Background Music and Content Expansion Support Story Comprehension in e-Book Reading of Preschoolers

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The Digital Screen Age

E-book Multimedia Features

- music / sound effects
- narrated text
- animation
- illustrations
- games
- Illuminated text
Original text:
No one listens to me,
I don’t have any friends,
Although outside the spring is blooming
Inside my heart it’s gloomy

Content expansion:
Look at all those people, so happy. They have friends to talk and laugh with and I am so lonely and sad
Our study is based on up to date research, which examines the role of multimedia in learning.

- The dual coding
  (Paivio, 2009; Sadoski, McTigue, & Paivio, 2012)

- The benefits of the combination of multimedia components
  (Neuman, 2009, 2013; Grimshaw, 2007; Maynard, 2005)
The uniqueness of this study

- To date, as far as we know, only the influence of sound effects in e-books on literacy has been researched.
- Many E-books have background music.
- Our study examined the effect of background music on story comprehension among preschoolers.
- E-book was designed specifically with quiet background music with a repetitive pattern throughout the story.
Music and Learning

• Studies have shown a positive correlation between listening to music and attention concentration levels, word memory, as well as retention of information.
  (Jonides, 2008; Spelke, 2008; Wandell, et al. 2008)

• Other studies have indicated that, music and vocal background have a negative impact on story comprehension.
  (Scholz, 2011; Thompson, Schellenberg & Letnic, 2012)

• Reducing external stimuli can reduce load on working memory therefore enhancing learning processes.
  (Mayer & Moreno, 2003)
Story Comprehension & Retelling

**Story Comprehension**

Requires linguistic and cognitive skills in low and high levels, as story details and main story points (van Kleeck, 2008).

- T/F Questions
- open questionnaire

**Retelling**

- The ability to tell a story you heard or read.
- Verbal expression of the child's story understanding.
- A better story comp. helps to produce a more coherent story.
- Repeated reading of a story improves the level of retelling
  - Use of story text
  - Referring to details
  - Understanding main story points
Research Questions:

• Will background music (BGM) and story content expansion (CE) combined, significantly promote story comprehension and retelling in comparison to having only one support tool, or none at all?

• Will reading with both support tools help preschoolers advance throughout the 3 open questionnaire stages?

• Will the starting level of vocabulary effect the post test scores?
Method - Participants

160 preschoolers (5-6)
8 kindergartens
Low SES

40 kids
BGM + CE

40 kids
CE only

40 kids
BGM only

Control group -
40 kids
No support tools

Process - All the kids read the story individually 4 times.
## Method - Tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Time</th>
<th>General vocab</th>
<th>Ret-telling</th>
<th>T/F questions</th>
<th>Open questions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PPVT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>+</td>
<td>Target story - no support</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

### Intervention

<table>
<thead>
<tr>
<th>Time</th>
<th>PPVT</th>
<th>Ret-telling</th>
<th>T/F questions</th>
<th>Open questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interim 2nd reading</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Post 4th reading</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>
Graph 1. Avg improvement between pre and post test according to time and group
Graph 2. Avg improvement between pre and post test according to time and group
Graph 3. Avg improvement between pre and post test according to time and group
Graph 4. Avg improvement between pre and post test according to time and group(3)
The influence of the initial level

Graph 5. influence of initial level in vocab. on story content comp.
Discussion

• Why CE supported story comprehension?

   It is clear!

• Why BGM did?

   We presume that the quiet music supported child’s concentration level and attention duration, which helped him to focus on the story content.

• Why the combination worked the best?

   In this case the child was more concentrated and attended to learn the expended content from the e-book.
Conclusions

• Combined mode that includes BGM and CE contributed to story comprehension and retelling better than the other 3 options.

• Content expansion effected more than background music.

• Background music as a single support had a slight effect.

• Kids with low initial vocabulary, who read the combined mode made the biggest advance.
Implications

• E-books designed with appropriate multimedia, are an efficacious source for supporting literacy of LSES preschoolers.

• Intervention programs of this kind in preschool can narrow the gap among low achieving children.

Further research:

• Researching the effect of those components on children with SLI.

• BGM which facilitates comprehension by musical clues.