



Role of technology in promoting formative assessment practices in science classes

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France and Ireland



FaSMEd

Presentation overview

1. Introduction to FaSMEd project
2. Framework for Analysis
3. Examples from France
4. Examples from Ireland
5. Evidences - findings



FaSMEd

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

This three year, €1.9M project, concluding 12/16

Working with partners across eight countries, researchers will look at how technology can be used in formative assessment by teachers to help raise attainment levels among students.

In each country this involves researchers working with a cluster of schools with a focus on the use of FA and technology to improve interactions in the classroom.

FaSMEd partners are:

- University of Newcastle Upon Tyne, UK - Coordinator
- The University of Nottingham, UK
- Ecole Normale Supérieure De Lyon, France
- Maynooth University, Ireland
- University of Duisburg-Essen, Germany
- University of Turin, Italy
- University of Utrecht, The Netherlands
- African Institute for Mathematical Sciences Schools Enrichment Centre , South Africa
- University College of Trondheim, Norway

Framework for analysis

- Formative assessment is considered as a teaching method where:
“evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.”
(Black & Wiliam, 2009, p. 7)

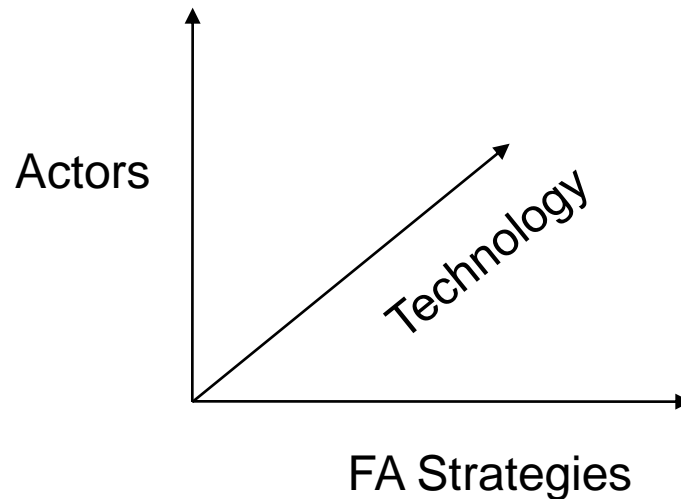
Framework for analysis

- From a 2D model...

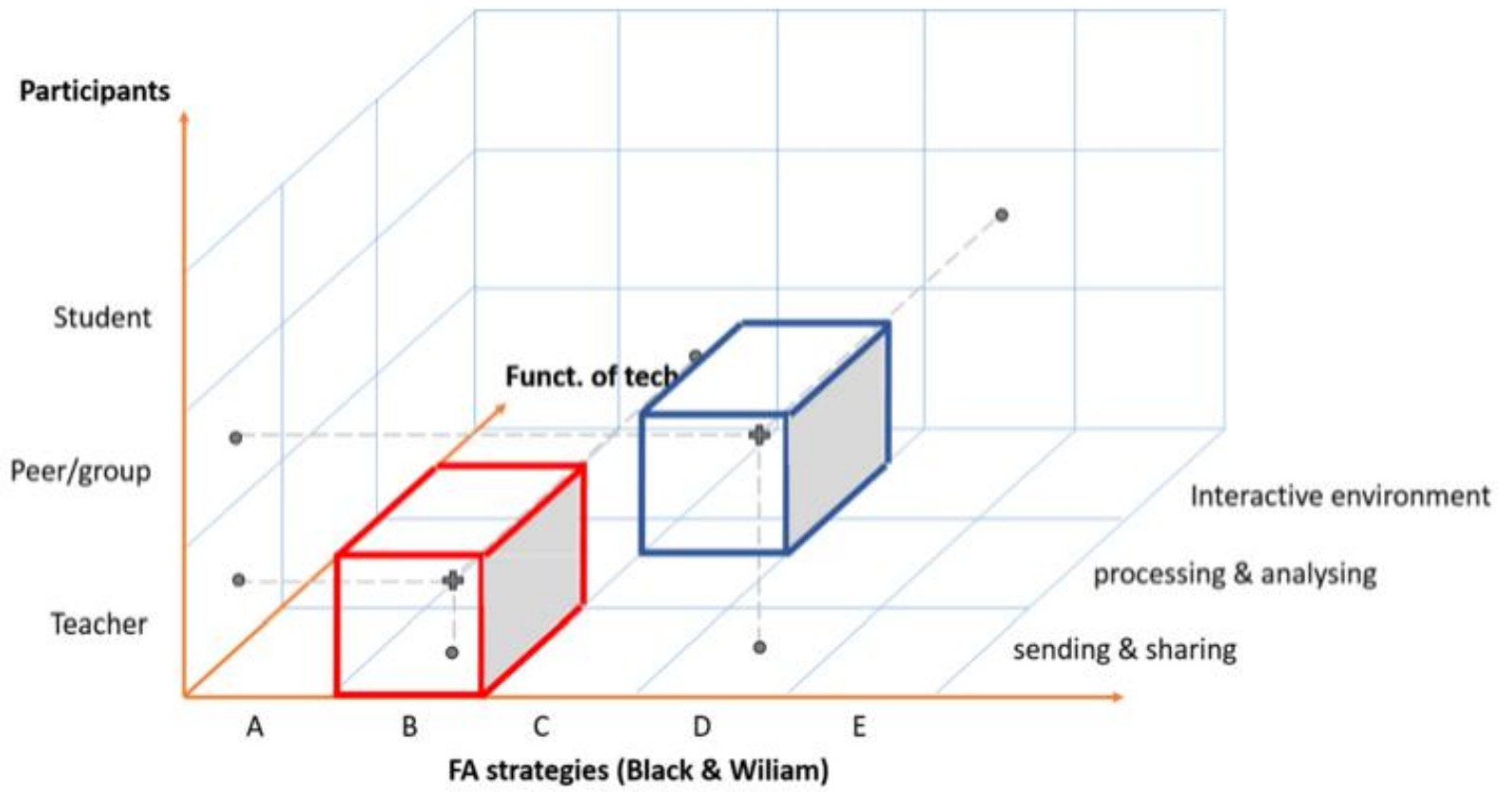
	Where the learner is going	Where the learner is right now	How to get there
Teacher	1 Clarifying learning intentions and criteria for success	2 Engineering effective classroom discussions and other learning tasks that elicit evidence of student understanding	3 Providing feedback that moves learners forward
Peer	Understanding and sharing learning intentions and criteria for success	4 Activating students as instructional resources for one another	
Learner	Understanding learning intentions and criteria for success	5 Activating students as the owners of their own learning	

Framework for analysis

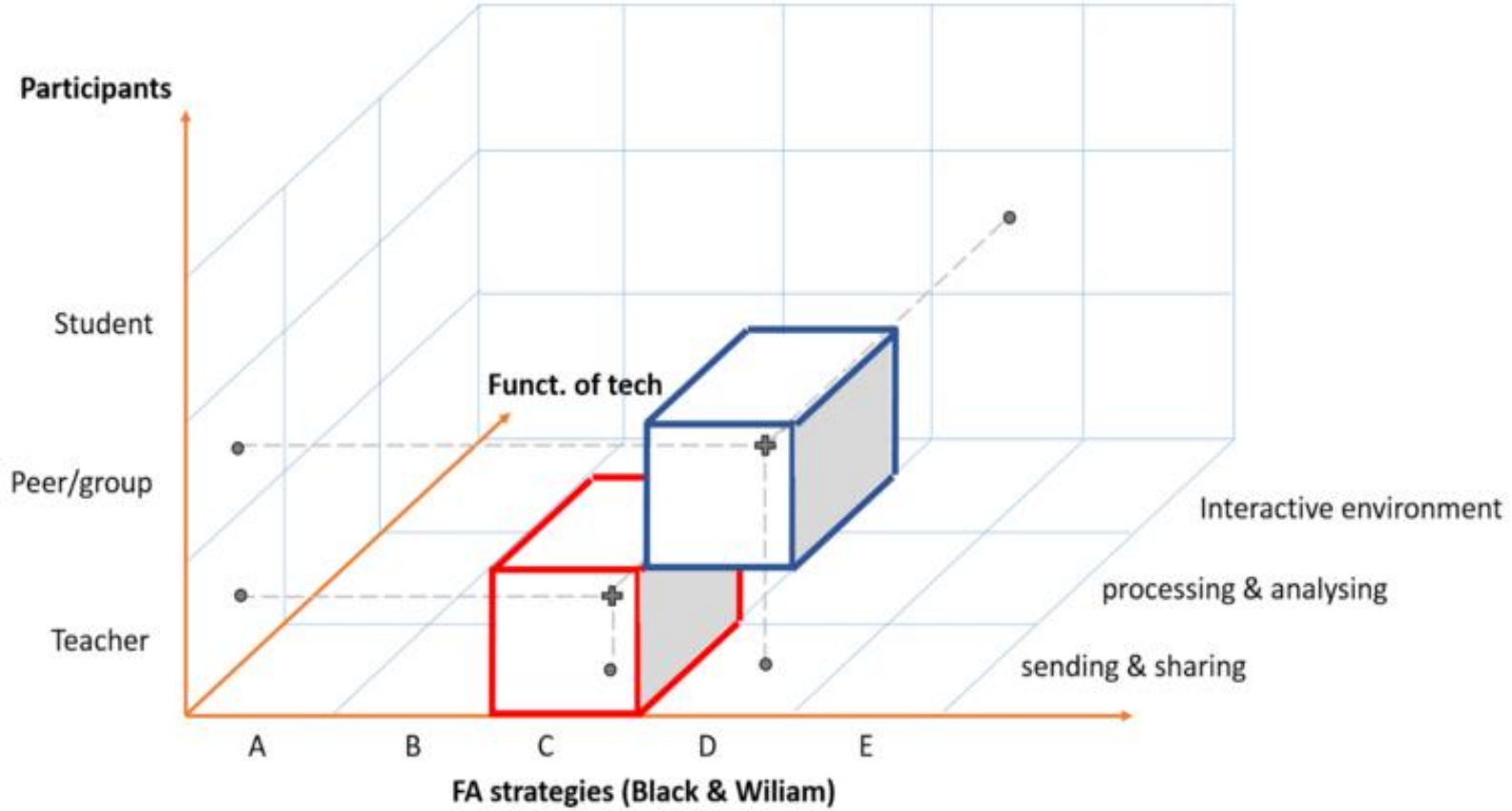
- ... to a 3D model:
 - The actors (teacher, student, class or peers)
 - The formative assessment strategies
 - The properties of technology



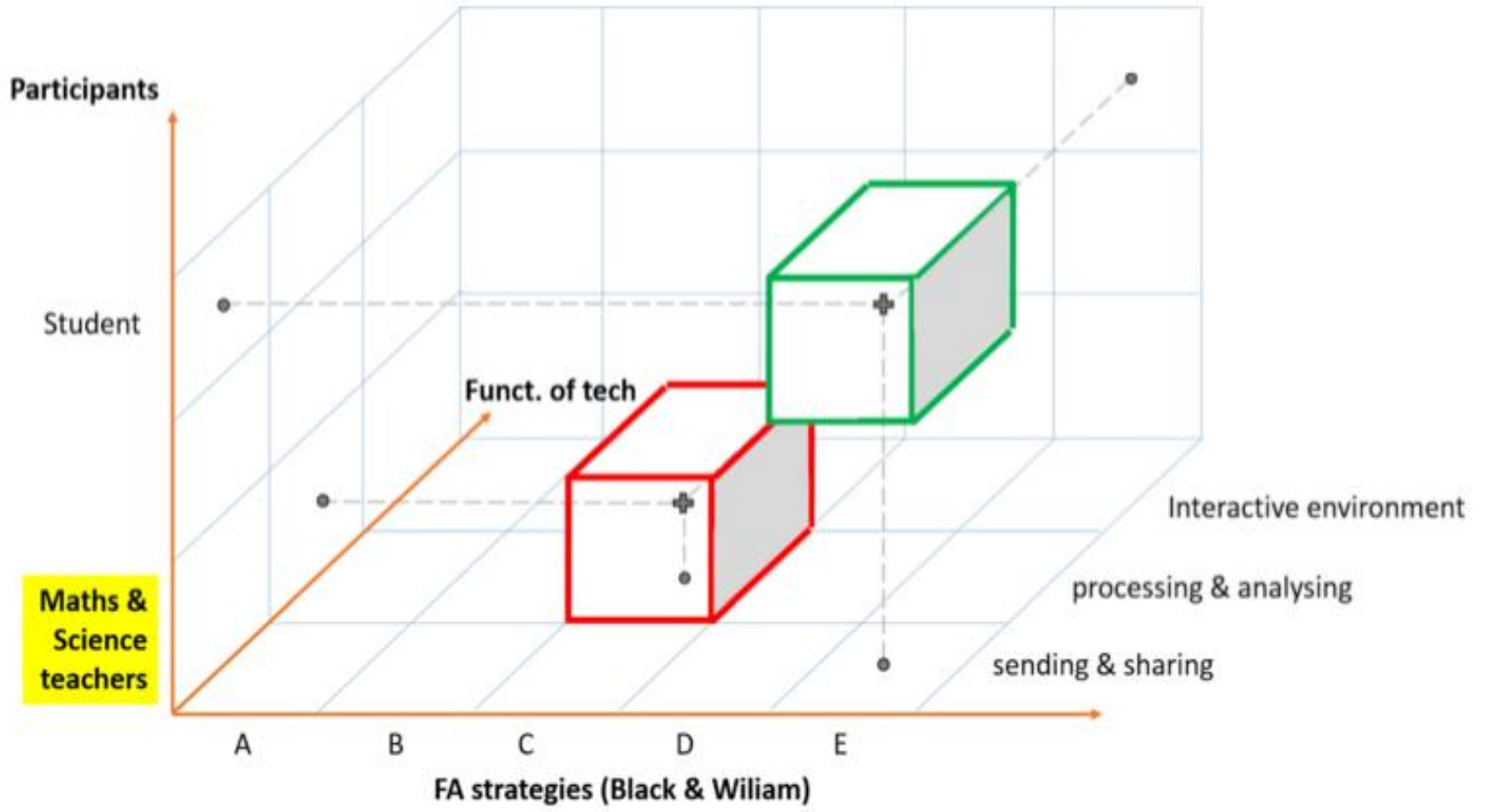
Session 3
maths



Session 8
physics



Session 9
physics



Formative assessment and technology in France



Clickers (Student response system)

Beamer

Tablets

One Note

IWB

Maple TA

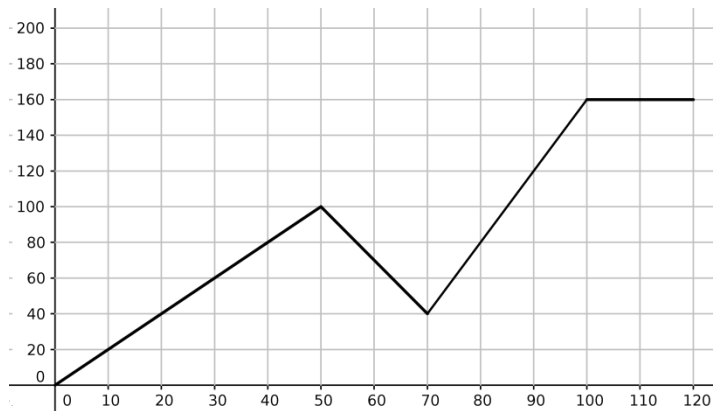
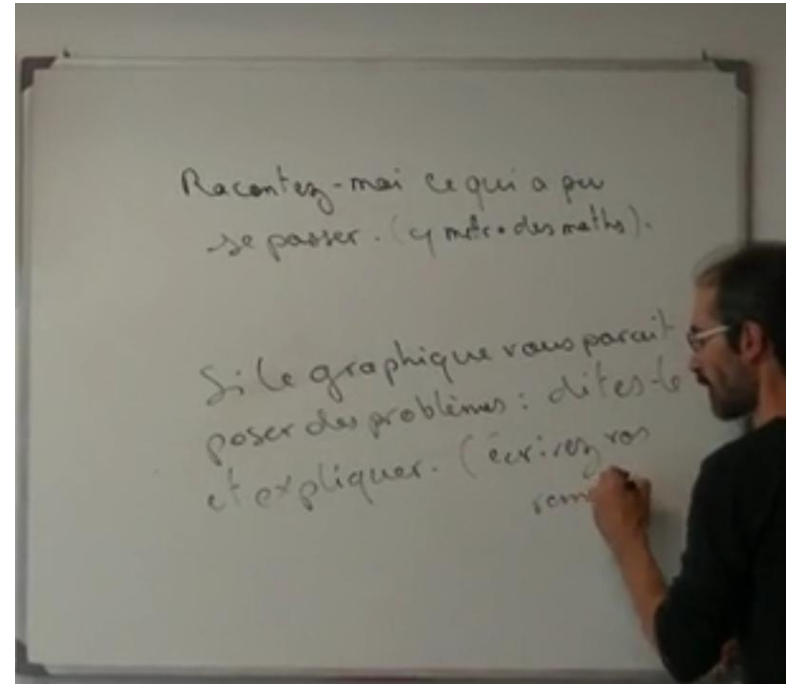


Interactions with teachers

- Different contexts : one school is 200km far from Lyon, the others are in the suburbs
 - Several 3-4 days visits following the class
 - Short meetings with teachers
- Journal
- Interviews after the lessons
- Questionnaire about teachers' background
- Observations : videos and pictures
(all videos available for research use on demand <https://ife.ens-lyon.fr/fasmed/>)

Case study 1: Thomas and his grade 9 maths class

- School context : low secondary school of a small town in South-East of France (Gap)
- Grade 9 class (students' age: 13-14),
- composed of 22 students with an average school level



Time-distance activity

Case study 2: Lisbeth and Thomas and their Physics and maths grade 7 class

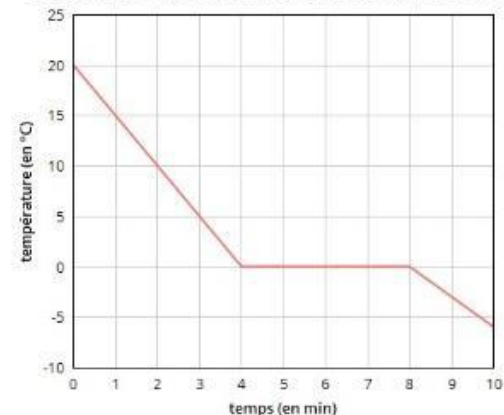


School context : located in a disadvantaged area of the suburbs of Lyon

Grade 7 class of students (11-12 years old) with an average school level in the context of this school and a great heterogeneity

Time – temperature activity

Evolution de la température en fonction du temps



Irish case studies



Interactions with teachers and students

Professional development sessions to plan and review lessons

Lesson observation - video and field notes

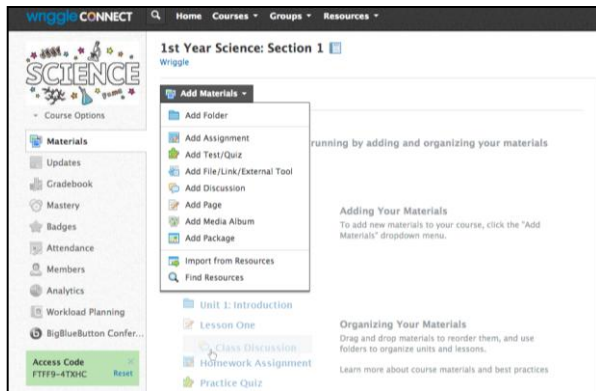
Interview with teachers pre and post intervention (December 2014 and May 2015)

Interview with students pre and post intervention (December 2014 and May 2015) including a Q-Sort activity

Student questionnaires distributed to all participating students in May 2015

Formative assessment and technology

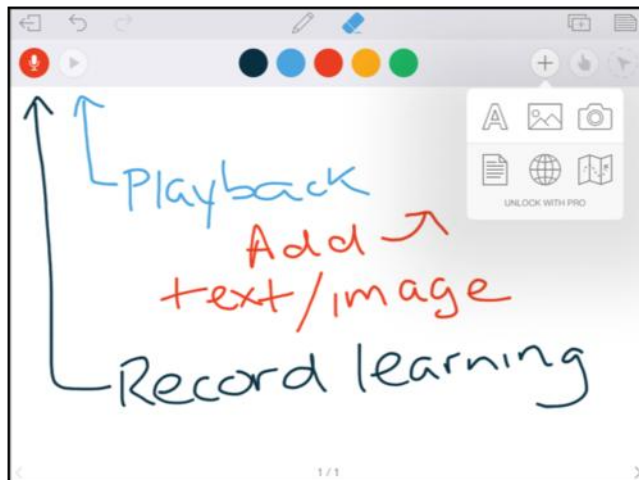
Online Learning Community



Logger Software



Educreations



Popplet

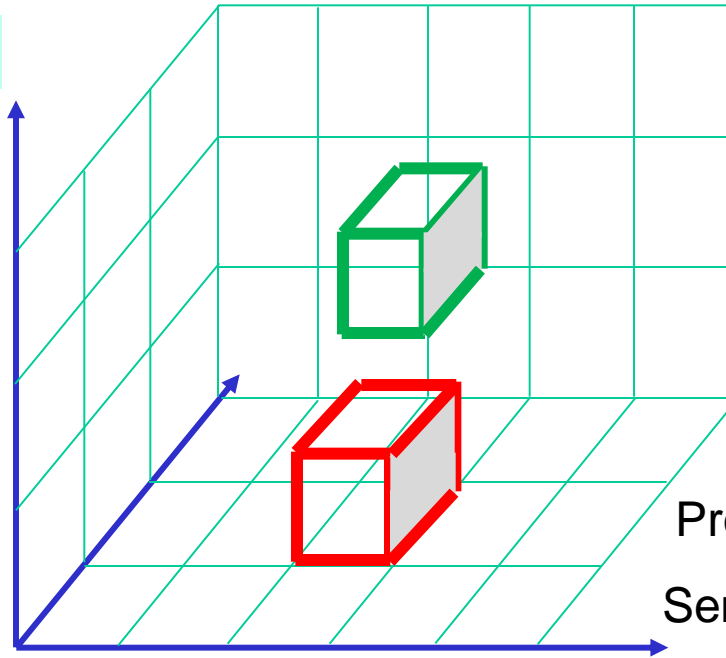


Assessor/s

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

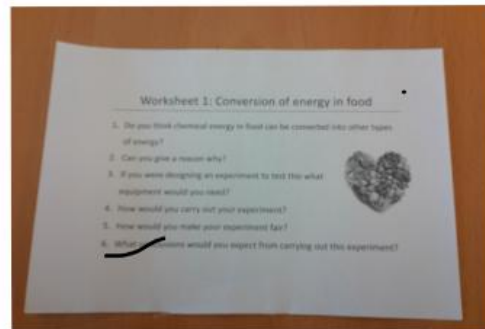
S5. Self regulation

Using
Educreations in
investigations in
science

Using *Educreations* in investigations in science

Worksheet 2

- Log in to [educreations](https://www.educreations.com)
 - msmooneympps@gmail.com
 - Science
- Complete worksheet 2
 - A's read the questions
 - C's login and save the video
 - B's and D's write the answers



Fe

③ You might need a treadmill and Lucozade Sport.

④ Get on a treadmill for 10mins then pause then drink Lucozade Sport. See the amount of energy it gives you. ⑤

① Yes

② Chemical Energy can be transferred into a different energy to create adrenaline from a sugar rush.

Schoology

06A Science: MPPS • Discussions

Insulation experiment using iPads

Due: Friday, February 13, 2015 at 11:59 pm

In your pairs please leave both of your names and answer the following questions:

1. Write 2 things you enjoyed about the experiment
2. Write 2 things you have learned from the experiment
3. write 1 thing you would change to make the experiment better

Posted Wed Feb 11, 2015 at 9:57 pm

Filter by user ▾

There are no discussions

Rich text editor: B I U [bulleted list] [numbered list] [link] [undo] [redo]

Navigation menu: Course Options, Materials, Updates, Gradebook, Mastery, Badges, Attendance, Members, Analytics, Workload Planning, BigBlueButton

Science: Rang Gormley
Celbridge Community School

All Materials

- Test 1
- The Skeleton
- Living Things
- States of matter
- Elements Compounds and mixtures
- The Circulatory System
- Respiration
- Energy
- exam questions.pdf
- Measurement
- Digestion
- Digestion Homework

Navigation menu: Courses, Materials, Updates, Grades, Members

Course list: French: Rang Gormley, Geography: Rang Gormley, History: Rang Gormley, Home Economics: Rang Gormley, Irish: Rang Gormley, Mathematics: Rang Gormley, Music: Rang Gormley, OLE: Rang Gormley, Physical Education: Rang Gormley, Science: Rang Gormley, Technology: Rang Gormley

06A Science: MPPS
Wriggle

Upcoming ▾

Viktorie Zelinska

Experiment by Pierce, Viktorie, Darragh and Itamar
Conclusion: We have successfully found out that the non insulated cans graph was steeper than the insulated cans. The lowest point the non insulated can reached was 64.9 degrees Celsius. The lowest point the insulated can reached was 74 degrees Celsius.

Thu 12 Feb 10:16 • Like

Comment... Post

Yvonne Greavy

Our experiment
Maya, Jade and Yvonne
We successfully measured the temperature of an insulated can and a non insulated can. We plotted them on graphs and it showed that the insulated can kept the heat of the boiling water in for longer. The end temperature of the insulated can was 79.2 degrees celsius and the end temperature of the non insulated can was 69.3 degrees celsius



Mr. Dixon

Some pictures of the updates from my schoology page



Tue Mar 10, 2015 at 10:35 am Comment · Like



Ms. Mooney

Here are some of the pre and post assessment sheets from the insulation task.



Tue Mar 10, 2015 at 12:52 am Comment · Like



Laura Guinan

Hi! I completed the Maths graph activity and here are some of the results. Before we started most of them saw the graph as a picture and if it went up Tom was walking fast and down was slow or else he was walking up and down a hill. Only one mentioned the distance from home on the axis when we discussed it initially. The kids responded well to the activity. They took a few minutes to get into...

Show More



Rang Gormley

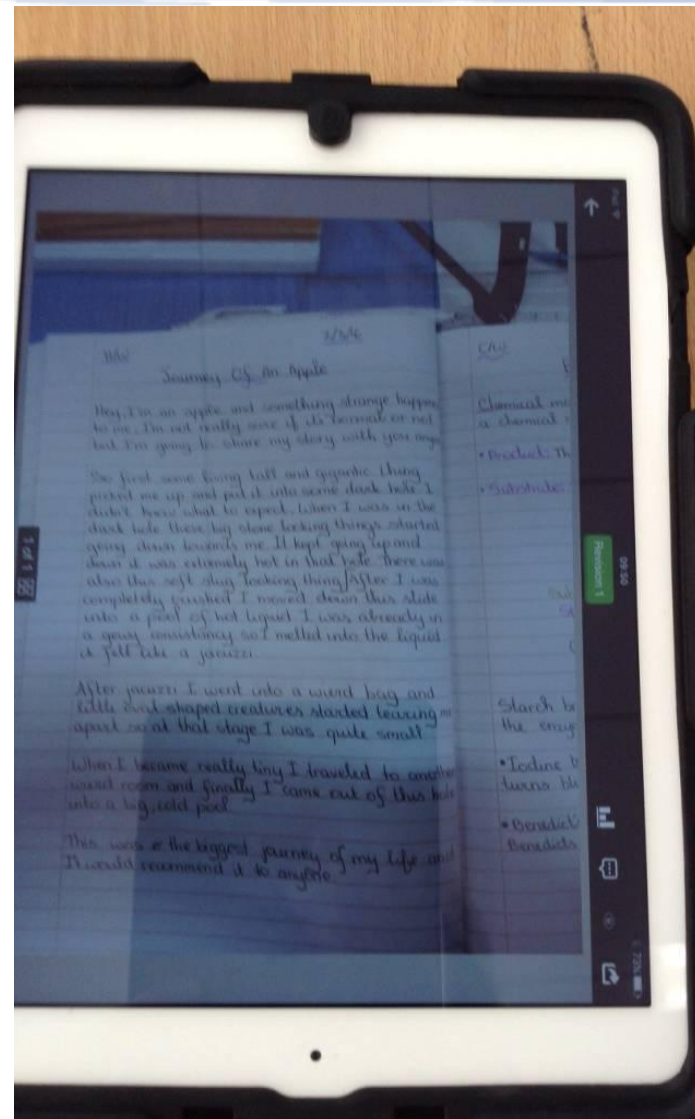
Energy Presentation

No Revisions



Alisauskas, Zigmus

Criteria	Rating	Rating Legend			Pts	Feedback
		4	3	2	1	
		Excellent	Good	Satisfact...	Needs I...	
Presen...	4	3	2	1	3	
Content	8	7	6	5	8	
Questi...	8	7	6	5	7	
Submi...	4	0			4	
	Submitted	Not sub...				



Journey of an Apple

Hey, I'm an apple and something strange happens to me. I'm not really sure if its normal or not but I'm going to share my story with you guys.

The first some thing tall and spindly thing picked me up and put it into some dark hole. I didn't know what to expect. When I was in the dark hole these big stone looking things started going down towards me. I kept going up and down it was extremely hot in that hole. There was also this soft slug looking thing. After I was completely crushed I moved down this slide into a pool of hot liquid. I was already in a gross consistency so I melted into the liquid. It felt like a juice.

After juice I went into a weird bag and little ball shaped creatures started tearing me apart. At that stage I was quite small.

When I became really tiny I traveled to another weird room and finally I came out of this hole into a big acid pool.

This was so the biggest journey of my life and I would recommend it to anyone.

Chemical...

• Protein: Th...

• Substrate:

Starch is the energy

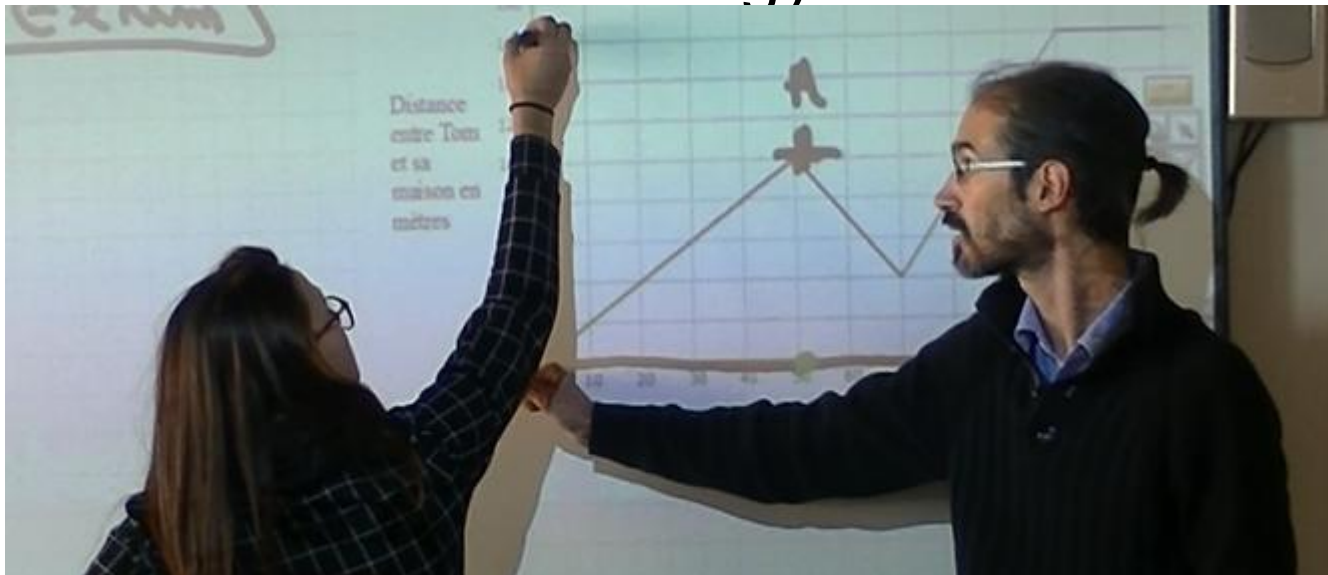
• Iodine turns blue

• Benedict's Benedict's

Evidences - findings

Both case studies highlighted that technology isn't a necessary condition for implementing FA strategies, but an *astounding accelerator* or *amplifier* of FA strategies.

Students had a very positive attitude to using technology.



Evidences

The dynamics within the three dimensional model show:

- the technological property of “sending and sharing” can be observed in four different FA strategies.
- “processing and analysing” data leads teachers to clarify and share their teaching intentions and the criteria for success as well as to activate students as instructional resources for one other.

Finally technology helped teachers to enroll in a complete FA process.

Evidences

The technology provided useful data and an efficient means of communication

The success of the FA strategies was largely dependent on the skills of the teacher in anticipating misconceptions, selecting appropriate topics for discussion and generating purposeful discussion through effective questioning.

Questions

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*Toolkit will be available on the FaSMEd
website....soon!*