Case Study 1: Maria, Lithe Secondary School

There are two sections in this case study:

A. The Case Study
B. Deconstructing this case study

Section A. The Case Study

Maria is a geography teacher and has been working at Lithe Secondary School for about 12 years.

Background

The school is on the outskirts of a large market town and has approximately 950 students on roll. In the last six months, the school has been running a 'bring your own device' (BYOD) policy and nearly all of the students in Maria's Year 7 group have either a tablet computer or a 3G mobile phone. Maria herself was given a tablet computer (mini iPad) last Christmas by her wife, but other than using it for emails, downloading recipes and surfing the net, she has not really explored how to use it for teaching or professional development.

In talking to other members of staff it seems that it is only the English department who are using mobile devices and this is mainly for creative writing and largely because one of the newly qualified teachers (NQT) is something of a technical wizard. However, spurred on by having an iPad herself, she decides that she is going to have a go and try to do something with the two Year 7 groups she teaches.

Pedagogical Focus

After the Easter break the groups are due to explore the idea of Plate Tectonics. Normally, she teaches this topic using Keynote and images on a series of slides to demonstrate what happens as the plates move apart or come together. The last slide is a quiz to check student understanding. However, the Keynote and quiz are a bit boring and she suspects not terribly engaging for the students. Her son has told her that there is an 'app' called Videoscribe that she can use to create videos that explain processes.

Over the Easter vacation she decides to have a go at making one of these videos to see if she can make her lessons more interesting and get the students to actually use the mobile devices they bring to school. Having followed the simple guide that accompanies the app, Maria created her video on Plate Tectonics and then used another app called Book Widgets, to create a test to see what the students had understood. After Easter, she used the first lesson to introduce the subject area, showed the video then got the students to do the test using the Book Widget.

Research Question

Maria had read in a book about an approach called Action Research, which involves creating a research question that helps to address a real problem or challenge facing teachers in their classrooms. Having reflected on the way she had been teaching Plate Tectonics and realizing that she needed to change her approach in some way, she decided to use the cyclical approach of Action Research to help her trial some changes / interventions. She identified the following research question as a focus:

How can I make my teaching of key concepts in physical geography more engaging for my Year 7 students?

Cycles of Action and Data Collection

At the end of the first lesson after Easter, Maria uses a feedback sheet to collect students' views on the lesson.

Although students mainly said it was more interesting than the Keynote presentation she showed in other lessons and they liked doing a quiz on their tablets, there didn't seem to be any real engagement with the tablet as a learning device, which was the other thing that Maria was trying to explore.

Reflecting on this feedback she decided to turn the lesson on upside down. So with her second year 7 group who she was teaching later that week, she decided to give the activity of watching the video and doing the quiz, as homework – or put another way, she 'flipped the classroom'. She used the results of the previous test to explore misunderstandings during the lesson. She also set students the task of creating their own Videoscribe tutorial. She told them to pick a particular geographic area from a list on the board and then use Videoscribe to explain what was happening in that area to the rest of the class.

To gauge what the students thought of this approach, she used another Book Widget tool to collect feedback during the lesson and found out that they really liked creating their own videos. However, she was not sure that any more learning had taken place than had already been covered in her initial video and quiz.

After the Plate Tectonics topic, she was due to teach the students about mountains. With the students now familiar with the use of Videoscribe, she decided to be completely radical. With one of the year 7 groups she decided to start the lesson with a list of different mountain ranges. She got the students to work in groups of four and gave each group a different mountain range.

She then gave them all the following task:

"Using your mobile devices and the internet, books, Videoscribe, Book Widgets or any other tool you wish, you need to present this mountain range back to the class in two weeks time. You can use every lesson and every homework time to complete this task. The key question

is: How was this mountain range created? Tell us everything you can about it's past, present and possible future, including its role in the local environment, how it might or might not support life forms and anything else that you think might be relevant."

In her other year 7 group she taught as normal with Keynote and quizzes.

Data Analysis

Although Maria had been reflecting on what had been taking place all the way though the term, she decided to do a final round of data collection.

So at the end of the two week teaching block on mountains, she used a new tool she had come across called Survey Monkey. Using this she asked for feedback from the two groups on the lessons about mountains. The Survey Monkey tool allowed the quantitative answers to appear as graphs and from this she could quickly see what was working well and what was not.

The open ended questions where students responded in text, required her to read through and try to make some sense of what her students were saying. She did this by grouping answers into the following categories which she used to write her report:

- positive comments
- negative comments
- undecided comments
- suggestions
- a final category called other

Making Claims

Having analysed the data in this way, Maria decided to ask a colleague to read her report to see if they had any reflections on what she had found.

From the feedback she got and based on her own further reflections, she created a final report which highlighted some recommendations. She then decided to present the research back to her colleagues at a geography team meeting. Based on the success of this, her head of department suggested that she also present this work at a local TeachMeet, which she did after securing approval from her head teacher.

Conclusion

In reflecting on the research journey, Maria realised that although she had set out focusing on the use of mobile devices, this initial focus changed to enhancing the learning experiences, particularly the ability of students to take ownership of their own learning through problem solving. The focus changed then from the desire to use mobile devices to exploiting and experimenting with the pedagogical affordances of mobile devices.

Section B. Deconstructing this case study

Background

The scenario presented here is common in many classrooms. Teachers have access to mobile devices, but are not sure how best to employ them to enhance the student learning experience, so they carry out a series of ideas, trialling small changes over time to see what works and what doesn't.

The initial aim for this teacher was to try and make her Year 7 geography classes more engaging for the students by getting the students to use their own mobile devices more effectively. This case study presents a cycle of experimenting with new ideas, collecting feedback from the students, reflecting on this information and making changes over the course of four weeks of lessons with two Year 7 groups. This form or exploratory research or evaluation is often called Action Research although terms like Action Inquiry and Action Learning are variants of this methodology. Although there are many different types of Action Research they all follow a cyclical pattern.

Pedagogical Focus

During her first cycle of research, Maria simply wanted to make her lessons more engaging for students by using mobile devices. She tried to do this using two different strategies. The first strategy was by changing the way she presented content and the second strategy was by getting the students to pick up their mobile devices and start using them as part of the lesson.

Using the Action Research cyclical model she reflected on the first trial and from the data she collected and analysed she decided that she needed to make some further changes which included students working at their own pace outside of class and with their mobile device. Maria's pedagogical focus was little changed. She was still interested in getting students to use the their mobile device, but had begun handing more control or 'agency of learning' about the key concepts, over to the students.

Her second intervention meant that through access to the results of the quiz, Maria could tailor the following lesson in line with the students' learning needs. However, rather than seeing any great changes between cycles 1 and 2, she realised that if she really wanted her students to be more actively engaged in the learning process, she would need to radically rethink her pedagogical focus. So for the third cycle of her research, Maria decided to see if she could use the mobile devices to make the learning experience more personalised. This involved letting the students choose how they tackled the task, making sure the task was more realistic, building in more collaboration by encouraging the students to work in groups.

Using the cyclical process of action inquiry, this is how her pedagogical focus developed over the course of three cycles:

Cycle 1
Pedagogical Focus: making lessons more engaging for students through the BYOD policy
Actions: using apps and tools on iPads

Cycle 2
Pedagogical Focus: making learning more engaging for students by getting students to learn the content in their own time with the teacher focusing on students needs during the lesson
Actions: Students access content and quiz in own time. Teacher accesses quiz results in their own time and tailor real time lessons to what students still need to learn.

Cycle 3
Pedagogical Focus: student responsibility for learning by making tasks more collaborative, personalised and authentic
Actions: Students are set a task to complete, collaboratively over two weeks

Research Question

As mentioned earlier, this case study represents a piece of Action Research sometimes called Action Inquiry or Action Learning.

As it is exploratory in nature, requiring changes to be put into practice, the research question that drives the research or evaluation needs to allow for such changes to be explored. Unlike a more traditional research design this research is more likely to change during the course of the inquiry.

So for the first cycle, the key questions that drove the initial Action Research was:

Can using the BYOD policy help make my teaching of key concepts in physical geography more engaging for my students?

This question points to the idea of a change and as you will note from the description of the intervention, Maria did just that - using VideoScribe for her presentation and a Book Widgets quiz to test the students. Having reflected on what happened using the data collected and analysed for the first cycle, the research question was then refined to this single question:

Does asking the students to learn about key concepts in physical geography for homework make students more active and engaged learners?

Realising from a reflection of the data she analysed about this question that students were becoming more engaged in the task, she decided to see what would happen if she gave even more control over to the students. She refined the research question to:

Does handing over responsibility of learning about key concepts in physical geography to the students enable those students to become more engaged in the learning experience?

There were two key questions related to mobile devices that drove this Action Research project.

- *How can I utilize the BYOD policy to make my geography lessons more engaging for my year 7 students?*
- *Can the use of the mobile devices deepen the learning experience for my year 7s?*

Data Collection

Maria chose to collect two types of data. The first set were directly concerned with answering her research questions and thus consisted of questions about the learning experience of students. The teacher used feedback forms, collecting both qualitative and quantitative data.

The second set of data allowed Maria to see what had been learned by the students. This data did not directly answer the research questions, but allowed her to see if what the students said about their learning experience was in any way related to the learning itself. This checking of one set of data against another set of data is sometimes referred to as triangulation The data collection tool consisted of a test on subject knowledge and enabled Maria to find out what students had learned about the key concepts being covered.

Data Analysis

Using both types of data allowed the teacher to view the changes in two different ways. This is called triangulating the data. In other words, do both sets of data point to the same findings? If they do, then the findings are more likely to be correct.

Making Claims

Whatever the teacher found out in this Action Research cycle, can only really be applied to teaching Year 7 geography in this school. Students of a different age, or in different schools might react differently to the use of mobile devices in this way.

Action Research is very much located in the context in which it was carried out. Having said that, the findings will be of interest to other teachers and can act as a useful guide in how to trial different techniques to exploit and explore the pedagogical affordances of mobile devices to directly enhance student learning.