
Our purpose

- Using the paper-based digital pen to support English course to improve reading fluency.

- Research issues
  - How are students’ satisfaction?
  - What are Students’ preferences?
An Experiment

• An English course with digital pen support
  – 31 participants
    • 9th grade students in a junior-high school in Taoyuan, Taiwan.
  – 10 week period
    • a total of 10 sessions of 45 minutes.

• Learning activities
  – Using Read-to-Me function
  – Using Record function
  – Using Playback function
An English course
with digital pen support

• During class….
  – Tap the Voice button on textbook.
  – Read along quietly while listening model’s reading.
  – Repeat steps 1-2 lots of times.
  – Switch to Record mode to record their reading and then play back their recordings.
  – Repeat steps 4 lots of times.
Analysis - satisfaction

- Using a questionnaire with four-point Likert-scale to access their satisfaction.
  - All reported having increased confidence in reading.
  - All but one said they are willing to use the digital pen to practice.
- Interview with teacher
  - Without computer, it is easier to conduct fluency program in their classroom.

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>Mean</th>
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<tbody>
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<td>1</td>
<td>The novel technique assists the students to practicing RR.</td>
<td>26</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>3.84</td>
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<td>2</td>
<td>After taking part in the study, I am able to read more quickly.</td>
<td>29</td>
<td>1</td>
<td>1</td>
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<td>3.90</td>
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<td>After taking part in the study, I am able to read with proper expression.</td>
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<td>13</td>
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<td>After taking part in the study, I am able to read correctly.</td>
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<td>0</td>
<td>3.58</td>
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<td>The novel technique makes the authentic practicing and the reading content easier to understand.</td>
<td>13</td>
<td>13</td>
<td>5</td>
<td>0</td>
<td>3.26</td>
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<td>6</td>
<td>I am willing to use the digital pen to practicing RR in the future.</td>
<td>28</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3.87</td>
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Analysis - Using Repertory grid Technique

• Element determining
  – 31 Student’s portfolios

• Construct elicitation
  – using triadic method
  – Example: ‘Enjoy playing back their independent reading’ v.s. ‘Not Enjoy playing back their independent reading’

• Rating the elements on the constructs

<table>
<thead>
<tr>
<th>Evaluators (Constructs)</th>
<th>Similarity Pole 1</th>
<th>Contrast Pole 4</th>
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<tbody>
<tr>
<td>Read-to-Me</td>
<td>Not enjoy to use</td>
<td>Enjoy to use</td>
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<tr>
<td></td>
<td>4 4  ... 4</td>
<td>Read-to-Me</td>
</tr>
<tr>
<td>Not Often to use</td>
<td>4 4  ... 3</td>
<td>Often to use</td>
</tr>
<tr>
<td>Useless to use</td>
<td>4 4  ... 3</td>
<td>Useful to me</td>
</tr>
<tr>
<td>Record</td>
<td>Not enjoy to use</td>
<td>Enjoy to use</td>
</tr>
<tr>
<td></td>
<td>4 4  ... 2</td>
<td>Record</td>
</tr>
<tr>
<td>Not Often to use</td>
<td>4 4  ... 3</td>
<td>Often to use</td>
</tr>
<tr>
<td>Useless to use</td>
<td>4 3  ... 3</td>
<td>Useful to me</td>
</tr>
<tr>
<td>Play back</td>
<td>Not enjoy to use</td>
<td>Enjoy to use</td>
</tr>
<tr>
<td></td>
<td>4 3  ... 2</td>
<td>Play back</td>
</tr>
<tr>
<td>Not Often to use</td>
<td>4 3  ... 2</td>
<td>Often to use</td>
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<tr>
<td>Useless to use</td>
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</table>
Analysis - Using Repertory grid Technique

- Using Idiogrid software to conduct a PCA analysis

- Non-fluent students dislike record and playback their recording.
  - Students should re-listen a model until a suitable criterion is met, and then are allowed to use recording.
Conclusion & Discussion

• We use paper-based digital pen to support English course to improve reading fluency
  – Student can practice to read in comfortable way.
  – All students reported increased confidence in reading.
  – Without computer, the program can be easily incorporated into their regular classroom.

• We use the repertory grid technique to gain the students’ preferences
  – Students should re-listen a model until a suitable criterion is met, and then are allowed to practice independent reading
Thank you!