An exploratory study on the use of digital tablet technologies in the junior school

Garry Falloon & Tonia Fenemor
Questions (working)

1. Does using strategically selected apps as one component of a class literacy programme appear to have any effect on the development of phonics skills of 5 and 6 year old students? (what evidence exists?)

2. What factors affect these students’ learning pathways when using apps, how do they deal with them, and what effect do they have on their learning trajectories?
Method and data

Strand A.

Quasi-experimental design. Groupings (control/experiment) based on results from pre trial assessments

- Running records (% accuracy - monitoring for possible transference)
- Burt (monitoring for possible transference)
- Phonics assessment (rolling testing stages 2-4 from May to December)
Strand A: Phonics development.

• Three sub-groups established within main groups: control (no iPad) and expt. (with iPad):
  Group a. scores: 75-80% (≤ 6% difference in May stage 2 phonics assessment: 2:6).
  Group b. equal 81-81% in May stage 2 phonics assessment (1:1);
  Group c. 56-65% (9% difference) in May stage 2 phonics assessment (1:1)

Rolling testing

• Baseline taken in May (stage 2)
• Testing September (re-test stage 2 - baseline stage 3)
• Testing December (re-test stage 3 - baseline stage 4)
iPads and apps integral to reading tumble for Angelfish and Jellyfish reading groups
Strand B: Student-device/app interaction and learning pathways

• One device between two students;

• ‘Educational’ apps organised into subject and skill libraries (maths, reading, thinking games, problem solving games etc.) Students are able to choose;

• Data recorded using Cydia Display Recorder and audio via USB stick voice recorders (later dubbed using iMovie)
Sample display capture

Mr Phonics
Pick a word bank!

Words 5
Words 6
Words 7
Words 8
Words 9

fruit
colour
color
123
days
months

back
Progress and observations to date (Strand A)

• First re-test completed (stage 2).
  Group a. average %age change expt +10.66%, control +7%. (+3.66%)
  Group b. +7% expt. & +7% control (0%)
  Group c. +22% expt. & +26% control (-4%)

• Other data needed to appraise any possible ‘transfer’ effect
  (eg. whole words - Burt, running accuracy- RR)

At this stage, at worst, app use appears to be doing no harm!
Strand B: Progress and observations to date

- Device interaction highly intuitive;

- Well-designed apps can sustain *beneficial* learning engagement for prolonged periods;

- Some attributes of apps can be challenging, confusing and sometimes distracting for young children, leading to ‘spin off’ trajectories;

- Variable nature of collaboration affects learning performance - more effective collaboration noted in student-selected pairings;

- Elements of effective device management with young children identified;

- Students’ knowledge, strategies and techniques affect progress and performance
Student interaction and decision making process (WiP from videos)

Knowledge
- Knowledge: conceptual - declarative (knowing that - content)
- Knowledge: conceptual - procedural (knowing how - content)
- Knowledge: technical - declarative ('knowing that' device/app operate in this way)
- Knowledge: technical - procedural (working out' how device/app operate)

Interaction Strategy/ies
- Perseverance - evidence of concerted effort to solve problem or complete task
- Random (trial and error) - applying patterns or understanding of concepts?
- Preemptive. Setting parameters to minimise difficulty and maximise chance of success (PLR)

Techniques
- Negotiated joint effort (two heads are better than one)
- Collaborative
- Semi-collaborative
- Combined solo efforts (each decides and inputs separately to same app)
- Separate solo efforts (each takes turns on different apps)

Interaction decision and approach
- 'Enablers'
- 'Impediments/distractors/confusers'

Tested on App (note response)

Decision: repeat same (not happy), move out (not happy) or move on (happy/not happy)

Clear instructions & stated learning goal
Formative feedback
Affective feedback (weak)
Blend teaching/practise/reflection
Age appropriate design (eg. language level)
User customisable options (eg. text-to-speech)
Uncomplicated/uncluttered pathway to learning goal/s

Over emphasis on affective reinforcement and extrinsic reward
Pay for bits of apps
External web links needed
Parts of apps locked
Messages to buy
Banner ads
Complex instructions and language, accents
Unnecessary 'whiz bangers'
Classroom Management

- Used the school virtues to describe the appropriate behaviour for using the iPads
  - Consideration of others working on different tasks, reading with the teacher
  - Checking power left and putting on to charge
  - If don’t use in appropriate ways then loose the privilege
  - Automatic download of new apps

- Teaching of new apps through Apple T.V
  - Organising apps into folders for different days
  - Teaching children iPad tricks so they can do the organising with guidance
  - Storage space during lessons
  - Time spent on routines and encouraging independence
School Virtues

• A lot of talk using the school virtues on how we use the iPads.

• Easy to understand as it is language used everyday.

• Looked at each virtue one day at a time – what it looks like, sounds like.

• Refer back to these if inappropriate behaviour is noticed.
Challenges faced by the teacher

- Choice of apps to match learning objectives
- Finding apps that are appropriate for New Zealand accent
- Limitations of apps
- Making sure there is enough room for recordings and saving of work
- Making time to search for appropriate apps
- Learning to use the iPad, the tricks, and Apple T.V
- With all school on same iTunes account the apps get shared and need to be deleted
- Not being able to sync due to recording software
- Lockable cupboard for secure storage
- Change in thinking about learning environment.
Favourite Apps

Popplet
BlobbleWrite
Mr Phonics 2
Rocket Speller
Smarty Pants School
Interactive Books – Toy Story
Hay Day
Cut the Rope
First Grade
What next from what we’ve learnt?

• Tighter structure to align closely to learning goals *balanced across* the weekly tumble (eg., specific apps linked to particular outcomes organised by day);

• Setting up printing - students like to share ‘tangible’ outcomes with others, samples for portfolios;

• Changing apps more regularly - trying to find more ‘teaching’ apps (eg., Mr. Phonics);

• Spend more time finding and using fewer, more targeted apps;

• Gather more data for both strands;

• Use Studiocode to code all video (summer scholarship). Test and refine mapped themes.