Authentic Activity as a Model for Web-based Learning

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Abstract: There has been a renewed interest in the role of authentic activities within courses as constructivist philosophy and advances in technology influence instructional design in higher education. This paper proposes ten characteristics of authentic activities, based on a substantial body of educational theory and research, which can assist teachers in designing more engaging and effective web-based learning environments. The paper presents the preliminary results of an in-depth investigation of two web-based courses using the aforementioned characteristics as an analytical framework. Preliminary analysis of the data generally supports the design of web-based courses around authentic activities.

Keywords: authentic activities, online learning, web-based learning environments

Authentic Activities

Influenced by constructivist philosophy and new advances in information technology, there is increasing interest among higher education faculty in authentic activities as a basis for learning in web-based courses. Whereas traditionally, activities have primarily served as vehicles for the practice of discrete skills or processes taught in courses using traditional instructional methods such as lecture and readings, a more radical approach being explored by innovative instructors is to build a whole course of study around a large scale authentic activity.

This more radical approach requires a shift in thinking about the role of activities in higher education courses. Brophy and Alleman (1991) have defined activities as: ‘Anything students are expected to do, beyond getting input through reading or listening, in order to learn, practice, apply, evaluate, or in any other way respond to curricular content’ (p. 9). Similarly, Lockwood (1992) stated that activities ‘encourage and affirm learning … [they] may take many forms, but essentially, they encourage the learner to respond to the text rather than remain passive’ (flyleaf).

Definitions of course activities such as these, derived from an earlier, more teacher-centered paradigm of teaching and learning, are inadequate within the context of web-based learning. The integration of constructivist learning theory and problem-based and case-based learning strategies with immersive scenarios and virtual role-playing places the activities that students’ complete as they study firmly at the heart of the design of the curriculum. Unfortunately, few instructors have ever experienced this type of
learning environment themselves, and thus they are unable to design and implement these types of authentic activities in their own courses. Our research project is aimed at providing faculty and instructional designers with an authentic learning model they can adapt for their own web-based courses.

**Purpose**

The overall purpose of this research study is to investigate the characteristics, implementation, and effectiveness of authentic activity as an alternative model for web-based learning in higher education. Specific research questions are:

1. To what extent does authentic activity provide an effective alternative pedagogical design for web-based higher education courses?
2. What are the specific characteristics of authentic activity that facilitate a whole course of study being grounded in a single complex activity?
3. What factors contribute to the successful adoption and implementation of web-based courses based around a single complex activity?

**10 Characteristics of Authentic Activities**

We began our study by reflecting on the characteristics of authentic activities described by various researchers, theorists, and practitioners. Ten design characteristics of authentic activities were identified in the literature. These characteristics are summarised together with supporting citations in Table 1. For instructors and instructional designers wishing to utilize authentic activities as a foundational component of web-based courses, we believe that these characteristics can provide a useful checklist. The goal of our research is to examine the implementation and effectiveness of the model across multiple courses.

1. **Authentic activities have real-world relevance**

   Activities match as nearly as possible the real-world tasks of professionals in practice rather than decontextualized or classroom-based tasks.

2. **Authentic activities are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity**

   Problems inherent in the activities are ill-defined and open to multiple interpretations rather than easily solved by the application of existing algorithms. Learners must identify their own unique tasks and sub-tasks in order to complete the major task.

3. **Authentic activities comprise complex tasks to be investigated by students over a sustained period of time**

   Activities are completed in days, weeks and months rather than minutes or hours. They require significant investment of time and intellectual resources.

4. **Authentic activities provide the opportunity for students to examine the task from different perspectives, using a variety of resources**

   The task affords learners the opportunity to examine the problem from a variety of theoretical and practical perspectives, rather than requiring a single perspective that learners must imitate to be successful. The use of a variety of resources rather than a limited number of preselected references requires students to detect relevant from irrelevant information.

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2 This set of ten characteristics is based upon an earlier set of characteristics developed by Jan Herrington for her 1997 award-winning doctoral dissertation titled *Authentic Learning in Interactive Multimedia Environments*. 
5. **Authentic activities provide the opportunity to collaborate**

   Collaboration is integral to the task, both within the course and the real world, rather than achievable by an individual learner.

6. **Authentic activities provide the opportunity to reflect and involve students’ beliefs and values**

   Activities require and enable learners to make choices and reflect on their learning both individually and socially.

7. **Authentic activities can be integrated and applied across different subject areas and extend beyond domain-specific outcomes**

   Activities encourage interdisciplinary perspectives and enable learners to play diverse roles and build expertise that is applicable beyond a single well-defined field or domain.

8. **Authentic activities are seamlessly integrated with assessment**

   Assessment of learning is seamlessly integrated with the major activity in a manner that reflects real world assessment, rather than separate artificial assessment tasks that are removed from the nature of the tasks inherent in completing the activity.

9. **Authentic activities create polished products valuable in their own right rather than as preparation for something else**

   Activities culminate in the creation of a whole product rather than an exercise or sub-step in preparation for something else.

10. **Authentic activities allow competing solutions and diversity of outcomes**

   Activities allow a range and diversity of outcomes open to multiple solutions of an original nature, rather than a single correct response obtained by the application of predefined rules and procedures.

**Methodology**

The overall study will eventually examine ten existing web-based courses that are intended to implement authentic activities as the primary focus for teaching and learning. Thus far, two web-based courses have been investigated. For each course described below, key personnel (project managers, instructors, and instructional designers, and subject matter experts) have been interviewed. In addition, the course websites have been analysed and critiqued. The findings are reported in reference to the three specific research questions listed above. But first, a brief description of these first two courses is provided below.

**Course Descriptions**

The first case we have analysed is a Masters level Research Methods course taught by faculty at Edith Cowan University in Western Australia. Students in this web-based course are challenged to learn both quantitative and qualitative research methods within the context of evaluating the impact of a school closure on a small rural community. Students undertake the tasks inherent in completing this authentic activity within a web-based virtual learning environment depicted in Figures 1 - 4. Figure 1 illustrates the welcome screen to the research course. From this screen, the learner can access any number of resources such as a planning calendar and data analysis tools, explore and contribute to online learning community bulletin boards, or enter the Postgraduate Study. The latter is illustrated in Figure 2. In the Postgraduate Study, the learner can access a variety of print, audio, and video materials relevant to the problem. Figure 3 illustrates a file...
cabinet where the learner can access the raw data, research notes, interviews, etc that have been compiled regarding the school and the community. Figure 4 is a screen capture of one of the interviews that the student can access while engaging in this authentic learning activity.

Table1: Characteristics of authentic activity, with supporting authors

<table>
<thead>
<tr>
<th>No.</th>
<th>Characteristic of authentic activity</th>
<th>Supporting authors, researchers and theorists</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>(Brown et al., 1989; Cognition and Technology Group at Vanderbilt, 1990a; Jonassen, 1991; Resnick, 1987; Winn, 1993; Young, 1993)</td>
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<td>2.</td>
<td>Are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity</td>
<td>(Sternberg, Wagner, &amp; Okagaki, 1993) (Lebow &amp; Wager, 1994)</td>
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<td></td>
<td></td>
<td>(Bransford, Vye, Kinzer, &amp; Risko, 1990) (Young, 1993) (Brown et al., 1989; Cognition and Technology Group at Vanderbilt, 1990a; Winn, 1993; Young, 1993)</td>
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<td>3.</td>
<td>Comprise complex tasks to be investigated by students over a sustained period of time</td>
<td>(Lebow &amp; Wager, 1994) (Bransford, Vye et al., 1990) (Cognition and Technology Group at Vanderbilt, 1990b) (Bransford, Vye et al., 1990; Cognition and Technology Group at Vanderbilt, 1990b; Jonassen, 1991)</td>
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<td>4.</td>
<td>Provide the opportunity for students to examine the task from different perspectives, using a variety of resources</td>
<td>(Sternberg et al., 1993) (Bransford, Vye et al., 1990) (Young, 1993) (Cognition and Technology Group at Vanderbilt, 1990b)</td>
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<td>5.</td>
<td>Provide the opportunity to collaborate</td>
<td>(Lebow &amp; Wager, 1994) (Young, 1993) (Gordon, 1998)</td>
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<td>6.</td>
<td>Provide the opportunity to reflect and involve students’ beliefs and values</td>
<td>(Young, 1993) (Myers, 1993) (Gordon, 1998)</td>
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<tr>
<td>7.</td>
<td>Can be integrated and applied across different subject areas and lead beyond domain-specific outcomes</td>
<td>(Bransford, Sherwood et al., 1990; Bransford, Vye et al., 1990; Jonassen, 1991)</td>
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<td>8.</td>
<td>Are seamlessly integrated with assessment</td>
<td>(Reeves &amp; Okey, 1996; Young, 1995) (Herrington &amp; Herrington, 1998)</td>
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<td>9.</td>
<td>Create polished products valuable in their own right rather than as preparation for something else</td>
<td>(Barab, Squire, &amp; Dueber, 2000) (Gordon, 1998)</td>
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<td>10.</td>
<td>Allow competing solutions and diversity of outcome</td>
<td>(Duchastel, 1997) (Bottge &amp; Hasselbring, 1993) (Young &amp; McNeese, 1993) (Bransford, Sherwood et al., 1990; Bransford, Vye et al., 1990)</td>
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The second case we analysed is from an undergraduate business communication course taught by faculty at the University of Western Sydney. This is an elective course that students would normally take in their third year. Students in this web-based course are challenged to develop business communications expertise within the context of assessing whether a company could benefit from an internal staff newsletter to facilitate communication. Students undertake the tasks inherent in completing this authentic activity within a web-based virtual learning environment that is depicted in Figures 5 - 8. Figure 5 illustrates the welcome screen to the business communications course. It’s the first day at work for the learner at a company called Virtual Records. In Figure 6, the learner is welcomed to the job by the business communications manager. Figure 7 illustrates the learner’s virtual office. Navigation through the course is enabled by the options displayed in the left column of each screen. Figure 8 is a screen capture of an interview with another employee, one of several that the student can access while engaging in this authentic learning activity.
Figure 1. Welcome screen from Research Methods course.

Figure 2. Postgraduate study screen from Research Methods course.
Figure 3. Research files screen from Research Methods course.

Figure 4. Video interview screen from Research Methods course.
Figure 5. Welcome screen from Business Communications course.

Figure 6. First briefing with manager screen from Business Communications course.
Your Office at Virtual Records

A modern little space. Angela looks after her staff.

Figure 7. Learner’s office screen from Business Communications course.

In Mario’s Office

Your First Interview with Mario De Palma

the External Communication Manager

2 pm - and Sharon shows you in to Mario’s office. He’s on the phone, leaning back in his chair, feet on his desk. He waves you to a seat and mumbles “2 secs” at you.

Figure 8. First interview screen from Business Communications course.
Findings To Date

The data from interviews with course personnel and the web site analysis has been imported into the NUD*IST (Non-numerical Unstructured Data Indexing Searching and Theory-building) qualitative data analysis program (Richards & Richards, 1991) to enable us to explore various themes and issues. While our analysis seeks to determine whether the ten characteristics of authentic activity for web-based learning are present and effective in the two courses we have analysed, we have also attempted to remain as open as possible to the identification of alternative characteristics. The preliminary themes and issues described below may be modified as we collect more data.

Question 1: To what extent does authentic activity provide an effective alternative pedagogical design for web-based higher education courses?

Theme 1: In the eyes of higher education instructors and instructional designers, authentic activity is a viable alternative pedagogical design for web-based courses.

Our preliminary analysis of these two cases lends support to the contention that authentic tasks, as described in the characteristics listed in Table 1, do provide an effective alternative model for the design of online courses at university level for most faculty and instructional designers. All personnel involved in the design and teaching of these two courses spoke positively about the experience in terms of student learning, student engagement, and their own professional development that resulted from participation and/or implementation of this type of web-based learning environment.

For example, one instructor commented that, after designing and working in a learning environment based on authentic tasks, she could never return to more didactic, lecture-based modes of teaching, even in her face-to-face courses. In a similar positive vein, an instructional designer from one of the cases pointed out that this type of course design gave her the opportunity to implement all the principles that she held most dearly with results that were immensely satisfying.

Theme 2: From the perspective of higher education students, authentic activity is a viable, even appealing, alternative pedagogical design for web-based courses.

Learning tasks that incorporate characteristics of the model described in Table 1 appear to be less threatening to students than other types of online courses. The real-life context and visual representation of the working space appears to provide a friendly point of reference for students that enables them to move quickly to meaningful engagement with the problem. For example, one teacher described an incident that occurred at an on-campus orientation session:

I stood behind two mature aged women who had expressed to me before things started that they didn’t want to do this unit. They hated the idea of it, they were terrified of it, they really disliked the fact that they had to do it. They were talked through how to access the site, the site came up and as they saw the image of the opening page, they turned to each other and said ‘Oh wow this is going to be great’. And they immediately weren’t scared of it, and I think that’s because it was presented in a human form.

(Interview with Camille)

Theme 3: Web-based courses utilizing authentic activity as the primary pedagogical design are effective with respect to expected outcomes.

Respondents were generally very positive about the learning tasks and their impact on students. One teacher, who had taught the course for many years as a lecture-based, face-to-face class noticed a ‘huge
leap’ in achievement for the authentic task web-based course as well as a readiness to engage in research methods that gave students a great deal of confidence:

They get a sense of what it is to be doing research. That doesn’t comfort them but at least they’re very realistic at the end of it. Apart from one or two students out of the 90, predominantly the feedback is ‘That was great. I really feel ready to go on, thank you.’ They have a great sense of personal satisfaction because they’ve got to the stage where they can do it. (Interview with Violet)

Theme 4: Building web-based courses around a realistic context is not sufficient to support engagement and learning. To be effective, the task itself must be inherently engaging and relevant to the desired outcomes.

The task itself may be of more importance than the realism of the context. In spite of this evidence of immersion and achievement noted above, respondents were generally dubious that simply providing a realistic context would guarantee that students would engage with a learning environment in an effective manner. One teacher noted:

Things can be real world without being engaging. Working in an industrial riveting shop is real world but is not very engaging. (Interview with Camille)

Other issues which appeared to emerge from the preliminary analysis related to the first research question included:

• Complexity: One respondent pointed out that complexity of task should not be confused with uncertainty about what is required: ‘I think you have to be careful about separating an ill-defined task from lack of clarity about what the task is’.

• Time on task: Respondents were aware that student engagement in tasks often led to a great increase in the amount of time students actually committed, often far in excess of the course requirements: ‘Ideally you would have the student pursuing the research at a very serious level, but the reality is … the unit is worth one semester’s work of 10 hours a week … it’s a big issue’.

• Collaboration: Respondents were generally positive about the benefits of collaboration, and saw it as a vehicle for a range of elements: ‘I am convinced that learning for most people is enhanced when they have to work with other people; when they have to take into account other people’s perspectives, to have to articulate themselves. When they have to interact with knowledge mediated by other people, that is a much stronger, richer learning environment’.

• Integration of learning across subject areas: One respondent pointed out that complexity needed to be appropriate to purpose: ‘If, for example, somebody lines up to learn how to use a software package they probably don’t want [to learn] certain generic skills that I would think are quite important, like conflict resolution’.

• Reflection: In addition to meeting standards of excellence, reflection was seen by one respondent as a very important part of the production of a polished product: ‘I think the process of polishing things is really important … you have to do that as part of the active reflection … going back to what you thought at the beginning and revising it. That’s absolutely core to the act of reflection’.

• Discomfort: One teacher reflected on the discomfort inherent in the learning tasks—such as in sharing and peer reviewing—and that both the students and the teacher put themselves ‘on the line’ through the public nature of online bulletin and discussion boards.
**Question 2: What are the specific characteristics of authentic activity that facilitate a whole course unit of study being encapsulated within a single complex task?**

**Theme 5: The first characteristic, the relevance of the real world task, appears very important.**

In discussing elements of a task that enable a whole course of study to be learned from its completion, respondents mentioned the importance of relevance within a real world context. Two of the respondents raised the issue of the trivialisation of learning, which critics of authentic approaches sometimes argue occurs when a learning area is tied to a single context or a visual representation as depicted in Figures 1-4 and 5-8. But another respondent refuted the notion by suggesting that a familiar context provided a starting point from which to draw examples, and comparisons to illustrate their understanding:

[In the learning environment, students are] able to discuss grounded theory, and ethnography in context, and the language they use is complex. They’ve got a context out of which they can draw examples, and they can illustrate the understanding. They have a much deeper conceptual understanding of the theoretical frames of the methodology … they’ve developed those understandings in context rather than just in an abstract form. (Interview with Violet)

**Theme 6: The fidelity of the simulated problem environment, although not a characteristic in our model, appears to be very important.**

The verisimilitude of the context was also considered important to the respondents. Everone who was interviewed commented on the engagement of students with the characters in the scenarios to the point where students discussed the characters’ personalities and traits as if they were real people. Respondents saw this as evidence of deep engagement and immersion in the learning tasks, but pointed out that initially there was a period of scepticism and reluctance shown by students. A ‘suspension of disbelief’ was required before students could fully enter the virtual ‘authenticity’ of the learning environment.

**What factors contribute to the successful adoption and implementation of activity-based online course units?**

As yet, no clear themes have emerged from the data in relation to this question. This research question will benefit from further exploration with a more diverse range of courses (as well the others). However, there are several antecedents to the development of the two online courses investigated to date that are worthy of discussion in this paper. For example, in both courses, the impetus for creation was the availability of development funding over and above normal university funding. The first course was supported by a competitive internal university initiative fund at the level of approximately 6,000 U.S. dollars, and the second course was supported by a nationally competitive grants fund at the level of approximately 20,000 U.S. dollars. Both funds were established to improve the quality of teaching and learning at the university level, not necessarily exclusively in online learning environments.

While funding was seen as a contributing factor to the successful development and implementation of activity-based courses online, most comments related to impediments to adoption. For example, the lack of models of task-based courses at the time of development was a significant problem for the authors and instructional designers of these two courses.

Lots of people had ideas and theory but nobody had tried to put it into practice. … There were no systems in place; nobody had done it before; nobody knew how to do anything, so there was a lot of personal learning attached to it. (Interview with Camille).
The scarcity of instructional designers and other personnel capable of contributing to the type of environment being developed was also an issue. The technology aspects of online learning compound this problem. For example, one respondent described the diverse range of capabilities instructional designers must bring to the design of online learning environments:

There are very few instructional designers who have the three kinds of qualities that I would see as being significant, which is: technical expertise, to know what is possible and what can be done; pedagogical expertise, genuine pedagogical expertise as there’s an awful lot of instructional designers who have read stuff in a book but who haven’t worked very closely with people or courses in action, so the understanding is fragile. And then the people skills to be able to work with academics who are not always the easiest people in terms of time and relationships to get on with. And finding people who have those three completely different sets of skills is very difficult. (Interview with Camille).

Institutional impediments also feature highly in respondents’ comments on problems associated with task-oriented online courses. For example, mandatory examinations impeded their efforts to create authentic assessment for courses. There was also an implied contradiction within university structures where on the one hand, faculty are encouraged to adopt innovative approaches to teaching online, but on the other, support structures are non-existent and procedural requirements create roadblocks to the smooth running of the course. The ignorance of university managers and decision-makers as to the nature of task-based online learning was also mentioned on a number of occasions, such as ignorance of the increased time required to develop the courses, and the massive increase in workload in dealing with student emails and discussion boards (Reeves, 2001).

Other issues raised by respondents as impediments include:
- the nature of technology failure and the frequent inability to keep students reliably online;
- lack of time for faculty to reflect on the process of teaching and learning online because of huge workloads;
- the established culture within universities that faculty act alone (the lone ranger model) and the fact that complex learning environments are best developed in teams;
- the perception amongst faculty that this approach is not going to work, and it is easier to maintain the tried-and-true methods; and
- the sometimes prohibitive cost of development and creation of scenarios.

Conclusion

This paper represents an interim report of a multi-year study to investigate the characteristics, implementation, and effectiveness of authentic activity as an alternative model for web-based learning in higher education. Preliminary analysis of the data from two courses (of the ten that will be investigated) lend generally positive support for the design of web-based courses around an overarching authentic activity. These positive perspectives are shared by teachers, instructional designers, and students. Nonetheless, these results should be viewed as preliminary in nature and subject to modification pending in-depth analysis of additional cases.

References


