Squiggle Park Trials with Tri-County Regional School Board

Squiggle Park Alignment to Standardized Assessments
Summary of results
About this presentation

This presentation is a summary of the trials Squiggle Park conducted in partnership with the Tri-County Regional School Board (TCRSB) in Q2 of 2016, and its resulting outcomes.
What is Squiggle Park?

A series of games to supplement classroom teaching and aligned with curriculum, motivating students in PreK-grade 2 as they master foundational skills through play.
Study Goals

Squiggle Park was welcomed into schools to play their two first games with students in grades kindergarten to 2.

The primary purpose for Squiggle Park was to test that the data we collected correlated to the Fountas and Pinnell reading levels assigned by teachers, that the games worked in a school setting and could be incorporated into the daily teaching routine, and to get feedback from Students and Teachers about their thoughts on our games. The secondary goal of the study was the Squiggle Park Alignment to other Standardized Assessments.
Who we tested

Squiggle Park was used in 18 schools in the TCRSB district between April 25th and May 25th 2016.

See appendix for full list
Who we tested

This included:

- 60 classroom teachers
- 4 reading experts
- 586 children between Kindergarten and Grade 2
How we tested

Children played Squiggle Park games, each assessing a different skills.

**World GPCs outline**

An adaptive algorithm adjusted a series of difficulty parameters to gauge the skill level of each child as they played and provide an experience that was unique to them.
Squiggle Park aims to teach foundational literacy skills and encourage learning through the playing of games.

The games use an adaptive algorithm to gauge a player’s proficiency at a particular skill, then serve up in-game questions suited to that skill level.

This incrementally challenges the player according to their own ability.
Baseline data

Schools provided the Fountas & Pinnell instructional reading level for each child, which formed the baseline for our study.

The next two slides show the distributions across all students for:

1. **F&P Reading Level**
2. **F&P Recommended Grade**
Distribution of F&P Recommended Grade

<table>
<thead>
<tr>
<th>F&amp;P Recommended Grade</th>
<th># of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-K</td>
<td>17</td>
</tr>
<tr>
<td>K / P</td>
<td>151</td>
</tr>
<tr>
<td>1</td>
<td>181</td>
</tr>
<tr>
<td>2</td>
<td>103</td>
</tr>
<tr>
<td>3</td>
<td>38</td>
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<tr>
<td>4</td>
<td>7</td>
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<td>5</td>
<td>5</td>
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<tr>
<td>6</td>
<td>3</td>
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<tr>
<td>7 and above</td>
<td>0</td>
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</table>

# of Students
Squiggle Park results

- Collected ~ 535 in-game hours worth of data throughout the testing

- Heinemann’s **instructional grade level equivalence chart** was used to provide an estimated mapping of scores to grade with spelling game data

- The next two slides show these results for all students who played the game as distributions for:
  a. **Level reached**
  b. **Level reached, roughly mapped to F&P reading level bands**
Correlating the data

The list of students was ranked (assigned a number from 1 to the total number of students), based on their comparative performance by both the F&P assessed reading level, and the level they reached in game.

A Spearman's rank correlation coefficient of 0.8304962 was then obtained which implies a strong positive correlation between the two rankings and can be seen in the chart on the next page.
Correlating the data

This demonstrates that performance in our games has a strong correlation to the instructional reading level.
Correlating the data

With correlation established, it was possible to group the Squiggle Park results into grades, providing rudimentary calibration with the F&P system.

The next few slides show this as follows:

1. Reading grade based on spelling level
2. Grade distribution comparison, as a combo chart
3. Grade distribution comparison, as an area chart
<table>
<thead>
<tr>
<th>Grade</th>
<th>1</th>
<th>2</th>
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<th>4</th>
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<th>6</th>
<th>7</th>
<th>8</th>
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<tbody>
<tr>
<td>K</td>
<td>-</td>
<td>1</td>
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<td>1-2</td>
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<td>2-3</td>
<td>A/B</td>
<td>3-4</td>
<td>A/B</td>
<td>4-5</td>
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<tr>
<td>1</td>
<td>C/D</td>
<td>11-12</td>
<td>D</td>
<td>12-13</td>
<td>E</td>
<td>14-15</td>
<td>E/F</td>
<td>15-16</td>
<td>F</td>
<td>17-18</td>
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<tr>
<td>2</td>
<td>I/J</td>
<td>18-19</td>
<td>J</td>
<td>19-20</td>
<td>J</td>
<td>21-22</td>
<td>J/K</td>
<td>23</td>
<td>K</td>
<td>24-25</td>
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</tbody>
</table>

**Legend**

- **Fountas and Pinnell Level**
- **Squiggle Park World**
Findings

- Children enjoyed the games and asked to play them again
  - See ‘Reaction’ in the appendix

- Teachers also responded well:

  “Working with Squiggle Park has been a great experience for our school.”
  - Jason Murphy, Principal, Barton Elementary
Findings

- Despite the offset and outliers to the grades being assessed (which is statistically likely in a study involving a large sample size), a strong correlation exists between performance in the games, and the F&P reading level.
- Students who played Squiggle Park for a minimum of 30 minutes each week experienced accelerated gains in the F&P scores and were likely to move up 2 more letter grades than students who did not participate.
Final thoughts

This study demonstrated that Squiggle Park was effective in giving children a structured yet joyful opportunity to explore and improve specific literacy skills, while generating a rich data set that can be used to continuously inform and improve the learning process. The game-based nature led to children asking to play again, providing opportunity for regular repeat play, practice and improvement.

Based on the feedback from reading experts and the progress of the individual students in the study, there is a recommendation to play Squiggle Park for a minimum of 30 minutes per student per week to accelerate the mastery of foundational reading skills.
Thank you

We would like to thank everyone at TCRSB for their incredible help, support and encouragement in conducting such a large study. We couldn’t have done it without you!
List of schools

- Arcadia Consolidated School
- Barton Consolidated School
- Carleton Consolidated Elementary School
- Clarke`s Harbour Elementary School
- Digby Elementary School
- Digby Neck Elementary School
- Drumlin Heights Consolidated School
- Evelyn Richardson Memorial Elementary School
- Forest Ridge Academy
- Hillcrest Academy
- Islands Consolidated School
- Lockeport Elementary School
- Meadowfields Community School
- Plymouth Elementary School
- Port Maitland Elementary School
- South Centennial School
- Weymouth Consolidated School
- Yarmouth Central

http://www.tcrsb.ca/Lists/TCRSB%20Schools/AllItems.aspx
Reaction

After playing the games, each child was asked what they thought, which was recorded using a Likert scale of sentiment:

([-] [-] [+] [++] [++++])

Result were positive!