

Doctoral Study in Educational Technology

Mike Joy

Department of Computer Science, University of Warwick, Coventry, UK
M.S.Joy@warwick.ac.uk

Abstract

The relative novelty of Educational Technology as a discipline yields challenges for the active researcher due to the interdisciplinary nature of the subject. We identify some of the issues which particularly affect doctoral students in educational technology and their supervisors.

1. Introduction

The use of technology to support learning and teaching has become commonplace, and the discipline of Educational Technology has become an increasingly popular area of research. For many universities, educational technology is primarily considered to be a tool for the use of academics, with expertise located in support departments rather than academic schools. Where there is research activity, it is consequently located in either education or computing departments, and few universities support departments or institutes devoted to educational technology.

A further consequence of the rapid expansion is that many researchers in the field of educational technology have a background in a single discipline (computing, education, or psychology), and have only subsequently assimilated complementary skills in the associated subjects. This is apparent in published research, where the interdisciplinary nature of the subject is typically not reflected in individual papers but in a mix of papers that are written either from a technical or an educational viewpoint, depending on the department in which the authors are situated.

Research and development into educational technology in schools may be funded through national or regional education ministries (such as the OET [1] in the US) and channeled through university education departments and agencies such as BECTA [2]. The focus of educational technology at school level is perceived as a pedagogic rather than a technical issue.

Support for the deployment of educational technology at higher education level may also be

available [3], but will typically target university staff development departments which are not engaged in research. A technical perspective on the subject has been taken by many university computing departments, where tools and techniques have been developed which incorporate educational technology into HE curricula (for example, [4,5]).

2. Doctoral Study

A paper published by an academic on a focused topic may well skim over issues not directly and immediately related to the topic. A doctoral student, however, must have a broader and more inclusive view. PhD study in any interdisciplinary topic requires the student to be familiar with several research methodologies, and to have assimilated knowledge and skills in all of the subjects involved. Educational technology is perhaps an extreme example of a broad interdisciplinary research area, requiring a student to be familiar with appropriate pedagogy, to be technically skilled in computing, and maybe also to have a solid grounding in psychology.

PhD theses in educational technology cover a wide variety of areas. One might consist of a novel technology which can be applied to the education process, and whose interest is principally technical. Another might focus on the novel use of a standard technology in an educational situation, and the interest becomes pedagogic rather than technical. Most theses probably lie somewhere between the two.

The problem then becomes how such study can be directed, and how the final research should be judged. In most cases, the criteria used in a single discipline (computer science or education) will not be appropriate for those aspects of the research relating to the other discipline. Furthermore, many supervisors with a specialist background either in education or in computing, may not be sensitive to the level of depth and insight commonly expected in the other.

The form of words used by the author's own institution to describe a thesis is typical guidance offered to both students and examiners to suggest its form and content:

“A [PhD] thesis shall constitute a substantial original contribution to knowledge ... and shall show a satisfactory knowledge of both primary and secondary sources. In addition it shall contain ... where appropriate, a description of methods and techniques used in the research.” [6, p. 42].

As educational technology matures as a discipline, the well-read researcher must be aware of those sources which are relevant but *outside their immediate field of interest*.

3. Breadth of Study

The experience of a doctorate student interested in educational technology is highly dependent on the type of department in which they have enrolled. The first challenge to the student must be:

How far must the student understand and assimilate material in the associated disciplines which is not immediately relevant to their investigations?

For example, suppose a student (from a computing background) has developed a novel technology which has immediate practical application as an educational tool in the HE sector. How much educational theory is needed to validate the research? Is it acceptable to focus on the technology, relying on basic understanding of established educational issues such as Bloom's Taxonomy [7]? Or must the student be sensitive to the many strands of theory which inform educational research at a variety of levels, such as the works of Piaget [8], Kolb [9] and Vygotsky [10]?

4. Basic Skills

Scholarship aside, in addition to the basic transferable skills expected of all graduates, a student in educational technology may need to acquire a variety of specialist skills. This motivates the question:

What skills should be expected of a successful graduate student in educational technology?

At a technical level, should they be competent programmers? At an educational level, should they have certificated competencies in education delivery (via a professional teaching certificate, for example)?

5. Research Methodology

Scientific methods and social science research methodologies [11] are dissimilar. Validating a technology may demand a formal (mathematical) approach by the scientist, but evaluating its efficacy in

an educational context requires research techniques of a quite different character. We should therefore consider the question:

What formal training in (social science) research methodologies should be offered to the educational technologist?

For example, consider the hypothetical student we introduced in the previous section. Is it acceptable for them to justify their new technology purely as a scientific exercise, or must they also be required to evaluate the technology in an educational context?

6. Conclusion

We can sum up our discussion as follows. *Is the discipline of educational technology mature enough for us to be able to describe a basic “syllabus” which we might expect a doctoral student to follow? If so, what is it, and to what extent is specialization within it consistent with the requirements of doctoral study?*

7. References

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