Role of technology in promoting formative assessment practices in science and mathematics classes

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Presentation overview

- Introduction to FaSMEd project
- The characteristics of professional development
- Activities undertaken
- Framework for analysis
- Online learning community
- Professional development analysis

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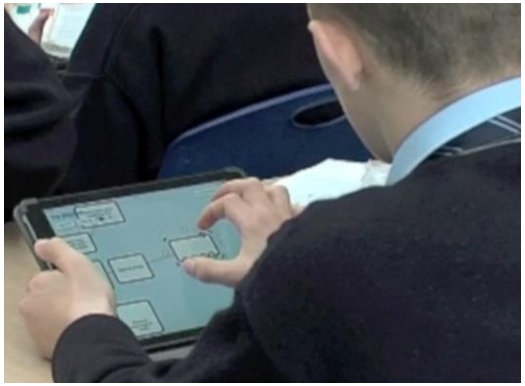

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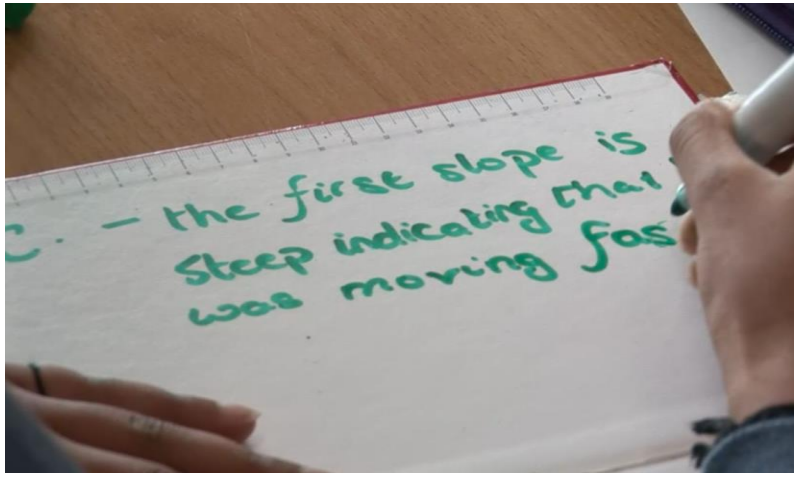
Raising Achievement through Formative Assessment in Science and Mathematics Education (FaSMEd)



Sessions with Teachers

CPD focused on the following aspects of formative assessment:

1. Building on prior knowledge and feedback
2. Identifying and responding to conceptual difficulties
3. Improving questioning
4. Increasing student collaboration
5. Students as assessors

Focus on Technology

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Key characteristics of the CPD programme

1. Workshops were interactive and activity-based.
2. Workshops focused on pedagogical practices to enhance student learning.
3. Key readings were provided for participants:
   - to engage with research underpinning the pedagogical practices
   - to promote reflective professional enquiry.
4. Participants were encouraged to share practice in both a formal and non-formal way, to encourage collaboration focused on learning and teaching.

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Key characteristics of the CPD programme

5. Workshops were tailored to suit the needs of the participating schools.
6. Participants were encouraged to think and plan how they could develop formative assessment, to build on existing practices, and to explore new practices using a *plan, do* and *review* cycle, promoting reflective enquiry.
7. Participants were encouraged to discuss FaSMEd classes with their students and to be explicit on formative assessment skills.
8. Participants were encouraged to view each other's practice and to give feedback so as to promote mutual respect, trust and support.

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Activities


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Students Working Collaboratively
Science Toolkit
Activity 4
Heart Rate Inves
Maynooth University
National University of Ireland Maynooth
FaSMEd
Identifying and Responding to Conceptual Difficulties
Science Toolkit
Activity 2
Insulation
Maynooth University
National University of Ireland Maynooth
FaSMEd
nts as Assessors
and Maths Toolkit
hic Organisers

Activities

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Identifying and Responding to Conceptual Difficulties

Science Toolkit

Activity 2

Insulation

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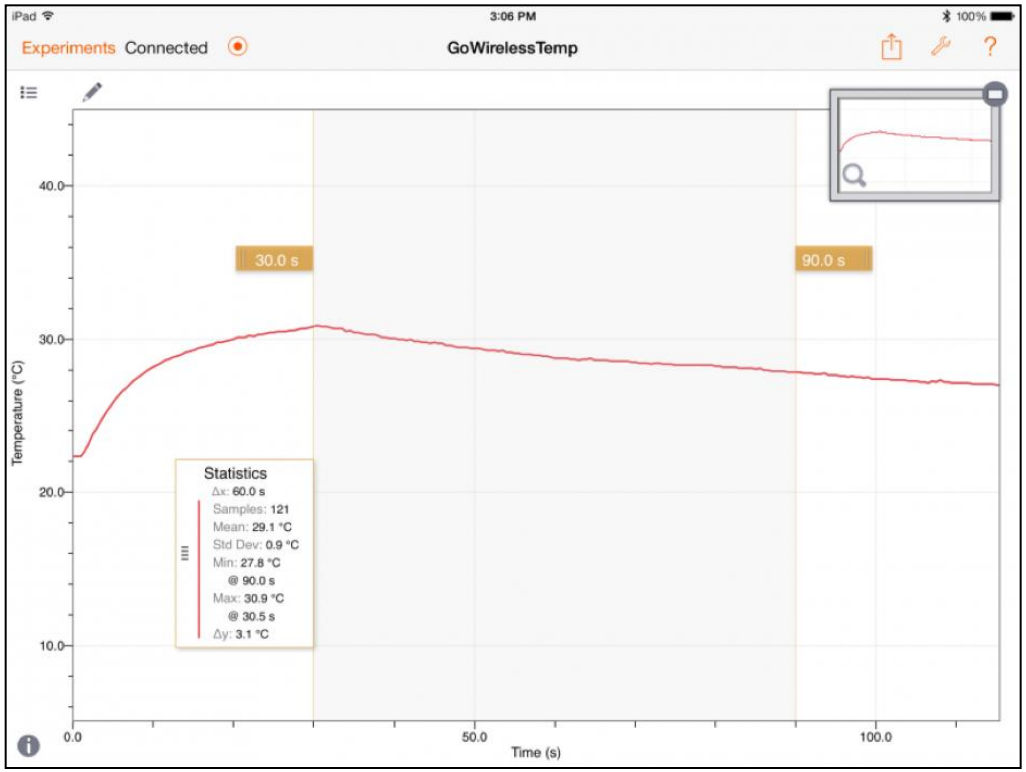


Framework for analysis

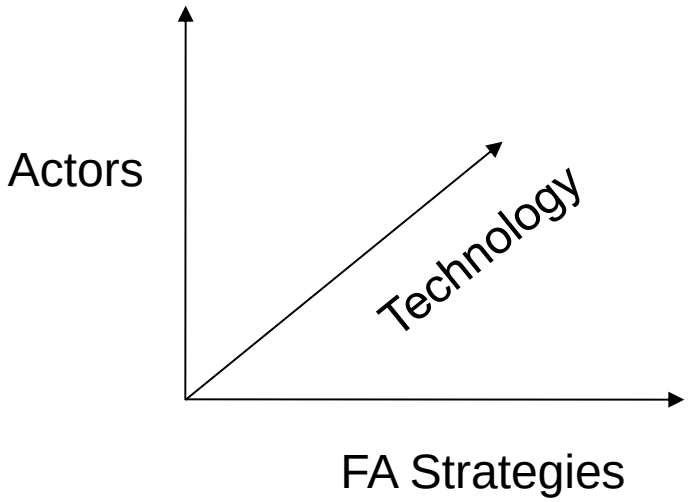
- From a 2D model...

<table>
<tr><th></th><th>Where the Learner is Going</th><th>Where the Learner is Right Now</th><th>How to Get There</th></tr>
<tr><td>Teacher</td><td>Clarifying learning intentions and sharing criteria for success</td><td>Engineering effective classroom discussions and tasks that elicit evidence of learning</td><td>Providing feedback that moves learners forward</td></tr>
<tr><td>Peer</td><td rowspan="2">Understanding and sharing learning intentions and criteria for success</td><td colspan="2">Activating students as instructional resources for one another</td></tr>
<tr><td>Learner</td><td colspan="2">Activating students as the owners of their own learning</td></tr>
</table>

Framework Relating Strategies of Formative Assessment to Instructional Processes
(Wiliam and Thompson, 2007, p. 63)

Framework for analysis

- … to a 3D model:
  - The assessors(teacher, student, class or peers)
  - The formative assessment strategies
  - The functionality of technology



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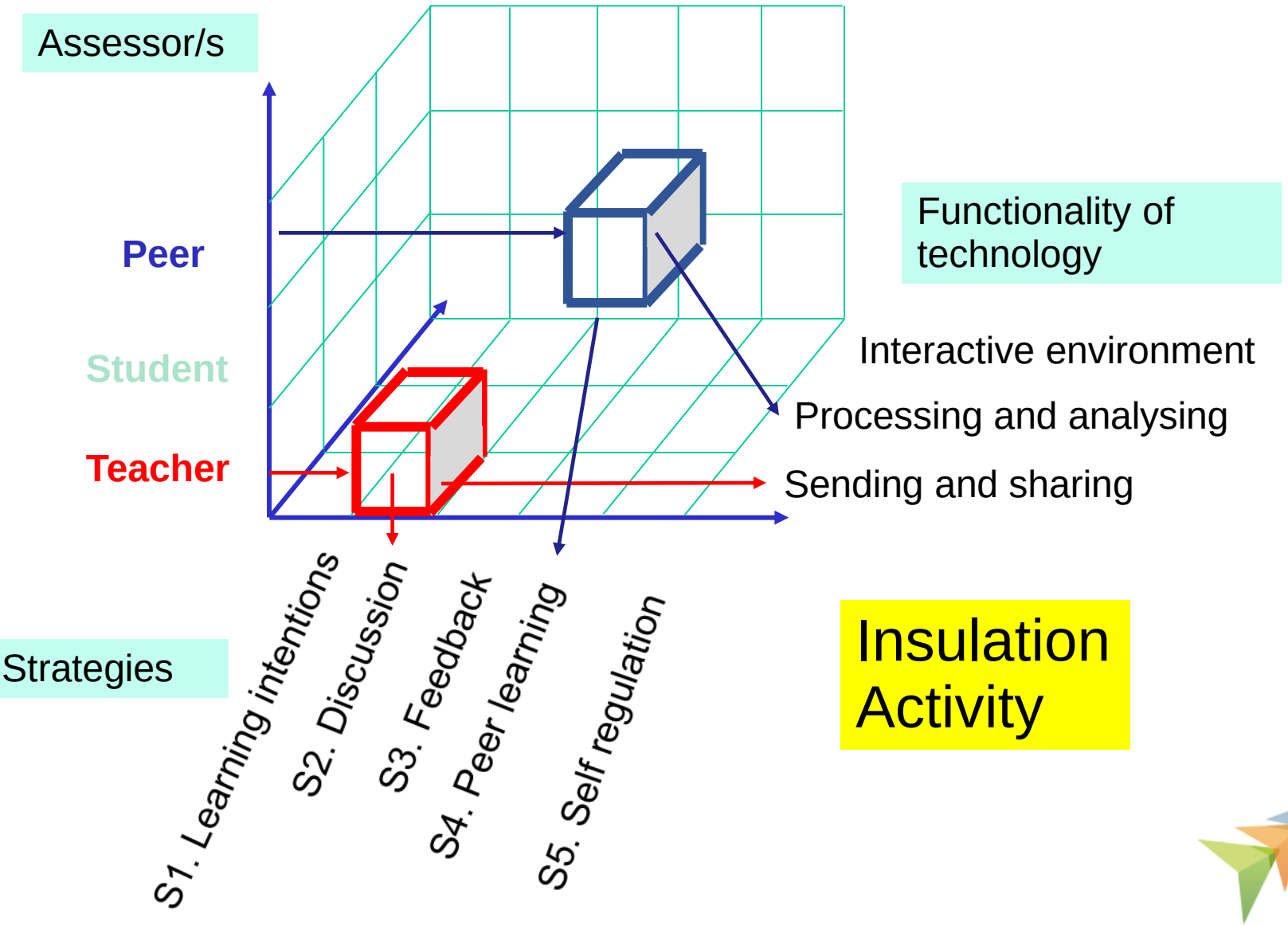
Assessor/s
Peer
Student
Teacher
Functionality of technology
Interactive environment
Processing and analysing
Sending and sharing
Strategies
S1. Learning intentions
S2. Discussion
S3. Feedback
S4. Peer learning
S5. Self regulation
Insulation Activity
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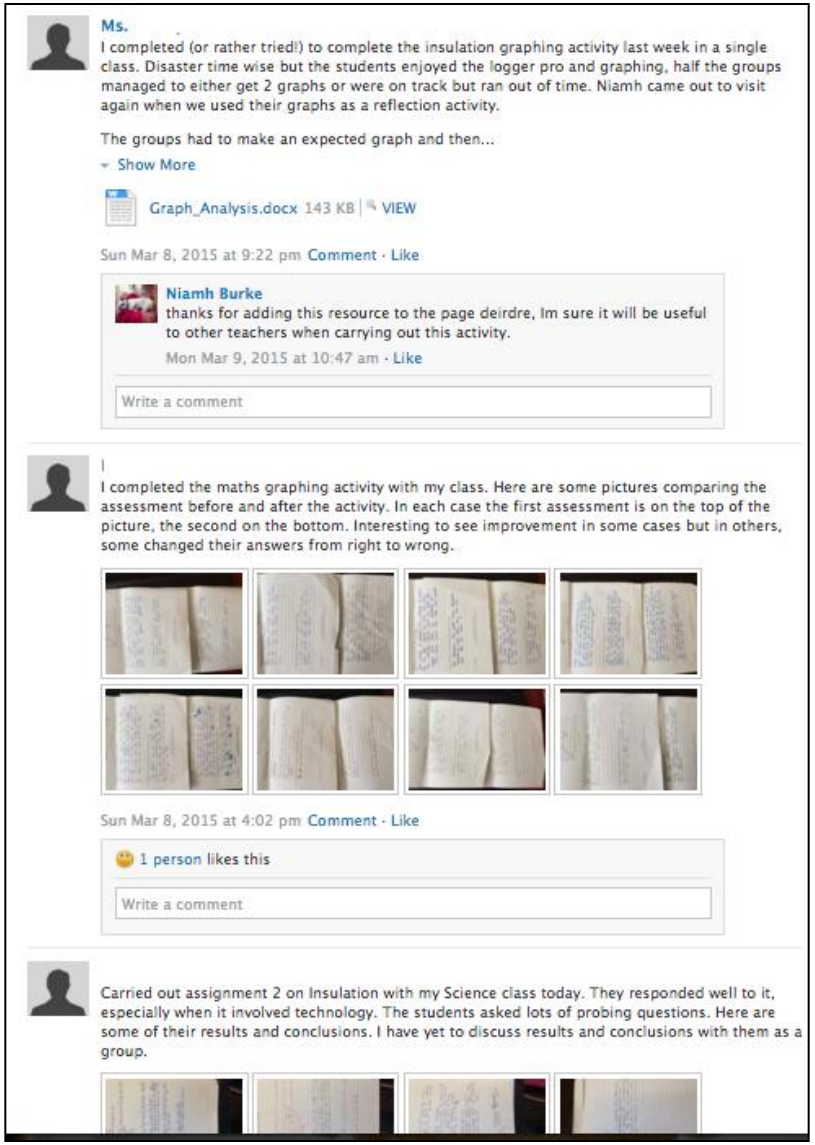
Online Learning Community



schoology

Between CPD sessions teachers shared their reflections and student work on Schoology. This sharing of practice between sessions encouraged peer support and professional sharing.

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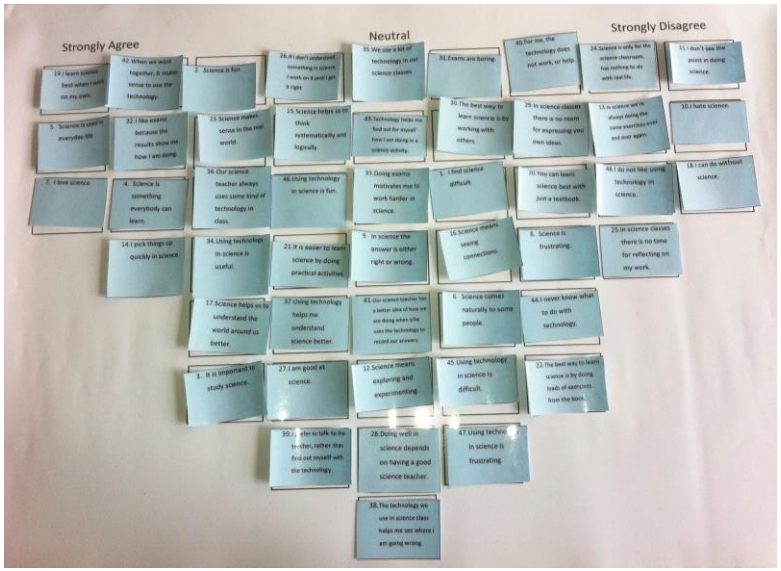
Data collection

1. Semi-structured interviews with teachers at the beginning and end of the research.
2. Semi-structured interviews with students at the end of the research with the focus on a Q-Sort activity .
3. In-class observation of formative assessment methods;
4. Video data analysis of recorded in-class curricular/formative assessment activities.
5. Questionnaires collected from all students.



Evaluating the Professional Development

Lipowsky & Rzejak (2012) state that CPD activities can be effective on 4 different dimensions:

1. The acceptance of the CPD activity among the teachers.
2. The effects that the CPD had on the professional competencies of the teachers.
3. Consequences for the teacher's actions in the classroom.
4. Changes in the students' achievements.

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Thank You!

For more information on the **FaSMEd** project please contact:

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