

Action research project

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Teaching and learning

Stockton
Riverside
College Bede
Sixth Form

Action research project 2008/9

Stockton Riverside College



Project title: Developing e-learning resources for AS Biology to meet the needs of learners

Summary: I completed this project in my dual role as Biology Subject Leader and Learning Development Manager. At the start of this project, I surveyed 45 learners studying AS Biology to explore their attitudes toward and experiences of e-learning. I concluded that learners' experience of e-learning in Biology was already positive, but that improvements could be made. In response to learners' needs, I created a wider variety of e-learning resources, gained permission for students to access You Tube, and developed a new AS Biology VLE (virtual learning environment) to provide better access to e-learning resources. From the results of a second survey, I identified which changes learners found most valuable and why. The overall conclusion is that e-learning resources engage and enhance learning, provided they are easy to access

and sufficiently varied to meet the needs of a diverse learner population.

Key words: e-learning, Biology, VLE.

The improvement needed: e-learning is an important part of the variety of teaching and learning methodologies used to enhance student learning. Or is it? At the start of my project, I had not measured how useful students actually find the e-learning resources produced for a new AS Biology course. Development of e-learning resources takes time: I needed to be convinced that time spent developing resources and time spent employing new technologies is time well spent.

I set out to find out whether learners find e-learning resources developed for AS Biology valuable, and what types of resources they find most useful and why. I also aimed to find out when students use e-learning resources (within lesson time,

or for independent study, or both), and to find out from learners what they think could be improved in terms of e-learning in AS Biology. My overall goal was to develop new e-learning resources to meet the needs of learners, and to avoid simply creating new resources in the belief that learners find them useful, with no evidence to support this claim.

Aims and objectives:

- to explore attitudes to e-learning for learners studying AS Biology
- to evaluate learner perceptions of the usefulness of e-learning resources.
- to develop new e-learning resources which are better placed for engaging students and enhancing their learning.
- to produce a set of recommendations to inform internal continuing professional development (CPD) and other further education (FE) providers regarding effective use of e-learning.

What we did

I surveyed 45 learners who were half-way through studying AS Biology (see Appendix 1 – e-learning Survey 1). The survey was designed to:

- find out how well current e-learning resources support learning
- find out when learners access these resources
- find out which types of resources learners value the most and why
- find out how e-learning resources could be better designed or better used.

Before learners started the survey, I explained its purpose. To help learners complete the survey, I also issued a summary of all the types of e-learning resources they had experienced during the course, supported by examples. The resources included both those used in lesson time and those available on the college's current VLE. Types of e-learning resources included animations; PowerPoint presentations; use of the electronic whiteboard; drag-

and drop exercises; online games; interactive quizzes and DVD/video clips.

Learners completed the survey anonymously. I analysed the responses to the completed survey to obtain both quantitative and qualitative data. Where responses to questions required comments, it was possible to categorise comments into similar groups of responses with similar themes, to provide additional quantitative evidence. A summary of responses to the e-learning survey 1 (including comments) is given in Appendix 2.

Following analysis of e-learning survey 1 results I concluded that:

1. learners are positive about e-learning: 53 % of learners find e-learning resources very useful and 47 % find them fairly useful. No learners considered them to be of little or no use
2. e-learning resources support learning in a variety of ways. The main benefits are in that they

aid understanding and recall and help learners to visualise information. They also provide interest and enjoyment. A typical comment was "they make lessons more interactive and interesting, and visuals can make things easier to understand"

3. all types of e-learning resource are useful to some extent, with Power Point presentations proving to be the most popular (identified as useful by 91 % of learners) and online games the least popular (identified as useful by 36 % learners)
4. it is important to use e-learning resources in lesson time (60 % of learners thought this was very important; 40 % thought it was fairly important). This aids learning in a variety of ways, giving a better learning experience, but also ensures that learners are aware of what is available on the VLE. One learner commented "I wouldn't think about them or know about them

at all unless I was shown them in class”

5. learners use e-learning resources mainly in lesson time (91 % of learners) or for revision in the run-up to exams (60 % of learners). Only one learner used the resources to consolidate learning after lessons
6. the majority of learners considered the VLE to be a fairly useful accessible store of e-learning resources (67 % learners), though some thought it very useful (15 %) and some thought it not useful (18 %).

The survey also invited to learners to make suggestions about ways of improving e-learning resources (taking into account types of resources used by other teachers or subjects, but under-used in Biology) and the VLE. These suggestions formed the basis of discussion for a focus group made up of eight learners who volunteered to join the group.

Taking into account the suggestions made in the survey, the group came up with the following recommendations to improve e-learning in AS Biology and increase use of the VLE outside of lesson time.

1. Give access to all lesson Power Points on the VLE. Learners find them very helpful to remind them of key points for each topic, particularly because they are visual and colourful.
2. Create more interactive games and quizzes. Students enjoy using these and do learn from them. However, “ready-made” online games are not always helpful as they are not tailor-made for their AS Biology specifications.
3. Use games, quizzes and other interactive resources in lesson time to show learners what is available on the VLE.
4. Give access to You Tube clips (currently blocked) as learners value their “bite size” and visual nature.

5. Create a Biology Blog or similar forum to ask questions or ask for help.
6. Improve the structure of the VLE, as resources are not well-ordered and therefore they are difficult to access and use.

Encouraged by the evidence that learners do value e-learning and informed by the recommendations of the focus group, I set about creating further e-learning resources for the next unit of study for AS Biology. I worked closely with the sixth form’s Learning Centre Manager to source interactive e-learning resources. I also pioneered use of a new VLE which was to be used by the sixth form in the next academic year.

To give VLE access to lesson Power Points, I converted all Power Points to flash movies using iSpring free software. These movies retain any animations in the original Power Point, and can be paused when desired by viewers. I created a wide range of e-learning games and quizzes using a variety of software

programmes (mainly free). Content Generator was used to produce a selection of “fun” flash games such as “Fling the Teacher”, “En Garde” and “Hoop Shoot”. An online game of Snakes ‘n’ Ladders was created using a programme made available by Oaklands College (with permission). A wide range of customised and differentiated games was created using eGames generator and online crosswords were made using Eclipse Crossword. The VLE also contained links to external websites (such as animations and simulations), exam questions and answers (word documents). Animated advice for revision was created using GoAnimate! A list of the relevant websites for animations and those used to create resources is given in Appendix 3.

I developed an AS Biology site using the college’s new VLE, organising the VLE in a much more structured way than was possible using the current VLE, with all resources categorised into sub-topics and each

resource given a brief but informative description (see screen shot, Appendix 4). All new resources were either used by learners in lesson time (particularly in revision lessons) or demonstrated to remind learners of their existence and accessibility. I sought permission to unblock You Tube from the college’s ICLT Development Manager, and this was granted. This enabled me to place relevant You Tube clips on the VLE, enhancing its appearance and topical nature.

Shortly after the AS Biology exam, all 45 learners were surveyed for a second time (see e-learning Survey 2 – Appendix 5). The survey was designed to:

- find out whether the new AS Biology VLE had improved learner access to e-learning resources
- find out whether learners valued the greater range of resources on offer
- find out which types of resources learners valued the most and why
- find out what other e-learning resources could be developed.

Before learners completed the survey, they were reminded of the main ways in which I had developed e-learning as a result of e-learning Survey 1. The survey required learners to rate the usefulness of e-learning resources placed on the VLE, including lesson PowerPoints video files; e-learning games; external resource links; exam questions and answers and You Tube links. Learners were also asked to rate the usefulness of the VLE and to make further suggestions for e-learning development.

Learners completed the survey anonymously. Responses were analysed in the same way as e-learning Survey 1. A summary of responses to e-learning survey 2 (including comments) is given in Appendix 6.

What we achieved

Following analysis of the e-learning survey 2 results I concluded that all the various e-learning resources and the new VLE were useful to the majority of learners, and therefore worthwhile. Comments were helpful in

elucidating the main reasons why learners find the various aspects of e-learning useful or valuable to support learning. The findings of the survey were discussed by eight learners who volunteered to join a second focus group.

The main conclusions drawn from the second survey and second focus group were:

1. 100 % of learners found flash movies of lesson Power Points either useful (67 %) or fairly useful (33 %). Many learners found them useful to revise or review learning, and identified them as easy to understand, clear and concise: “you can go over exactly what was said in the lesson”
2. 96 % of learners found flash e-learning games either useful (60 %) or fairly useful (36 %). 4 % never used them. Most learners identified these as useful for revision and checking learning. Many appreciated the “fun” aspect involved in using them: “doing something fun while learning instead of just

reading works for me”. Comments made it clear that different learners appreciated different games and activities. Whereas one learner found “Fling the Teacher” most useful for its “more challenging questions”, another preferred “the simpler ones focusing solely on biology such as crosswords; no distractions like a teacher being flung”

3. 82 % of learners found links to external resources such as animations and simulations either useful (42 %) or fairly useful (40 %). 18 % never used them. Some of the learners appreciated having “a different view of the same material” and found that these resources helped to understand or remember processes
4. 80 % of learners found exam questions and answers either useful (67 %) or fairly useful (13 %). 18 % never used them and 2 % did not find them useful. 20 learners stated that electronic

access is very important, mainly for giving exam practice and developing exam technique. A typical comment was “very important because it gives us an idea of what style of questions may come up and what is expected of an answer”

5. 62 % of learners found You Tube links either useful (33 %) or fairly useful (29 %). 36 % never used them and 2 % did not find them useful. You Tube videos provide visual and/or auditory stimulus: “they can summarise what we’ve learnt, or can be funny so they stick in your mind”
6. 100 % of learners thought the new VLE was either very useful (69 %) or fairly useful (31 %). They thought it was well-organised, easy to use and navigate, easy to access and appreciated the variety and range of e-learning resources made available to them.

The impact

As a results of carrying out this project, I now have

evidence that students find e-learning resources useful, and that time spent developing resources is time well spent. Learners have benefited from the project as their views have informed development of the new AS Biology and the kinds of resources it contains.

The “bottom line” is that in e-learning Survey 2, 96 % of learners rated the e-learning resources on the new AS Biology VLE as either valuable or very valuable. Staff have tried out at least one new idea.

We now work together as a sciences maths team and people are more willing to support each other.

Sessional staff have attended all the meetings (a first), and I have also held extra support sessions to help them with e-learning resources sample minutes (see appendices 6).

The student survey after the resource trial showed a significant improvement from an average score of 1.8 to an average score of 3.6 (out

of 4). The satisfaction of the students increased by 92 % (see appendices 5).

Your ARP and CPD

I have learnt that learners appreciate access to a wide range of e-learning resources. Overall, some are more useful and more used than others, but learner comments in both surveys and both focus groups made it clear that a diversity of e-learning resources is required to meet the needs of a diverse learner population. Regular exposure to e-learning resources in lesson time reminds learners of their existence. An easily accessible and well-structured VLE is key to the use of e-learning resources outside of the classroom.

Since creating the e-learning resources and setting up the new VLE, I have encouraged my Biology colleague to start adding their own sections and resources. Furthermore, the AS Biology VLE has already been demonstrated to my sixth form colleagues during a staff development week as an example of good

practice. The findings of this project will inform future CPD.

Products:

- e-learning Survey 1 (Appendix 1)
- analysis of e-learning Survey 1 - including learner comments (Appendix 2)
- summary of useful websites (Appendix 3)
- screen shot: structure of the new AS Biology VLE (Appendix 4)
- e-learning Survey 2 (Appendix 5)
- analysis of e-learning Survey 2 - including learner comments (Appendix 6).

Messages for other providers

The most important success factor in this project was to consult learners at every stage of the project, via anonymous surveys and focus groups. Surveys enable you to seek the views of all learners, whereas focus groups help to clarify any issues identified in such surveys. The project also highlights the benefits of pioneering e-learning resources on a VLE. A pioneer site is useful

to demonstrate to colleagues how a VLE subject site could be structured. Such as site also provides examples of the wide variety of e-learning resources which can be included on a VLE.

Future action:

- develop the discussion forum on the new VLE and encourage students to use the facility to improve communication between teacher and learners.
- continue work on the AS Biology VLE to organise and improve e-learning opportunities for the first half of the course.
- create an A2 Biology VLE to a high standard and along similar lines to the AS Biology VLE created for this project.
- report the project's findings to the sixth form's Learning Development Group initially. I will seek the group's advice on how the findings of this project and examples of e-learning resources would best be disseminated

cross-college through a CPD activity.

Provider profile

Stockton Riverside College (SRC) is a general further education provider. SRC merged with Bede College, a neighbouring sixth form college, in May 2008. SRC Bede Sixth Form is now a division of SRC, with approximately 420 learners. Most learners at SRC Bede Sixth Form follow level 3 academic courses (AS and A2 level) though a small minority of learners follow Level 3 vocational programmes or level 2 (GCSE) courses.

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