An interview with Dr Garry Falloon

Associate Professior, Faculty of Education, University of Waikato

What has your involvement at Leamington been?

I started working with the school in 2011. The University of Waikato, Faculty of Education purchased a set of iPads to use at the school for a series of studies exploring:

- student learning pathways using a range of different apps linked to learning objectives
- the nature of student problem solving and strategies used when developing content using open design apps
- the nature of student talk when working in pairs and small groups using iPads collaboratively for learning tasks.

Early research explored use of apps that supported teachers' work with students developing phonics skills. This complemented the school's phonics development programme based on Yolanda Sorrell's phonics training initiative. After a six month trial working with junior school teacher Tonia Fenemor, we noted a 4-5% advantage for students using the range of apps selected to support the skills being taught. However, due to the short time frame for the study and some changes within the experiment groupings, it was not possible to conclusively state any statistically significant learning advantage.

During this time, however, we developed and adapted an 'observeware' app that allowed us to gather display and audio data about how children work together and approach problems presented in apps they used, and how they went about operating the devices. This helped us understand:

- criteria teachers should apply to selecting good apps as suited for purpose
- how different arrangements of students affected output and work quality when working collaboratively
- the sort of questioning and interaction strategies teachers could use when supporting students, and the effect of different task designs on effective app use.

Later work has applied the 'observeware' app to unpacking the relationship between task design, teacher role, device affordance and student learning resources (what they 'bring to the table') at senior school level.
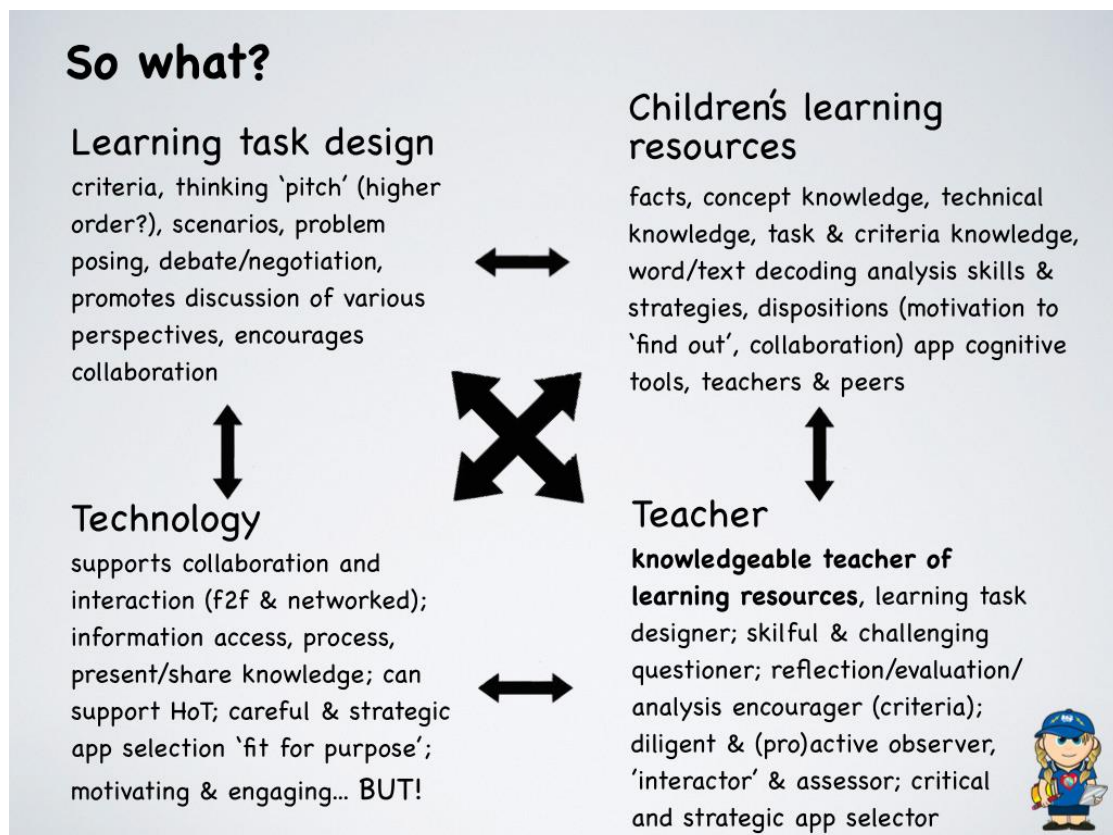
What have the key outcomes been, in particular in relation to student achievement?

There have been many outcomes - including:

- Improved teacher selection of apps as suited to learning goals and purposes (criteria for selecting - what to look for and what to avoid)
- Highlighting the importance of well developed and understood learning tasks and related success criteria
- Providing visible evidence of the effects of teacher intervention on student thinking and work processes when they are working collaboratively with the devices. This has directly fed into changes in teacher questioning, levels and types of learning, scaffolds/ formative feedback provided to students while they work (types of formative feedback), support for pedagogical changes and 'risks' teachers are making to make the best of the learning advantages the devices present
- Providing visible evidence of the influence of task design on the levels of thinking the students engage in when using apps collaboratively. The quality of thinking evident when students work together on scenario-based and problem forming/solving tasks using content-builders was significantly superior to that displayed when they were required to use them for lower level consumption or mastery tasks.
- Gaining a greater understanding of the way students approach tasks using iPads. The research suggests students working together on learning tasks are able to benefit from certain features of the iPad. These include the device's flat, easily viewable display and the convenient editing capabilities of many apps that allow more than one student to observe and work on a task at the same time. This can support learning improvement, as group members, even if they do not have access to the keyboard, are able to identify errors or areas for change and improvement anywhere on the display. These changes can be easily actioned at any time using app tools like spelling, grammar and punctuation checkers, word pickers and so on, and other editing features. Students see the iPad's display in much the same way as an artist might view a canvas – they build their work progressively using the whole landscape, rather than working in a linear fashion as may have been the case when using pen and paper.

What questions should schools ask themselves when they are considering the impact of using digital technologies on student learning?

How 'impact' (or affect) can be evaluated across multiple domains - cognitive (academic), social and affective (attitudes, dispositions, values)? Traditionally we have tried to 'pin' technology contribution to academic only, and while this is important, digital technologies can also contribute to overall student development in other ways. Evidence needs to be gathered about affect across a wider range of student development foci, using new technology tools that provide information useful for schools for reporting and recording purposes. This could include display video and audio data useful for providing visible evidence of student thinking and learning progression over time, shared via e-folio or other online assessment systems. These data should be presented as valid evidence alongside test scores and other means of reporting student learning performance. Traditional assessments are good for measuring some things but they provide limited evidence of affect when it comes to learning with digital technologies.

When schools are considering embarking on initiatives such as BYOD or developing handheld-supported modern learning environments, in relation to assessing or collecting evidence of any affect on student achievement, I would suggest they consider:

- adopting a broad definition of student achievement that encompasses academic, social and affective outcomes, and collect assessment evidence against all three;
- using digital systems for recording, collating, reporting and communicating student work and progress with and through these devices. Many apps (e.g. ShowMe, Explain Everything) have built in systems that can do this;
- developing data and reporting systems that can be used to support digital assessment information (eg., e-folios). These data could be shared at interviews or used when collating information for OTJs, NCEA assessments etc.;
- redeveloping, if needed, curriculum, programme and pedagogical designs to reflect an emphasis on higher order thinking – this is the type of learning emerging technologies, if used well, are ideally suited to supporting

Read more about Garry's work in this Computers in New Zealand Schools article