Exploring students' experience of project-based learning in an instructional design course

Ioana Hartescu

Lancaster University, UK

s.hartescu@lancs.ac.uk

Abstract. The present research aims to explore the different conceptions of reality that university and placement organizations staff, as well as postgraduate students have in the context of a project-based learning class in instructional design of online courses. The methodology used is phenomenography. This project contributes towards filling the research gap concerning technology enhanced learning in universities in Romania in the context of a student-centred learning strategy. The implications for policy and practice will also be discussed.

Keywords: project-based learning, instructional design, higher education, Romania, technology-enhanced learning

1 Context of the research

The research is conducted at the University of Bucharest, Romania, in the Faculty of Psychology and Educational Sciences and focuses on graduate students taking a compulsory course in "Design of Blended Learning Programs", in the first year of the "Training of trainers" master. The first stage of data collection was conducted during the second semester, from February to June 2013, and the second stage will take place from February to June 2014. Data will be collected from different cohorts. In the first year there were 21 students in the cohort.

Instructional Design is presented to students as a possible career avenue once they graduate the master program. As lecturer of the course, I chose project-based learning (PjBL) as a pedagogical approach, based on my experience of training instructional designers in professional contexts. Students undertook projects for real organizations and were responsible to design small e-learning courses based on real requirements. Thus, the learning was placed in an authentic work context. As part of their training, students met with the clients' representatives to analyse the current situation and identify the learning needs; they worked with subject-matter experts, and produced and presented functional prototypes of online modules.

Two organizations agreed to embark on this project, both from the public sector. Their mission is to train and certify various categories of civil servants and specialized personnel. One of the organizations has a broad audience and offers a large array of general topics, while the other concentrates on a specific professional category and offers specialised education to gain accession to a specific profession. Each of these organizations has an e-learning platform which they plan to use to provide distance learning to their audiences.

The class meetings were accompanied by learning technology support. A virtual learning environment (VLE) was used, as well as an authoring tool (CourseLab) for the creation of the online modules. Students submitted written reflections throughout the semester, communicated via the online forum, uploaded their assignments and received feedback, and found all the necessary materials in a centralized space. This is the first time a VLE is introduced to the

students of the faculty, and they only used it for this course. The existing practice in the faculty is to have a yahoo group accessible to students and teachers to facilitate all communication and transmission of materials. Assignments, either final or intermediate, are usually brought by the students in printed form and the teachers review them in an open colloquium, asking questions if necessary. Students are used to the project work, but it usually means they have to prepare, in teams, a report that will be presented at the final colloquium. Learning is not organized around the projects, and the projects are seen more as a means of assessment, rather than a method of learning. This is why having a PjBL approach, with real projects for real organizations, and an e-learning platform to support the learning, was a change from the usual experience of the students from many points of view.

2 Significant problems in the field of research

An on-going preoccupation in the field of higher education is how to improve ways of teaching and learning, and how to better prepare the students and to equip them with the competencies necessary for the work market. The European funds available for the higher education system in the recent years made it possible, since 2009, for many universities to implement e-learning platforms. However, this doesn't necessarily mean that teachers and students are prepared to use them. Although relevant articles published in peer reviewed research journals about Romanian experiences are scarce, one can form an image about the current state of affairs by participating in conferences. An analysis is currently underway based on the articles published in the proceedings of the eLearning and Software for Education Conference (www.elseconference.eu) held in Bucharest, starting with 2009, in order to have a clearer picture of the context and practice in Romanian universities. Preliminary results indicate a focus on technology at the detriment of pedagogy, and reports usually concentrate on small scale, specialized implementations, with little qualitative data useful to establish good practices. The situation is quite different in primary and secondary education, where national, government-supported initiatives are taken to ensure a systemic impact [1]. At all educational levels, however, the investments that were made were accompanied by studies emerging from the need to prove accountability and efficiency, and to a much lesser extent to investigate the actual experiences of the people involved.

PjBL in Romania is widely promoted and used from pre-school to secondary education. However, at tertiary level, projects are seen as ways to assess students, not to organize their learning. Instructional design, although it is presented to students as a possible career option, is only covered by one course lasting one semester, at master level.

Therefore, although PjBL is not a new approach in the universities globally, technology enhanced learning is widely used, and instructional design is a program of study in its own right at many universities in the world, in Romania the situation is different. In what ways it is different, and how it can be improved – these are the research gaps that this PhD project is hoping to fill.

3 Research questions

This qualitative research aims to answer the following questions, in the context presented above:

• What different experiences students, teachers, and placement organizations staff have of project-based learning?
• What are the perceptions of students, teachers', and placement organizations staff about the role of the teacher in project-based learning?
• What are the students' and teachers' perceptions about the role of technology in learning instructional design?
• How do students conceive of their own learning of instructional design?
• What are the implications of the findings for policy and practice?

4 Theoretical background

The research is grounded in the constructivist paradigm of learning. Constructivism is a philosophy of learning that supports the idea that knowledge is constructed by the learners as a result of the experiences they live. Learning is making meaning from the interactions with the world, especially when the present experience conflicts with existing knowledge and creates a challenge or a puzzle [2]. The principles of constructivism emphasize the necessity of incorporating feedback and reflection into the learning process, and of rethinking the role of the teacher who needs to engage learners in a journey of inquiry rather than treat them as "empty vessels into which knowledge is poured" [3]. While all learning is situated (in one context or another), meaningful learning happens in the same context of its application [4]. The implication for instructional design is to bring the real world closer to the learning context (class, program) by using authentic problems or projects to trigger and direct learning.

Building on Marton and Saljo's [5] concepts of learning as being either deep learning (based on understanding) or surface learning (based on reproducing), Biggs [6] notes that when teachers use active teaching methods (such as problem or project-based learning), students are encouraged to use a deeper approach to learning, while more passive methods (such as lectures) leaves them to use the methods they are accustomed to (meaning that students who are more "academic" will use a deeper approach, while students who are not, will use a surface approach).

As a method that "organizes learning around projects" [7], PjBL involves students in authentic settings, encouraging them to explore and apply the subject matter to situations that are complex and relevant to the professional practice for which they are preparing. Use of PjBL is documented in various disciplines [8 - 15]. Out of the 17 articles reporting cases of PjBL implementations in higher education, 15 are placed in the context of undergraduate education, only one is dedicated to graduate education, and one presents cases from both educational levels. As far as learning technology support in PjBL is concerned, only 5 studies included it in their focus, out of which 3 concentrated on information searching and retrieving tools and techniques, 1 on self and peer-assessment, and 1 on online group reflection. This shows a gap in the research about ways that learning technology is experienced in PjBL environments, and about ways that students can be better supported with technology.

5 Methodology

The chosen research methodology, phenomenography explores the various ways in which people experience the world; it aims to describe, analyse and understand these second-order perspectives called conceptions of reality [16]. The results of this methodology are "categories of description, in which different ways of understanding a phenomenon are logically and hierarchically interrelated to establish a typology" [17]. Although a relatively new methodology, it is particularly used and useful in research on higher education because it makes explicit to the academic staff certain aspects which are relevant in teaching and learning at this level, such as the relational nature of learning and the various conceptions students have on the content, which can help teachers adjust their teaching strategies to facilitate conceptual understanding [18]. Phenomenographic studies switched the focus of research towards the experience of the learners, as it is understood by them, and their ways of understanding concepts [19]. Based on people accounts of their experience, phenomenographers derive categories of descriptions that illustrate the variety of different experiences and identify structural relationships between these categories, delimiting an outcome space of the experiences people have of one phenomenon. Phenomenographic practice is not dogmatic and has some variations [20] in terms of how different researchers analyse and manage the data.

Data concerning the students' experiences was collected using a variety of methods: questionnaires, semi-structured interviews, focus groups, online learning journals. Data from teachers, managerial staff from the university, and placement organizations personnel was also collected using interviews.

Phenomenographic analysis will be used to identify "a small number of qualitatively distinct descriptive categories of the ways in which the subjects experience (or understand, or conceptualise) the phenomena of interest" [19], as well as the relations between these categories.

6 Proposed approach and existing results

The first stage of data collection resulted in a total of 18 questionnaires, 49 online reflections, 2 focus groups, and 4 interviews. The questionnaires were administered at the beginning of the course in order to determine the students' prior experience or knowledge about (a) project-based learning, (b) instructional design, and (c) technology enhanced learning. Their experience in all three domains was scarce to none. All of them reported having worked on projects, individually or in small groups, for their final assessment in a variety of disciplines, but none of them participated before in a course organized around projects. Some of the students had previously seen e-learning platforms, but they did not use them with any consistency. None of them was familiar with instructional design. From the preliminary coding of the focus groups and online reflections, the main areas of variability appear to be: the way the students experimented teamwork (communication, roles, planning), how they balanced the focus between product and process, how they viewed the support they received, including: the online and face to face feedback, the meetings with the client, the pedagogical scaffolding of the course, and the technology support. Concerning the technology support, students report three types of approaches, not necessarily mutually exclusive: (1) using the e-learning platform (mainly the homework feature) as a planning and organizing device that helps them stay on track time- and quality- wise, (2) searching for additional online tools that would facilitate their collaborative work, with variable degrees of success, and (3) focusing on the use of the authoring tool and the technical issues associated with it, again with variable success. Out of the 4 interviews, 3 were with staff from the faculty and 1 was a group interview with the representatives of one of the placement organizations. The analysis of these interviews is in an incipient phase. The existing results are preliminary and although some categories are beginning to emerge, the results are not final yet. It is important that structures and relationships are not imposed artificially on the data by the researcher, so a more structured presentation of the analysis status is not attempted at the moment.

The second stage of data collection that will take place in the second semester of the 2013 / 2014 academic year will benefit from the lessons learned in the first stage concerning the students' availability to participate in interviews and focus groups. The focus of the questions will also be narrowed, and the frequency of the questions increased, in order to capture a rich picture of their perspectives on each of the elements of the course.

7 Contribution to knowledge

The higher education sector in Romania, as in other Balkan countries, has seen tremendous change in the post-communist period, driven by a complex combination of factors, such as the Bologna Process, the influx of European pre-accession and structural funds, the international exposure and experience brought by the teachers and students mobility programs, and the influence of international non-governmental organisations [21]. One of the goals of these changes was to improve the quality of the education process, namely, to bring education closer to the student, to train - and persuade - teachers to use more student-centred methods, to bring the curriculum closer to real life. The extent to which this was achieved is not known; however, the current preoccupation in Romanian higher education with quality assurance should help clarify this matter in the future. Furthermore, peer reviewed research on teaching and learning in higher education in Romania is scarce or unavailable, and even though inter-institutional cooperation is improving, teachers still do not form a community of practice where initiatives and experiences can be shared and replicated.

The main contribution of the present research is that it will document the students' experiences in using PjBL supported by technology in the context of a Romanian university, which should broaden the outcome space of the studied phenomenon.

Although the results of a qualitative study are not generalizable in the sense quantitative research results should be, this study aims to produce results that are transferable by practitioners in similar contexts, by providing sufficient information to support an informed decision. The results of the research can be informative for further improvements in the way PjBL is used in instructional design courses, and, perhaps, by extension, in other related subjects. To my knowledge, this is the first time that a course with an instructional design focus is offered in Romania at academic level. If it is successful, the course may become a permanent part of the curriculum and it may even extend to a stand-alone degree. On the other hand, project-

based learning, although not a novel method in the higher education, does not feature in many research articles. From the 17 accounts found by doing a review of the literature starting with the year 2000, only 2 articles present cases of implementations in graduate education, while 15 articles report cases from undergraduate education. In Romania, in the K12 education, PjBL is used and promoted, but I am not aware of any account of this approach being used for learning in higher education. By understanding the students' various experiences, teachers can improve their methods; faculty management can set realistic goals and implement adequate support for reaching them. If this approach is successful for these courses, it may extend to other disciplines, promoting interdisciplinary projects and a truly integrated curriculum. Another area that could benefit from the results is the professional training of instructional designers in organizations, by offering grounds to adjust the curriculum and the methods to better support the learners.

Technology support for learning is currently mainly used in technical universities in Romania, and less so in the humanities and social sciences faculties. Combining project – based learning with technology support may open avenues into how more student centred methods may be implemented in Romanian universities and may create a clearer picture of the factors and issues that should be considered when designing and implementing teacher development programs.

Moreover, instructional design teaching and PjBL were never documented at tertiary education level in Romania. This research has the potential not only to enrich the existing body of knowledge drawn mainly on Western or US experiences, but also to bring a fresh new perspective from the Eastern European higher education point of view.

Note

Ioana Hârţescu is a PhD student in E-Research and Technology Enhanced Learning at the Department of Educational Research, Lancaster University, UK. Her supervisor is Professor Mary Hamilton (m.hamilton@lancaster.ac.uk). Ioana started the program in February 2010 and is expected to complete and defend her thesis by the end of 2014.

References

1. Vlada, M., Jugureanu, R., Istrate, O.: E-learning and educational software. Educational projects and experience of implementation in Romania. Proceedings of the 4th International Conference on Virtual Learning, Iași, Romania. Retrieved August 10, 2013, from http://www.icvl.eu/2009/disc/icvl/documente/pdf/met/ICVL_ModelsAndMethodologies_paper01.pdf (2009)
2. Wilson, B.G.: Constructivism in practical and historical context. Chapter in Bob Reiser & Jack Dempsey (Editors), Current Trends in Instructional Design and Technology (third edition). Pearson Prentice Hall, Upper Saddle River NJ (2011)
3. Alessi, S.M., Trollip, S.R.: Multimedia for learning: Methods and development (3rd ed.). Allyn and Bacon, Boston, MA (2001)
4. Brown, J.S., Collins, A., Duguid, P.: Situated cognition and the culture of learning. Education Researcher, 18(1), pp 32 – 42 (1989)
5. Marton F., Säljö, R.: Approaches to Learning. In: Marton, F., Hounsell, D. and Entwistle, N., (eds.) The Experience of Learning: Implications for teaching and studying in higher education. 3rd (Internet) edition, pp 39-58. University of Edinburgh, Centre for Teaching, Learning and Assessment, Edinburgh (2005)
6. Biggs, J.: What the student does: teaching for enhanced learning, Higher Education Research & Development, 31 (1), pp 39-55 (2012)
7. Thomas, J.W.: A Review of Research on Project-Based Learning. Autodesk Foundation, San Rafael, CA (2000)
8. Braguglia, K. H., Jackson, K. A.: Teaching Research Methodology Using A Project-Based Three Course Sequence Critical Reflections On Practice. American Journal of Business Education 5(3), pp 347 – 352 (2012)
9. Hou, H. T.: Exploring the behavioral patterns in project-based learning with online discussion: quantitative content analysis and progressive sequential analysis. TOJET: The Turkish Online Journal of Educational Technology 9(3), pp 52 – 60 (2010)

10. Karaman, S., Celik, S.: An exploratory study on the perspective of prospective computer teachers following project-based learning. International Journal of Technology and Design Education 18(2), pp 203 – 215 (2008)
11. Kim P., Hong J., Bonk C., Lim, G.: Effects of group reflection variations in project-based learning integrated in a Web 2.0 learning space. Interactive Learning Environments 19(4), pp 333-349 (2011)
12. Korfhage Smith, R.: A Case Study in Project-Based Learning: An International Partnership. Journal of Teaching in International Business, 21(3), pp 178-188 (2010)
13. Krogstie, B.: A model of retrospective reflection in project based learning utilizing historical data in collaborative tools. In Proceedings of the 4th European Conference on Technology Enhanced Learning, Sept 29 – Oct 2, 2009 (Eds. U. Cress, V. Dimitrova, M. Specht), pp. 418 – 432 (2009)
14. Lee, N.: Project methods as the vehicle for learning in undergraduate design education: a typology. Design Studies 30(5), pp 541 – 560 (2009)
15. Lopez, T. B., Lee, R. G.: Five principles for workable client-based projects: Lessons from the trenches. Journal of Marketing Education 27(2), pp 172 – 188 (2005)
16. Marton, F.: Phenomenography – describing conceptions of the world around us. Instructional Science 10, pp 177 – 200 (1981)
17. Ashworth, P., Lucas, U.: What is the 'World' of phenomenography?, Scandinavian Journal of Educational Research, 42(4), pp 415-431 (1998)
18. Entwistle, N.: Introduction: phenomenography in higher education. Higher Education Research & Development 16(2), pp 127-134 (1997)
19. Booth, S.: On phenomenography, learning and teaching. Higher Education Research & Development, 16(2), pp 135-158 (1997)
20. Åkerlind, G. S.: Variation and commonality in phenomenographic research methods. Higher Education Research & Development, 24(4), pp 321-334 (2005)
21. Zmas, A.: The transformation of the European educational discourse in the Balkans. European Journal of Education 47(3), pp 364 – 377 (2012)