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Authentic activities and online learning

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***Abstract**: There has been a renewed interest in the role of student activities within course units as constructivist philosophy and advances in technology impact on educational design and practice. This paper proposes ten characteristics of authentic activities, based on a substantial body of educational theory and research, which can assist teachers to design more authentic activities for online learning environments. The paper includes a short review of the literature, together with the list of characteristics attributed to appropriate authors and theorists. The paper concludes with a discussion of how the affordances of Internet technologies can facilitate the operationalisation of authentic activities in online courses of study.*

***Keywords**: authentic activities, online learning, Internet*

Authentic activities

There has been a great deal written about authentic activities in recent times as the influences of constructivist philosophy and new advances in technology impact on educational theory, research and development. As a result, the role of activities in courses of study has grown to the point where they are no longer relegated to the role of a vehicle for practice of a skill or process.

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 such as these which spring from a earlier, more teacher-centred paradigm of teaching and learning, now appear inadequate. The influence of a constructivist philosophy, of problem-based and case-based learning, and the use of immersive scenarios and role-play have placed the activity students' complete as they study firmly at the heart of the curriculum.

Constructivism's influence on the role of the activity

Under the influence of more 'instructivist' or teacher-centred approaches, activities were seen as a vehicle for practice. For example, in a systems approach to learning (such as Gagné, Briggs, & Wager, 1992) the activity or task that students do is described in a list of nine events of instruction as: 'Eliciting the performance', and is an opportunity for the student to show that he or she has mastered the skill and is able to demonstrate it to the teachers' satisfaction. The systems model is based on a behaviourist approach and on the assumption that if skills and sub-skills are taught in the right order, in a systematic and comprehensive manner, then effective learning will occur. Similarly, Dick and Carey (1990) describe the use of practice and feedback in the classroom:

> Not only should [learners] be able to practice, but they should be provided feedback or information about their performance … that is, students are told whether their answer is right or wrong … Feedback may also be provided in the form of reinforcement. Reinforcement for adult learners is typically in terms of statements such as "Great, you are correct". (p. 138)

Compare this approach to some of the learning environments designed from a more constructivist philosophy. For example, in an undergraduate engineering course described by Reeves and Laffey (1999) the students' task is to plan a mission to Mars, and to design a research station including a renewable power source to sustain life once a station is established. In another example of complex activity, Pennell, Durham, Orzog and Spark (1997) describe a web-based environment where students learn business communication skills by accepting temporary employment in a virtual recording company. They are given a complex task to complete, and in order to do it, they make appointments and keep a diary, 'interview' the director and other employees, and write letters, memos and reports. In these examples, there is no attempt by the teacher or designer of the course to break up content areas into skills and sub-skills, and teach each one in a systematic form with practice and feedback. Instead, the activity gives a purpose and meaning to the learning that will occur without predetermining and limiting the scope and sequence of the enquiry.

Complexity of this kind would be extremely difficult without the guidance and support of the teacher and by other students within collaborative groups. Such complex and sustained activities can guide learning in entire courses of study, where the activity does not supplement the course—it is the course.

The emergence of theories of learning such as situated cognition (Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991; McLellan, 1996), and anchored instruction (Bransford, Sherwood, Hasselbring, Kinzer, & Williams, 1990), and other influences such as problem-based learning (Savery & Duffy, 1996) and cognitive flexibility theory (Spiro, Vispoel, Schmitz, Samarapungavan, & Boeger, 1987), together with our own earlier work in web-based learning (author references here) have served to provide a substantial foundation for the design of complex activities as a central component of course design.

10 characteristics of authentic activities

In reflecting on the characteristics of authentic activities described by researchers, ten design characteristics of authentic activities have been identified in the literature. For teachers and designers of authentic activities, these characteristics can provide a useful checklist:

1. *Authentic activities have real-world relevance*

   Activities match as nearly as possible the real-world tasks of professionals in practice rather than decontextualised 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 form a variety of theoretical and practical perspectives, rather than allowing 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.

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*

   Activities need to 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 lead beyond domain-specific outcomes*

   Activities encourage interdisciplinary perspectives and enable diverse roles and expertise rather than a single well-defined field or domain.

8. *Authentic activities are seamlessly integrated with assessment*

   Assessment of activities is seamlessly integrated with the major task in a manner that reflects real world assessment, rather than separate artificial assessment removed from the nature of the task.

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 outcome*

    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 rules and procedures.

These characteristics are summarised together with supporting authors and researchers in Table 2.

Table2: Characteristics of authentic activity, with supporting authors

No.	Characteristic of authentic activity	Supporting authors, researchers and theorists
1.	Have real-world relevance	(Lebow & Wager, 1994) (Cronin, 1993) (Oliver & Omari, 1999) (Brown et al., 1989; Cognition and Technology Group at Vanderbilt, 1990a; Jonassen, 1991; Resnick, 1987; Winn, 1993; Young, 1993)
2.	Are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity	(Sternberg, Wagner, & Okagaki, 1993) (Lebow & Wager, 1994) (Bransford, Vye, Kinzer, & Risko, 1990) (Young, 1993) (Brown et al., 1989; Cognition and Technology Group at Vanderbilt, 1990a; Winn, 1993; Young, 1993)
3.	Comprise complex tasks to be investigated by students over a sustained period of time	(Lebow & 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)
4.	Provide the opportunity for students to examine the task from different perspectives, using a variety of resources	(Sternberg et al., 1993) (Bransford, Vye et al., 1990) (Young, 1993) (Cognition and Technology Group at Vanderbilt, 1990b)
5.	Provide the opportunity to collaborate	(Lebow & Wager, 1994) (Young, 1993) (Gordon, 1998)
6.	Provide the opportunity to reflect and involve students' beliefs and values	(Young, 1993) (Myers, 1993) (Gordon, 1998)
7.	Can be integrated and applied across different subject areas and lead beyond domain-specific outcomes	(Bransford, Sherwood et al., 1990; Bransford, Vye et al., 1990; Jonassen, 1991)
8.	Are seamlessly integrated with assessment	(Reeves & Okey, 1996; Young, 1995) (Herrington & Herrington, 1998)
9.	Create polished products valuable in their own right rather than as preparation for something else	(Barab, Squire, & Dueber, 2000) (Gordon, 1998)
10	Allow competing solutions and diversity of outcome	(Duchastel, 1997) (Bottge & Hasselbring, 1993) (Young & McNeese, 1993) (Bransford, Sherwood et al., 1990; Bransford, Vye et al., 1990)

Authentic activities online

Learning environments designed according to these guidelines can be offered successfully in a variety of modes. On-campus courses can be well accommodated, and there is a history of the success of this approach in modern applications of the apprenticeship system, work-based learning and internships. Collaboration, use of resources and the presentation of final products can readily be implemented when students and teacher are physically present, and access to places of professional practice is often readily available.

However, there is a great deal of pressure on universities to also provide quality learning outcomes for students who study at a distance, and the Internet has been identified as a means to provide that service. There has been much criticism of the tendency of some institutions to simply dump large tracts of text in modules or sections onto websites (Harasim, 1997; Noble, 1998), leaving students to study in lonely isolation. In this practice, educators are effectively ignoring the great potential and the significant affordances of the Internet to enable authentic tasks to guide student learning.

There are a number of affordances of online technology that enable these characteristics to be operationalised. For example, a web-based course of study can incorporate in its design a metaphor based on a realistic and authentic context to preserve the complexity of the real-life setting Students accessing the site can move freely around the resources as required, rather than in a linear manner through modules or sections of text in a set sequence. Problems presented to students can use the full capacities of the technology to present situations and scenarios in video clips, text links and images to give meaning and purpose to the students' endeavours, and to provide motivation to complete the task. The technology supports sustained effort by providing the capacity to support students at a distance, and to enable them to consult and collaborate as they work. Collaboration can be encouraged through appropriate tasks and communication technology. Discussion boards and chat rooms can be used to encourage sharing and joint problem solving within and among groups. The easy accessibility that the web provides to a wealth of resources and ideas enables learners to share in expert opinion and to create global communities of learners who can interact readily. The internet can be used most successfully to encourage reflection, such as through the use of reflective online diaries or the use of listservs as journals (Piburn & Middleton, 1997). Collaborative group work, peer assessment, and diversity of outcomes can be encouraged and supported on the internet through the use of communication technologies and the publishing capabilities of the web.

The design and creation of web courses to support authentic activities is not easily accomplished, and it undoubtedly requires a great deal more thought and effort than the development of didactic, content-based instruction. However, if we are to use the capabilities and affordances of technology, together with the findings of recent research and theory, to improve learning outcomes we must endeavour to examine more closely the role of student activities and tasks in the learning process. The use of authentic activities is one possible way to affect such change.

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