Integrating ICT through Multimodal Discourse

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[There is a ] suggestion that one of technology’s main strengths may be in supporting students’ efforts to achieve rather than acting as a tool for delivery of content.

Tamin, et al. (2011)

What does 40 years of ICT in education research say?
Writing stories about mathematics using ICT

Over many years teachers have tried to integrate mathematics with other subjects.

My efforts have involved mathematics, creativity, ICT and language. Here are two examples from the past decade. In both projects students were using a version of Logo/MicroWorlds/Scratch.

Background – previous projects
Children drew a map of streets around the school. Using MicroWorlds they programmed the turtle to follow a path that was described in text and recorded as a voice-over.
Changes within constant modalities

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Previous project with MicroWorlds – 2a
Previous project with MicroWorlds – 2b
Previous project with MicroWorlds - 2
In these examples students were set specific tasks – even though there were opportunities for creativity and personalisation.

In the following example Grade 4 students [about 10 years old] were asked to write a story about a mathematical topic of their choice.
Diagram of research project

- Introduction
  - RPPS Multimodal discourse
  - Why and how?
- Project
  - Preparation
  - Task
  - Data collection
- Analysis
- Conclusions
  - What are the findings?
  - What is recommended?
- Summary
Writing stories about mathematics

- aim was to investigate whether primary school students showed mathematical understanding when creating an animated story
- participants were a Grade 4 class from a suburban public school
- participants had not used the software before
- for the research students had 4 lessons to complete their animated story

Background – why and how
It was decided to make the project appear to be a normal classroom activity

- all lessons were taken by the teacher
- one researcher observed some lessons
- all sessions but the last were in the classroom
- a storyboard was produced on paper
- at the start and at the end of sessions students were encouraged to discuss/question

Structure of the project
- paper-based storyboard
- students saved a version each session
- “finished” product
- audio recording of discussion/question times at end of each session
- video recording of computer room session
- video recording of students showing their stories to the class and answering questions

Data collection and analysis
Mixed numbers and Improper fractions – storyboard i
Mixed numbers and Improper fractions – storyboard ii

A group of kids came into Le' Resteraunt and ordered 4 pizzas.

They ate 3 6/8 slices of pizza altogether. 3 6/8 is a mixed number.
Students organise their files into folders classified in a way that is meaningful to them. Students explain the purpose of passwords for accessing files stored on networks. They follow simple plans and use tools and a range of data types to create information products designed to inform, persuade, entertain or educate particular audiences. They create information products to assist in problem solving in all areas of the curriculum. With minimal assistance, students use ICT tools to capture and save images. They use simple editing functions to manipulate the images for use in their products.
They make ongoing modifications to their work to correct the spelling of frequently used words and to rectify simple formatting errors.

They evaluate the final information product and describe how well it meets its purpose. Students make adjustments to their equipment and apply techniques that are ergonomically sound.
Record-keeping and assessment of work produced by students is difficult.

Is one modality a better representation of learning than another?

What is the balance between explicit modelling of thinking skills and forced use?

Many computer rooms are not designed for whole class plenary sessions.

Some issues facing teachers
This research and similar projects clearly show that teachers can engage students in meaningful learning activities that involve ICT.

It is not always clear to teachers how to assess the ICT component of student learning.

If ICT is to be truly integrated throughout the school curriculum, then it must also be integrated into pre-service ICT teacher education.

Concluding thoughts
Thank you for your participation through probing questions and creative comments!

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