

Voices from The Field: Developing Employability Skills for Archaeological Students Using a Project Based Learning Approach

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ABSTRACT

Graduate employment statistics are receiving considerable attention in UK universities. This paper looks at how a wide range of employability attributes can be developed with students, through the innovative use of the Project Based Learning (PjBL) approach. The case study discussed here involves a group of archaeology students from the University of Central Lancashire (UCLAN) and their task of reconstructing and firing a small, early medieval clamp kiln. The employability skills and attributes are discussed, with reference to Yorke's Understanding, Skills, Efficacy and Metacognition (USEM) model of employability.

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INTRODUCTION

Within the current UK archaeology and heritage sector the competition for jobs is fierce and students need a complex set of skills and personal attributes to attract a potential employer. In the latest Institute of Field Archaeologists survey (Aitchison and Edwards, 2008, p.106) employers said as well as field skills, new entrants also needed experience in project management, people management and problem solving.

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DEFINING EMPLOYABILITY

In this paper, employability is a “a set of achievements – skills, understandings and personal attributes – that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy.” (Yorke, 2006, p.3). This definition moves away from merely listing key, core, or specific skills that students need to demonstrate (Hillage and Pollard, 1998) Dacre Pool and Sewell, (2007). Employability becomes a more complex and richer idea involving, “a mix of personal qualities and beliefs, understandings, skilful practices and the ability to reflect productively on experience.”(Yorke, 2006, p.13.)

Yorke’s USEM model is nonlinear and features four interrelated components: understanding, skills, efficacy, and metacognition. Figure 1 shows the major influence of the E (efficacy) component.

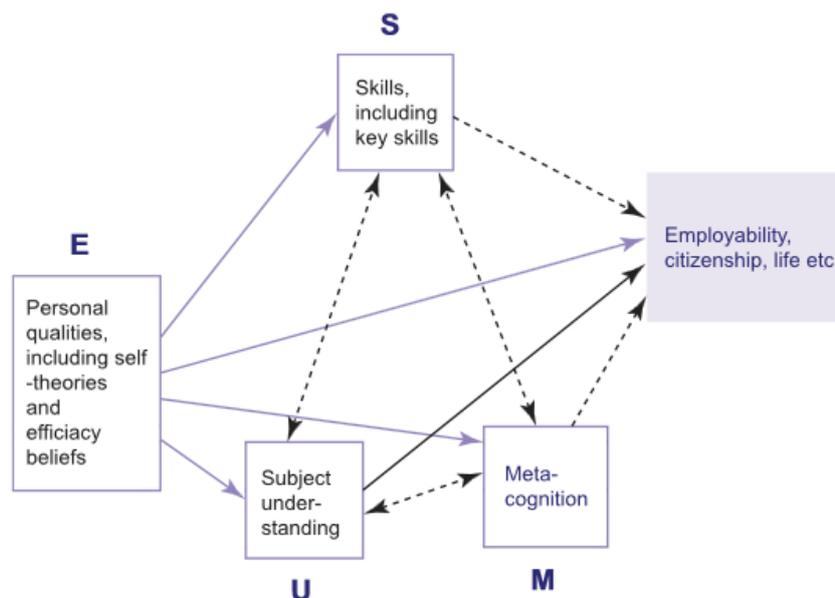


Figure 1. *The USEM Employability Model* (Yorke, 2006)

Using complex pedagogies such PBL and PjBL.

Within a constructivist model such as USEM, students develop their own understanding and explanation through an experiential approach, which allows the learner to analyse, test and to develop their learning. PBL and PjBL (Project Based Learning) exercises are vehicles which encourage and support students to do this.

PBL and PjBL have been used in some UK archaeology departments to teach specific modules, for example, McGuire (2008) Enquiry Based Learning in Level Archaeology at Glasgow University and Wood (2010) “Athens, Empire and the Classical World” at Sheffield

University. University College, Dublin has delivers a major part of its experimental archaeology degree programme through PjBL.

Defining PBL and PjBL

PBL and PjBL are pedagogies which come under the umbrella term for self-directed enquiry known as Enquiry Based Learning. (EBL). PBL is defined by Savary (2006) as “a learner centred approach that learners use to conduct research, theory and practice and apply skills and knowledge to develop a viable solution to a problem.” (p. 12).

Donnelly and Fitzmaurice view PjBL as product driven, “an individual or group activity that goes on over a period of time, resulting in a product, presentation, or performance. It typically has a time line and milestones, and other aspects of formative evaluation as the project proceeds.”(2005, p. 3). Savin Baden (2007) defines PjBL as “predominately task orientated.... students are required to produce a solution or strategy to solve the problem (and) are required to produce an outcome in the form of a report or design...”(p.18).

In a PjBL exercise based on the archaeological study of pottery kilns design and development, the research problem might be very structured, “How do we design and build a small kiln which can be used to fire pottery?” In this example, the building and firing of a kiln are the focus of sustained inquiry and reflection.

For a study looking at the difficulties of recognising kilns and pottery manufacturing sites in the archaeological evidence, a PBL scenario might be, “you have been asked to revisit pottery production site excavated in the later 1900’s and review the unpublished excavation report. There are some sketches, and the excavator’s notes but no overall site plan. You must identify the major features of the site, including the kiln.”

The following case study was devised as a PjBL exercise because project management was a key skill that employers in the Institute of Field Archaeologists survey felt were missing in many archaeology graduates. (Aitchison and Edwards, 2008, p.110). In the real world, archaeologists have to work as teams on clearly defined projects that have specific outcomes and are time, resources and scope constrained. Project management, therefore, concerns the application of skills and knowledge to meet the requirements of the chosen project successfully. This project was designed to meet three outcomes: the practicalities of managing the build and successful firing of a small kiln, answering a research question, and lastly, some reflection upon the personal learning that has taken place during the activities.

CASE STUDY: INVESTIGATING THE EVIDENCE LEFT IN THE ARCHAEOLOGICAL RECORD BY A SMALL CLAMP KILN

This experiment was structured over twenty two hours of contact time and was a voluntary activity undertaken by five, third year students from the archaeology department at UCLAN. They could use the activity to count as part of their required hours of fieldwork but these were final year students, who had already completed this requirement.

The PjBL process

Session One: Introducing the trigger and deciding on the research question (classroom based).

Archaeology students need a working knowledge of main pottery types and pottery production; so that they are able to recognise and date artefacts and structures during their independent student initiated summer fieldwork and staff initiated excavations. From their first year Introduction to Archaeology module, and from their subsequent excavation experience, the students recognised pottery's importance for dating purposes, and could identify basic pottery types. This exercise reinforced learning that students already had acquired in the classroom, and during their field work.

For this exercise, the trigger was a portfolio of excavated evidence containing a photograph of an excavated kiln from excavations at Norton Priory, Cheshire, and a video of experimental kiln firings at Butser Ancient Farm. After a group discussion our research question became, "what kind of evidence does the building and single firing of a small kiln leave in the archaeological record? "

Sessions Two and Three: Designing the experiment (classroom based.)

The students had no experience of the pottery production process or kiln technology, so they had to do some considerable research on the process and the practicalities of this. Outside the tutorial students were encouraged to work independently on gathering more information, and developing ideas which they then share with the rest of the group. They brought in excavation photographs and drawings they had discovered, sketched their designs out and argued the pros and cons of each design.

The group decided that the kiln structure should be simple and easy to build. There is archaeological evidence of this practice that has been found on Roman and Iron Age settlements sites.

Session Four: Making pottery (classroom based)

Our research question was based around firing a kiln that was loaded with pots. Pots can explode during the fire process for a variety of reasons: they are poorly made and contain air pockets, are too wet when fired, or suffer thermal shock, and these broken pots might leave recognisable shards in the ashes of the kiln. The volunteers made twenty eight unglazed pots of differing sizes.

Session Five: Building and Firing the Kiln (field work)

We spent a day building the kiln and firing the kiln. We dug a small pit in which a fire was lit and allowed to burn to embers. Our pots were laid on the embers and covered with more wood and turves to seal the kiln. The firing took place over twelve hours.

Session Six: Excavating the kiln (field work)

We returned a week later and spent the day excavating the kiln. Around twenty four of the pots had fired successfully. We excavated the firing pit but found little evidence that would distinguish this from a domestic hearth.

PROJECT EVALUATION

The students were asked to attend a final classroom session to reflect on their activities and contribution to the experiment, guided by a series of semi structured questions.

Relation of Students comments to the USEM employability model.

This section details comments that came from our discussion of the project and what the students thought about the activity and their own personal learning.

- U Understanding: subject knowledge; its comprehension and applicability

This project, based around ceramics, was designed to promote students understanding about experimental work, and the process of research. One student felt that this was a very personal piece of exploration, (It's all about) testing of provable hypothesis so you will start out with a research question and instead of book bashing and going to the library and regurgitating other peoples' nonsense, you are going out an actually creating something to try and bridge the gap between the known and the unknown.

They understood that even after their planning, the kiln might fail, but their research still had meaning,

I don't think it's actually what's produced ... because if everything is broken, the write-up could still be sound, because what it would say is what I believe is the problem is that we did this, we did that, we did this wrong....it still makes the experiment legitimate, because you are justifying something that you shouldn't do...you still find something out.

Undergraduate students usually only start designing research questions with their third dissertation topic, and it is rarely that they are in a research partnership with a member of staff,

It's not you saying here is what you have to do, go and do it, here's all the reading, go; it's actually promoting real thinking. So not Googling something and then copying it into a text, you know, there's your essay ... It's actually thinking about stuff, it's like, for the challenges you have.

- S Skills: skilful practice, the deployment of skills

The discussion on skills development is driving the employability agenda in Higher Education. However it is not just acquiring skills that is important, it is recognising the skills that you actually have running (the project) in small groups exactly we've done it then it promotes team work as well, which is again, one of your employability skills. "

Being competent at field work was recognised as being important and a source of pride in some, "it's the practical skills that are of benefit to you, so whether it's sieving in a lab or it's making pots or whether it's getting your hands dirty digging."

There was also recognition of developing a more specialised skill in pottery making, So not only can I tell what kind of pot and the age of the pot from a little tiny piece, I can also recreate that pot, I can make it as it was...it will also help you when you are drawing it. People take shards and they draw the cross sections and they say right, we know this from that. You are going to be quicker with that because you will be able to tell right away that it's definitely not wheel thrown, for example.

- E Efficacy: seeing opportunities for learning, personal commitment, believe in own efficacy when faced with challenges

One of the largest challenges for the students was not so much the design or the excavation of the kiln, but making the pottery to fire. They found out that they actually enjoyed learning how to make pots, "you can read about something, the process and its fine and you might learn something I mean we probably have a better understanding than anyone on our course about how to create pottery."

And, “now that I have actually made it, I have a new found respect for it, and when I find the pottery I will have the experience of what we have done in my mind and that will help”.

The students also developed a new found sense of competence. We had been allowed to build our kiln on some spare ground at a local business which taught some archaeological skills to school children. One of the student mused on the possibility of getting a part time job with the company because he now had the skills and the confidence to teach people to make ceramics, “now I can pretty much make these pots and now show someone how to do (it) and then fire a kiln.”

- M Metacognition: self-awareness of own learning, reflection

Clearly this experiment had been a very different learning experience to what the students had had previously. To encourage further reflection, we discussed the concept of “soul authorship” (Schindler, 2015). Schindler thinks that through active and authentic learning experiences, such as making and using building tools or structures, we can encourage archaeology students to make a deeper and more thoughtful connection with the past. He feels that this gives his student real ownership of the teaching and learning experience. The students reflected on this; they understood the concept and could relate to it.

Doing this brings out new respect for the past. We were talking a bit before about you know that soul ownership...a lot of people do argue that personal connection with the things that you do dig up is very nice whatever, but to actually make stuff, you do have a personal relationship with what you are doing ...if it’s making pots, or building a granary or a roundhouse or a kiln.

They recognised they were thinking about archaeology in a different way. This soul thing with the pot, linking us to that bit of pot ...I think it goes further than that, because you are also linking yourself to the person that has made the same kind of thing ...you kind of get a bit of an attachment don’t you ...to that person, like, you know in the past. They have had to go through the same stuff we have had to do to get this. Is it going to get up to temperature? Is it going to keep to temperature? Is anything going to come out of it?

And sometimes that we can, as archaeologists, reflect on our relationship with the past, “and when I saw the Oxford North pot with a thumb print in it...that is a real kind of connection. That is a moment in time stopped there, and it stopped with the pot being made“

CONCLUSIONS

Both pure and hybrid PBL and PjBL approaches have been used successfully within the archaeological curricula at several universities because time, resources, interest, expertise with the curriculum and appropriate managerial support, were available within their Department or School to do this.

For other university departments where such approaches are not yet used, it is suggested here that the PjBL approach could be trialled and used within one module of an archaeological degree course to ascertain student interest, and if it has been of benefit in developing their employability skills. If successful, a PjBL exercise could be developed to as a replacement for, or addition to, a course's requirement for excavation and field work, or even an option for a traditional dissertation.

PBL and PjBL are, of course, only two elements in the lecturer's personal teaching tool kit. We could try to develop some space within our own teaching to explore alternative approaches to learning with our students. Here, in this personal and safe space, we can try to enhance our students' learning experiences, and help them to develop and articulate the employability skills and attributes which are demanded of them in the "real" world.

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