

Oxfordshire Teacher Uses Mapping Techniques to Teach ICT

David Williams is an ICT teacher at Burford School in Oxfordshire. Though traditional in many ways, the school is contemporary in its outlook and willingness to engage with the challenges of the new millennium. David has been exploring the power of using ICT-based mapping tools to teach the concepts and topics of ICT to both his GCSE and A' Level classes with fascinating results.

Concept maps graphically illustrate relationships between information. In a concept map, two or more concepts are linked by words that describe their relationship. A mind map is a visual representation of hierarchical information. Students follow a process of building a mind map, to represent an entire concept or an idea with branches of associated thoughts. These are used for different purposes in the classroom. For example, I use concept maps to portray the connections of different schemes of work within an ICT examination board, whereas I would use a mind map to show a specific topic such as communication. Ultimately though, both come under the category of visual learning tools and can be used for storing, processing, organising and presenting information graphically.

Having seen Inspiration® software, which allows users to create concept maps and mind maps, I could see straight away how this would help my students to plan, breakdown and brainstorm on a wide range of topics. I had used paper-based mapping as a technique to plan or explore ideas before, but Inspiration software took the concept of mind mapping to another level, eliminating the restrictions of space and allowing users to unleash their creativity and focus solely on their ideas. The functionality of Inspiration meant that students could pour all their ideas onto the page, reorganise them, link them up, and by transferring to the Outline View, have the satisfaction of seeing their ideas made into a structured story or argument. The

area for expression was expanded so that space issues did not get in the way of the thought process.

It was particularly important, especially in this scenario, that the software was easy to manage and intuitive. Inspiration really met these expectations; the concept of mind mapping delivered by the software was simple and effective.

Mind mapping helps students understand process in Project Management

Indeed, taking a creative approach to using ICT to teach ICT delivered great results for my students in many different areas of learning. Inspiration is ideal for planning and structuring ideas so that students can then go on to link together the different topics that we are covering. When demonstrating the elements of Project Management, for example, I used a mind mapping exercise as the vehicle for students to reflect on the links between the sections and the various risks if one section is behind schedule.

When teaching the stages of Project Management in ICT, a traditional method was undertaken explaining each step stage by stage as shown. (See Figure 1)

Analysis

Analysis is the use of processes for gathering basic information needed for the design.

Design

Design is the use of information gained from analysis to create an outline.

Development

Development is the building of the outline.

Implementation

Implementation is the actual use.

Evaluation

Evaluation is the assessment of the effectiveness of all aspects.

Figure 1—The stages of Project Management in ICT

It was when my students used a mind map in the context of this relational model, that further benefits became apparent. We started out by brainstorming all the possible elements required to make an ICT project successful and then we moved them around into the best order. (See Figure 2) By creating links between the stages we could emphasise the importance of certain parts being completed before the project could effectively move forward. We could even add notes which contained the real learning behind each element. (See Figure 3)

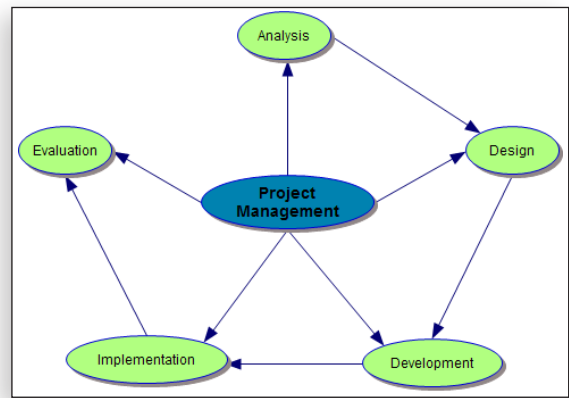


Figure 2—Williams' students used Inspiration to brainstorm the elements of a successful ICT project

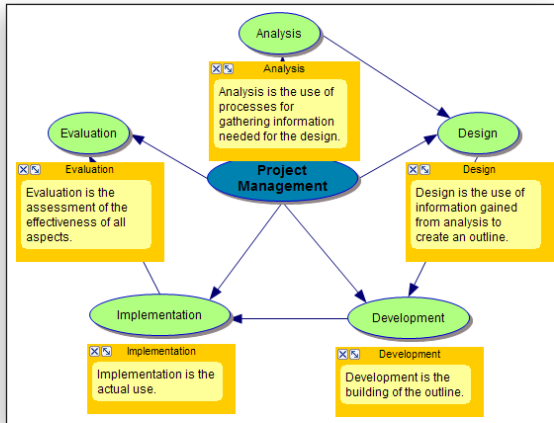


Figure 3—Adding notes in Inspiration helped students to understand and explain the process.

Mapping with Inspiration helps students explore and display complex processes

In the first year of the ICT A' Level my students undertook a project as part of their coursework where they will approach a local business and plan a design for a new website. They have planned this really well using Inspiration. In the second year we explored business processes and we undertake an ICT project on entity relationship diagrams for database structures. You simply cannot demonstrate this without drawing it — however, doing this by hand is time consuming and can be awkward and confusing for students. Using Inspiration though, the student can quite simply build up the structure by dropping the steps into nodes on the map which can be easily moved around and linked up to get the correct structure.

Students enhance and clarify their understanding as they represent processes and connections visually

Learning a radiant thinking method such as mind mapping helps students to understand how databases function and whether the relationships should be one to many or many to many. The process uses a simple representation of the same connections that exist in database in programs such as Access. These

maps therefore become visual representations of how databases actually work. The ability to demonstrate visually how a database is working creates a real knowledge of the subject.

Mind maps stimulate and extend more able pupils

Mind maps can be used with more able groups to ensure that all of the content in a lesson is delivered. Working collaboratively to create a mind map and then distributing the map is an effective way to ensure that all students understand the links between subjects. A more traditional approach does not necessarily show the links effectively.

Mind mapping takes students' learning beyond the focus subject area

Students are engaged in self learning as they have to use their own ideas, associations, and categories to create a mind map. The outcome is categorically more useful as they are creating their own mind map, not simply looking at one created by the teacher. Mind mapping strategies shift the roles of teacher in the instruction process. Mapping techniques transform me from being a transmitter of information to a negotiator, facilitator, and researcher for my students. However, maps also allow me to identify areas that are incorrect or that the student is struggling with. They instantly become obvious to me; allowing me to support them better with their learning. This supports the "Learning to Learn" agenda as stated in "2020 Vision: Report of the Teaching and Learning in 2020 Review Group".

Mind maps can also increase the efficiency of information retrieval as it is quicker to start at a central concept and work out logically until you find the information that you require, rather than work through lists or use an index (interestingly for students, this is the concept that underpins the way that websites work). Once you have created maps, they can be really helpful for review and revision as well.

Mind maps help students plan and organise writing

Fundamentally, however, Inspiration software is great for helping students to plan reports or essays, which are as much of a requirement in a subject such as ICT as they are in many other subjects across the curriculum. ICT has a real business aspect and this requires students to research, plan and write up their essays. For students that struggle with this process, Inspiration has been a really helpful tool which allows them to switch from the mapping view to a textual Outline View. This really aids those of my students that may struggle to get their thoughts down in a linear way. They can pour all their ideas onto the page, reorganise them, link them up and, by transferring to the Outline View, have the satisfaction of seeing their ideas made into a structured essay plan or report structure. Inspiration is also invaluable as students can take ideas that they have developed and transfer them straight to PowerPoint® without having

to write it all up again. This can be a great tool to help students with their presentation preparation.

What is clear to me is that mapping is a flexible, creative tool, but when enhanced by ICT, its power to aid the teaching of ICT as a subject is really valuable. In addition, I and my colleagues believe that once these skills are developed in one curriculum area they can be applied to all subjects to encourage creativity, to aid planning and to reinforce learning.

Further information:

David Williams has also undertaken research with KS2 students through to degree level who have special educational needs, into how Inspiration can support their learning. Burford School is impressed with the potential of Inspiration and has been working with twenty-five Teaching Assistants to support the learning of SEN kids through the school.



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