

Applying authentic learning to social science: A learning design for an inter-disciplinary sociology subject

Fiona Borthwick

Faculty of Arts
University of Wollongong, Australia
fiona_borthwick@uow.edu.au

Sue Bennett

Faculty of Education
University of Wollongong, Australia
sue_bennett@uow.edu.au

Gerry Lefoe

Centre for Educational Development and
Interactive Resources
University of Wollongong, Australia
gerry_lefoe@uow.edu.au

Elaine Huber

Faculty of Arts
University of Wollongong, Australia

Abstract

As universities move towards more vocationally oriented courses, students expect pedagogic practices that make closer ties to potential workplaces. The pedagogical approach of authentic learning is well suited to this purpose as it proposes an apprenticeship-type model and a model that brings simulated work tasks into the classroom. In the social sciences, authentic learning is under-utilised and under-theorised as these subject areas do not fit easily into these models. An alternative model of authentic learning aims to offer students opportunities to 'enmind' the requirements of a discipline, be critically reflective about that discipline, and to develop the skills to bring the discipline into their subjective experience. Using this model for authentic learning as a starting point, the authors have examined the applicability of authentic learning to the social sciences, derived relevant design principles and applied these to produce a learning design for a sociology subject that can be tested and critiqued. The purpose of this paper is to present this learning design as a starting point for discussion about a new form of authentic learning.

Keywords

authentic learning, learning design, social sciences

Introduction

The authentic learning approach to teaching and learning has been theorised in various ways and implemented in many different educational contexts. Authentic learning is well known in professionally oriented subject areas because of its clear relevance to preparing students to be practitioners in their chosen field (Herrington, Reeves, Oliver, & Woo, 2004; Oakham, 2001). In higher education, there has significant interest the types of pedagogical strategies that should be employed and the role of information and communications technologies in support authentic learning (Bennett, 2005; Bennett, Harper, & Hedberg, 2002; Herrington, Oliver, & Reeves, 2003). The main focus of this literature has been on how authentic resources and activities can assist students in making links between concepts and theories learned in formal education and their application to real-world professional practice.

By contrast, authentic learning has been far less theorised and applied in social science disciplines, which require students to not only understand the content matter of the discipline and its possible application, but also to be critical of the discipline and its wider contexts. The social sciences include some subject areas that have clear links to professions, for example, 'pure' law and policy-based social science subjects, and others that are much less directly vocationally related, for example, theory of law and theory of ethics subjects. Ideally, all these subject areas should be located within a broader social and political context so that students develop a critical consciousness, and not just acquire knowledge of the discipline. However, drawing these subjects into 'real world' situations in a critical way is challenging. A reading of the authentic learning literature that places less emphasis on professional preparation suggests an approach based more in social constructivist pedagogy. Such an approach appears appropriate to teaching and learning in the social sciences because it provides students with opportunities to drive their own learning in ways that encourage them to make connections with other subjects studied at university, to their potential professional lives, and to their broader participation in social and cultural life.

This paper reports the outcomes of a design project carried out by the authors to determine the applicability of authentic learning to the social sciences. The project began with a critical review of the literature on authentic learning, with a particular focus on its application to relevant disciplines in the social sciences. This enabled the authors to distil a set of design principles based on theory and reported practice. The next step operationalised these principles by applying them to the redesign of a subject incorporating sociological, legal and philosophical concepts. This resulted in the creation of a learning design that identifies a sequence of tasks and the accompanying resources and support structures, using the formalism developed by Agostinho, Oliver, Harper, Hedberg and Wills (2002). This format represents the application of the authentic learning principles in a way that enables critique and adaptation by other teachers and designers.

The paper begins by firstly outlining some of the general challenges of teaching and learning in higher education and how these relate to the context of the design project. Secondly, authentic learning in this context is defined, including a summary of principles and characteristics, and a description of the redesign of a subject based on these principles and characteristics. Finally we discuss the limitations and challenges of authentic learning in the social sciences.

Context for the design project

The tension between the role of higher education in offering a liberal education valuing knowledge for its own sake and its role in preparing students to be professionals in the workforce poses some general challenges to formulating effective teaching and learning strategies. These challenges include (DEST, 2002; Laurillard, 2002; Ramsden, 1992):

- Building students' subject matter knowledge specific to the discipline of study as well as enabling them to develop generic higher order attributes, such as problem-solving and communication skills.
- Helping students make connections between what is learned 'in class' and the importance of those concepts in the wider economic, social, cultural, and civic world.
- Developing students' specific skills and practical knowledge that are directly relevant to employment to prepare students for the world of work.

Fundamental to meeting these challenges and to inculcating academic literacy is to enable students to make connections between the different subjects (or units) they are studying. The ability to take theories and methodological approaches from one subject to interrogate or supplement those in other subjects demonstrates a high level of understanding, of motivation to continue learning, and of disciplinary competence.

This contrasts with a sense of each subject being discrete, valuable on its own terms but then left behind at the end of semester. Authentic learning offers a way to link what is familiar to students to the disciplinary requirements. In doing this, relevance and understanding can be enhanced by moving between what is known and what is unknown, instilling a cognitive approach that can be used by students across subjects and disciplines.

An authentic learning approach aims to make the study of often abstract ideas or issues that can seem to be irrelevant to students' daily lives tangible, and it offers a means by which students can potentially understand how their identities are socially constructed and positioned. Redesigning subjects to include authentic learning therefore has potential to inculcate a critically self-reflective capacity. Further, learning through an authentic approach may encourage the student to engage in social and political issues outside of university. Such thinking skills are analytical, but also include imaginative, ethical and integrative thinking as a result of learning to be able to make connections between, for example, a given claim in the media and its philosophical or ideological premises or its sociological context. Thus, the primary aim of the authors was to determine a pedagogical approach suited to social science which embodied authentic learning theory, that took the subjective location of the student into consideration, and that opened the possibility for critical and self-reflective thinking in and about the discipline and in relation to other disciplines and everyday experiences.

Authentic learning in higher education

A review of the relevant literature reveals three common types or models of authentic learning. These share a common origin in the notion of situated learning (Lave & Wenger, 1991), which gives some commonalities between the models, but each has different characteristics and underlying assumptions, which can be summarised as follows.

- In the **apprenticeship model** students become part of a workplace and are mentored by a relevant professional thereby providing an authentic work experience in the 'real world' (Baccarini, 2004; Brown, Collins, & Duguid 1989; Hughes, 1998; Oakham, 2001; Radloff, 1999).
- In the **simulated reality model** the 'real world' moves into the classroom via learning activities that seek to simulate aspects of 'real world'/authentic work conditions (Bennett et al., 2001; Bostock, 1998; Brylinsky, 1995; Herrington, Oliver, & Reeves, 2003; Herrington & Oliver, 2000; Martens, Gulikers, & Bastiaens, 2004).
- In the **enminding model** authenticity comes from the connection between a student's experiences and the disciplinary 'mind' (Stein et al., 2004; Tochon, 2000).

In the apprenticeship and the simulated reality models, there is an assumption that the 'real world' represents the profession and the student needs to be, in some way, placed into this world either through a form of apprenticeship or by bringing in simulated activities to the classroom. In this way the specificity of the student is largely ignored as the authenticity comes primarily from the link to professional activity and the student is expected to move seamlessly from their subjective position into the world of the profession (Cumming & Maxwell, 1999).

For the purposes of developing students with analytical, critical, and reflective skills the enminding model offers a more appropriate approach because it requires engagement with the discipline as an authentic activity. Once a theory is enminded it can also be critiqued, ideally through other enminded theories and through experience, and used to question the very discipline from which originates. Using this model, 'authenticity refers to a personal capacity for critically participating in some cultural practice' (Van Oers & Wardekker 1999, p. 231). In the enminding model all of the elements (students, classroom activities, the discipline, and the profession) are considered to be part of the real world.

In the classroom the student is met from their subjective position with the required aspects of the discipline in a way that combines both to make the learning experience authentic; that is, part of the way in which the student can understand and analyse everyday life experiences and a range of social issues. This corresponds with the view put forward by Stein and colleagues (2004) which characterises authenticity as 'the intersection of the 'mind' of the discipline with the here and now of the pedagogical moment' (p. 241). Making learning authentic in this way facilitates students' engagement with the discipline through a connection to themselves, which may encourage a desire to continue learning beyond the classroom. This, in part, comes from an authentic learning strategy that requires a high level of engagement with the subject's content and a high level of reflection by the student about the content, the learning processes and the application of the discipline to wider societal issues.

This notion is supported by Tochon (2000) who proposes that 'in organising disciplinary activities, teachers act on two kinds of experiential knowledge integrated into the learning situation: biographic knowledge and situated knowledge' (p. 356). In order for students to have the opportunity to enmind the discipline, the role of the teacher is, in a way, diminished or shifted sideways. Each student arrives with particular subjective/biographic knowledge and will also experience the learning situation in a specific way (situated knowledge). Given this, the teacher's role is primarily to integrate the content of the subject or discipline through scaffolding tasks that successively build authentic learning skills.

The enminding model of authentic learning proposed by Stein and colleagues (2004) draws heavily on social constructivism, but lacks the requirement that students be provided opportunities to develop skills in critical reflection. Extending the model to include critical reflections allows students to both use aspects of the disciplinary mind to critically reflect on their commonsense understanding of the topic and to use their current knowledge to critically engage with the discipline. In this way elements of commonsense can challenge the claims of the discipline's account of the topic, and aspects of the discipline can challenge the student's commonsense account which creates the opportunity for students to move to a critically informed reflective position about their knowledge and that of the discipline. As students expand their disciplinary knowledge they have greater capacity to critically engage using different aspects of their disciplinary knowledge to question a current claim. To be critically engaged during authentic learning is to be reflective about the discipline and one's own knowledge position in order to produce shifts in self-knowledge and in the discipline. This is the ideal process for the social sciences as it advances both an individual's knowledge and also enables that to impact on the discipline. However, in the early stages on an undergraduate program a more realistic aim is to use authentic learning in ways that encourage students to use the discipline as a new way of knowing and to challenge their current ways of knowing. Thus, the focus is on students developing new knowledge and understandings for themselves.

Deriving principles and characteristics for authentic learning

This design project originated from the need to find a teaching approach that would better meet the needs of social science students undertaking inter-disciplinary subjects. The initial step in the project's methodology involved examining subjects that had elements in common and in contrast, analysing the requirements of each subject, and reviewing the literature on authentic learning to develop principles and characteristics for authentic learning upon which a new design could be based.

The subject analysis indicated the need to encourage critical and self-reflective engagement with the content matter and beyond. Authentic learning offers the potential for a higher level of engagement with the subject matter by developing an understanding of a theory or concept through its application to current practices and problems.

Additionally, the authors identified the need to establish a pedagogical approach that would encourage, facilitate, and supports students to take responsibility for their own learning such that students would continue to use this learning pattern as a way of making connections to other subjects and to issues from everyday life. Studying social science requires the capacity and willingness to engage with ideas beyond the demarcation of one subject because to merely know the subject matter cannot be sufficient for students moving into legal and policy-based professions. A critical imagination is also required to locate the subject matter into its field, including limitations and problems internal to the discipline, and within a broader context that incorporates political, economic, social, and historical issues.

Based on the principles developed from the literature review and subject analyses, the expected learning outcomes for students based an authentic learning approach to subject design and implementation would include the following:

- Challenging ways in which theories explain the world, for instance, students using their experiences to look for gaps and inconsistencies in theories.
- Reflecting on personal assumptions about a topic and assumptions about its implications in broader contexts, for example, from a university subject to the home, or a workplace experience to a concept studied at university.
- Transferring insights and knowledge from one topic area to another, for example, from one subject to another or one experience to another.
- Critically engaging with the subject matter and critical reflection about it, the discipline, and the broader contexts.
- Defining research problems/projects/questions and, in doing this, being able to process material by making decisions about relevance and irrelevance.
- Communicating written and oral responses to a research question that includes any contradictions or uncertainties and presents a response that is multifaceted but clear and decisive.
- Working collaboratively to develop and solve problems as a form of knowledge-construction, not just content reproduction, at the level of shifting the student's current knowledge position to one that has critically engaged with aspects of the discipline. At a more advanced level, the student can challenge the claims made by the theory as a form of knowledge construction.

To achieve these outcomes the characteristics of our model of authentic learning requires the lecturer to act as a facilitator rather than primarily as knowledge-giver to provide 'scaffolding' for learners to build their understanding and knowledge base (Nicaise, Gibney, & Crane, 2000; Maina 2004). Fundamental to the authentic approach is the particular design of the tasks to have the following features:

- an overall complex task which is broken down into sub-tasks for/by the students
- the tasks encourage students to make connections to wider work and/or life issues and to their experiences
- tasks are supported by the provision of many resources from multiple sources
- tasks are designed so that multiple perspectives are required

- tasks are collaborative and elicit multiple perspectives
- the tasks provide scope to critically engage with the discipline and its field
- tasks allow connection between a student's current understanding and 'new' information being presented.

Importantly, the literature suggests that authenticity comes from the opportunity for students to develop their own approach to learning and responding to a problem (Stein, et al., 2004; Tochon, 2000; Van Oers & Wardekker, 1999). And in so doing students use their experience and their subjective position to engage with the requirements of the discipline. Significant in-class activity and related assessment is needed to scaffold students' development of a critically reflective approach to learning. Working collaboratively with other students and teachers helps students move from their initial understanding to one based on their critical reflection. This is the function of the class groups as a community of learners — the social construction of meaning and the changes of 'sense' for the individual (Van Oers & Wardekker 1999; Bruner 1996).

Application of design principles to a social science subject

This section describes how the principles and the characteristics of authentic learning outlined above were operationalised through the redesign of a sociology subject called 'Punishment: Purpose, Practice, Policy'. The subject is inter-disciplinary, encompassing law, sociology, philosophy, and attracts students with diverse educational experiences with a wide spectrum of future employment opportunities. As the subject is inter-disciplinary it provides opportunity to derive a learning design that might be adapted for the other subjects.

The subject is offered over a 13-week teaching session in three-hour classes of 20–25 students. In the three-hour teaching blocks, the lecturer uses some of the time to present content to the students to provide a basic level of information from which students can develop their understanding. The remainder of the time is used for collaborative learning in groups with some directed activities and some group generated learning objectives. In Week 2 of the subject students are assigned to groups in which they will work each week for the rest of the semester. By Week 4 each group has generated a learning timetable and research objectives timetable. The subject is divided into two main sections. The first section (Weeks 1–7) introduces the relevant aspects of the discipline by examining the justifications for punishment and the explanations for the increase in the incarceration rate over the past decade. During these seven weeks the students complete their reflective journal (discussed below). The lecturer provides most of the resources for this section of the subject. The second block begins after the student presentations (discussed below) in Week 8. From Week 9 to Week 13 the skills required to complete the final assessment tasks are developed with the students provided the resources for the classes.

Learning outcomes

On completion of this subject students will have the following:

- An introductory knowledge of the main concepts and their functions within the discipline, for example the deterrence of crime as a justification of punishment, the politics of law and order, white anxiety and the regulation of indigenous people.
- A capacity to reflect on and 'drive' their own learning and in doing this to make links between the commonsense of what seems (individual or personal knowledge), the 'taken-for-grantedness' of what we know, and the critique of the normality of this through the discipline's concepts, and thus to construct self-knowledge.

- An ability to work collaboratively to develop their knowledge and skills base and that of others in ways that establish a community of learners.
- A capacity to critically and imaginatively reflect on the approaches of the subject in order to complete a major task or project that has relevance to the practices of the discipline and requires research and analytical skills.
- An ability to write and speak in a self-reflective and critical way in general, so that the subject encourages engagement with life/public/world issues.

Assessment tasks

For this subject the major assessment task is a choice between writing a policy report or an activist's project. For both tasks the central aim is for students to provide options for addressing one or two of the main contributing factors that have caused a rise in the incarceration rate. The scenario for the report requires it to be prepared for the state premier and the activist project requires a leaflet to be designed for public distribution that will encourage a change in current practices of incarceration. In both projects students must substantiate their claims with evidence from the subject or related research. The subject introduces the context of current incarceration practices and some of the contributing factors, but also leaves open space for students to draw out other contributing factors that concern or interest them, provides them with the skills to begin to address these factors and then requires a task that reflects this process.

The presentation is a smaller task, requiring students to demonstrate content knowledge and understanding halfway through the semester on an interim level question. This is a collaborative task requiring each group to choose a concept from the class readings and use it to analyse a current issue in an area relevant to the discipline, for example based on a newspaper article, some statistics, a film, television show, or policy document. This encourages independent learning, collaborative learning/teamwork skills, conceptual understanding and practice in the art of critiquing a current social, political or legal practice.

The journal (cf. Laiken 2002; Khamasi 2004) requires reflection on how the student is learning the subject matter in relation to their current knowledge or beliefs. A pattern of journal writing is established with guiding questions so that the reflections are directed to specific aspects of content to encourage subjective engagement, not just regurgitation of content. For each class there is a pre-class journal activity, then in-class activity, and then a post-class journal activity. The activities are written into the journal as a way for the students to actively engage with the subject and with how their understanding of how the subject matter changes. The journal activity, during Weeks 1–7, establishes a pattern of learning and engagement through the authentic learning approach during which the journals are reviewed for assessment and for feedback. The structure is for the pre-class questions to articulate the student's commonsense ideas, to meet a student's current subjective position about the topic. The in-class activities add new content and analysis to the commonsense understanding, and the post-class journal questions encourage reflective analysis of the topic and of the student's understanding. An example of a pre-class prompt is: 'Give three reasons that justify punishing a person for committing a crime'. The post-class question asks: 'To what extent do your reasons fit within the main justifications of retribution and utilitarianism? Which do think is the stronger justification and why?'. Weeks 9–12 provide an opportunity for the students to implement the journal approach to learning encouraged through Weeks 1–7.

The main functions of the journal are to establish a learning pattern or structure that is self-generated and reflective, and to develop a student's understanding of the discipline.

Depending on the topic, the resources could include varied academic texts, statistical databases and current policy responses. To encourage students to be active in their own learning some basic texts would be given with directions about how to find more. Being realistic there should be a textbook that gives some basic introductory/foundational ideas for the students. The rest of the substantive resources can be self generated or, better still, each group member can be responsible for gathering the additional reading for a week's work.

Figure 1 summarises the learning design for this particular subject. This representation uses a formalism based on the work of Agostinho, Oliver, Harper, Hedberg and Wills (2002) and shows the sequence of tasks, which includes classroom, individual study and assessment activities. Also shown are the resources, supports and timeframe required for each task.

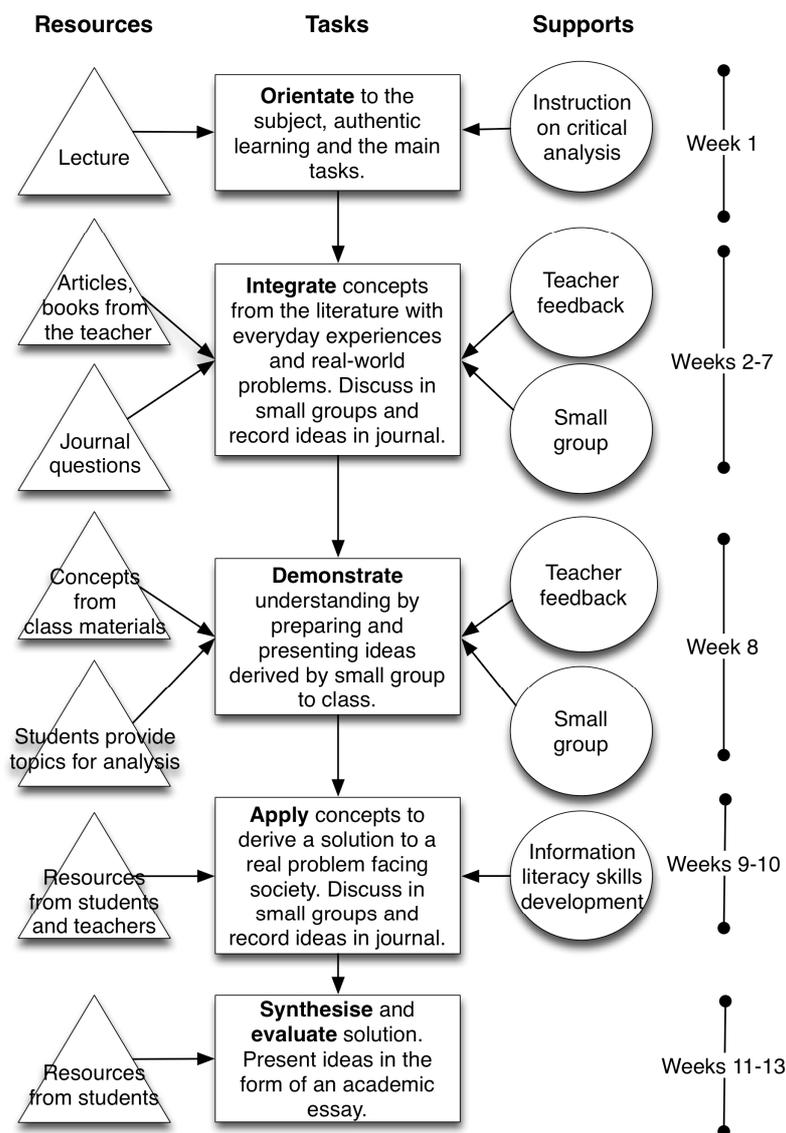


Figure 1: Learning design for the subject, 'Punishment: Purpose, Practice, Policy'

Discussion

Graduates from the social sciences have the potential to occupy positions that can have a major influence on many aspects of society. A subject designed and implemented through authentic learning can provide a cognitive approach that allows students to develop a critical consciousness and motivation to learn in a self-directed way. It also provides the skills to work and learn collaboratively, and to respond to a complex task in a logical and incremental way through the scaffolding in the subject design. However, some of these have further implications, including:

- For students there is a higher workload than in a 'conventional' subject as the student must generate a problem or issue to address and the locate resources to complete this as part of the in-class activities and the assessment task. Also some students may be challenged by the need to work in established groups for the semester and the requirement to be a more independent and self-reliant learner.
- For the lecturer there are two main challenges. Firstly, finding the right background and supporting resources is more difficult for an authentic learning subject as it must offer a degree of complexity in order to begin to enmind the discipline, but students must also be able to understand them through their own and collaborative learning processes. Secondly, lecturers need to adopt a teaching approach that guides students in their learning rather than directing them in what and how to learn. The lecturer takes on the role of a facilitator who must respond to the needs of the group and particular learners. This may also have a time implication with more students seeking individual assistance with what is likely to be a new experience in their learning.

In this authentic learning design, less content can be included than in a 'conventional' subject as students must develop their ideas at their own pace and through their own efforts before more information can be introduced. The approach requires more time for self-reflection rather than just understanding a certain amount of material and using it to answer a question. In order to investigate these issues and others arising from implementation of this design, the subject will be evaluated in 2007 and 2008. The findings will be reported in the future.

Conclusion

This paper reports on a project that examined the applicability of authentic learning to the social sciences in higher education, building on the enminding model of Stein and colleagues (2004) and Tochon (2000) by identifying relevant design principles and applying them to the design of a specific inter-disciplinary social science subject. The learning approach developed through this project emphasises critical reflection and collaboration with others to develop personal knowledge that values disciplinary content and practices rather than looking only to the world of professional practice for what is deemed to be authentic. This extends the conceptualisation of authentic learning beyond vocationally focused subjects and offers an alternative to the apprenticeship and simulated reality models that are commonly applied in higher education.

Subject designers should review the implications of the learning design proposed here when considering adapting it to their teaching. For students such a design includes increased workloads, the challenges presented by extensive group work, and role changes associated with a shift to working more independently. For the lecturer the main challenges include the identification of appropriate resources and a change of role to be more facilitative than directive, with the resultant impact on time for individual consultation as students adapt to new roles. The potential benefits in terms of student learning outcomes of such a learning design may indeed far outweigh the concerns raised. To this end the authors invite testing and critiquing of this learning design by others.

References

- Agostinho, S., Oliver, R., Harper, B., Hedberg, H., & Wills, S. (2002). A tool to evaluate the potential for an ICT-based learning design to foster high-quality learning. In A. Williamson, C. Gunn, A. Young, & T. Clear (Eds.), *Proceedings of Australasian Society for Computers in Learning in Tertiary Education* (pp. 29–38). Auckland: UNITEC.
- Baccarini, D. (2004). The implementation of authentic activities for learning: A case study. In *Seeking educational excellence*. Proceedings of the 13th Annual Teaching Learning Forum, 9–10 February 2004. Perth: Murdoch University. Retrieved March 6, 2005, from <http://lsn.curtin.edu.au/tlf/tlf2004/baccarini.html>.
- Bennett, S. (2005). Using related cases to support authentic project activities. In A. Herrington & J. Herrington (Eds.), *Authentic learning environments in higher education* (pp. 120–134). Hershey, PA: Idea Group Inc.
- Bennett, S., Agostinho, S., & Lockyer, L. (2005). Reusable learning designs in university education. In T. C. Montgomerie & J. R. Parker (Eds.), *Proceedings of the IASTED International Conference on Education and Technology* (pp. 102–106). Anaheim, CA: ACTA Press.
- Brown, J., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(Jan/Feb), 32–42.
- Bostock, S. J. (1998). Constructivism in mass higher education: A case study. *British Journal of Educational Technology*, 29(3), 225–240.
- Bruner, J. S. (1996). *The culture of education*. Cambridge, MA: Harvard University Press.
- Brylinsky, J. (1995). *Authentic discovery laboratories in motor learning*. Research report. Retrieved March 3, 2005, from <http://eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED387447>
- DEST. (2002). *Striving for quality: Learning, teaching and scholarship*. Canberra: Commonwealth of Australia.
- Herrington, J., & Oliver, R. (2000). An instructional design framework for authentic learning environments. *Educational Technology, Research and Development*, 48(3), 23–26.
- Cumming, J. J., & Maxwell, G. S. (1999). Contextualising authentic assessment. *Assessment in education: Principles, policy & practice*, 6(2), 177–194.
- Herrington, J., Oliver, R., & Reeves, T. C. (2003). Patterns of engagement in authentic online learning environments. *Australian Journal of Educational Technology*, 19(1), 59–71.
- Herrington, J., Reeves, T.C., Oliver, R., & Woo, Y. (2004). Designing authentic activities in web-based courses. *Journal of Computing in Higher Education*, 16(1), 3–29.
- Hughes, C. (1998). Practicum learning: Perils of the authentic workplace. *Higher Education Research and Development*, 17(2) 207–227.
- Khamasi, W. (2004). Journal writing as a tool of qualitative assessment in a Kenyan higher education context. *Journal of Authentic Learning*, 1. Retrieved April 17, 2007, from <http://hdl.handle.net/1951/391>.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, MA: Cambridge University Press.
- Laiken, M. E. (2002). Managing the action/reflection polarity through dialogue: A path to transformative learning. In A. Goody, J. Herrington, & M. Northcote (Eds.), *Quality conversations: Annual international conference of the Higher Education Research and Development Society of Australasia* (pp. 401–408). Jamieson Centre, ACT: HERDSA.

- Laurillard, D. (2002). *Rethinking university teaching: A framework for the effective use of educational technology*. London: Routledge Falmer.
- Maina, F. W. (2004). Authentic learning: Perspectives from contemporary educators. *Journal of Authentic Learning, 1*. Retrieved April 27, 2007, from <http://hdl.handle.net/1951/389>.
- Martens, R. L., Gulikers, J., & Bastiaens, T. (2004). The impact of intrinsic motivation on e-learning in authentic computer tasks. *Journal of Computer Assisted Learning, 20*(5), 368–376.
- Nicaise, M., Gibney, T., & Crane, M. (2000). Toward an understanding of authentic learning: Student perceptions of an authentic classroom. *Journal of Science Education and Technology, 9*(1), 79–94.
- Oakham, K. M. (2001). Let's kill the "C" word: Notions of authentic and synthetic in the teaching of journalism. *Australian Journalism Review, 23*(1), 199–216.
- O'Shea, T., & Self, J. A. (1983). *Learning and teaching with computers*. Englewood Cliffs, NJ: Prentice Hall.
- Radloff, P. (1999). If we have to situate learning for students to remember anything, won't that change our universities beyond recognition? In K. Martin, N. Stanley, & N. Davison (Eds.), *Teaching in the disciplines/learning in context: Proceedings of the 8th annual Teaching Learning Forum* (pp. 332–336). Perth: University of Western Australia. Retrieved March 24, 2005, from <http://lsn.curtin.edu.au/tlf/tlf1999/radloff.html>.
- Ramsden, P. (1992). *Learning to teach in higher education*. London: Routledge.
- Stein, S. J., Isaacs, G., & Andrews, T. (2004). Incorporating authentic learning experiences within a university course. *Studies in Higher Education, 29*(2), 239–258.
- Tochon, F. V. (2000). When authentic experiences are "enminded" into disciplinary genres: Crossing biographic and situated knowledge. *Learning and Instruction, 10*(4), 331–359.
- Van Oers, B., & Wardekker, W. (1999). On becoming an authentic learner: Semiotic activity in the early grades. *Journal of Curriculum Studies, 31*(2), 229–249.

Acknowledgements

The authors would like to acknowledge the support of an Educational Strategies Development Fund grant from the University of Wollongong.

Copyright © 2007 Borthwick, Bennett, Lefoe and Huber.