British Journal of Educational Technology *Vol 33 No 4 2002* 493–496

Colloquium

A design framework for online learning environments

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Online Learning Environments

Online learning environments can be of three types:

1. using the web as a supplement to face-to-face instruction,
2. using the web in a mixed mode with face-to-face instruction and
3. using web-based instruction instead of face-to-face instruction (Berge *et al*, 2000).

The online environments of the third type are referred to in the literature as web-based instruction, virtual learning, online learning and e-learning. However, the learning process in these environments is basically "hypermedia based instructional, which utilizes the attributes and resources of the World Wide Web to create a meaningful learning environment where learning is fostered and supported" (Khan, 1997). Web technologies are being used popularly at all levels of education and training. However, most of the web-courses are nothing more than a classroom lecture materials posted on to the web. Carr-Chellman and Duchastel (2000) say that "many online courses lack basic design consideration and that the web is simply being used as a medium for the delivery of instruction created within another framework" (p. 29). Detailed evaluation of online learning environments frequently reveals that courses tend to be electronic versions of the conventional print-based versions from which they have been derived (Dehoney and Reeves, 1998). This paper presents a design framework for creating online learning environments.

Design framework

A framework provides a basis for designing instruction. Sometimes it is referred as philosophy or the theory behind a specific design. Three schools of thought have been widely used and explored to provide guidance for instructional practice: behaviourism, cognitive psychology and constructivism (Villalba and Romiszowski, 2001). However of the three, constructivism has been identified as the most suitable one for online learning environments (Hung, 2001; Oliver, 1999; Hung and Nichani, 2001).

While the web enables us to transform constructivist tasks to be used in online learning (Table 1), the design framework (Figure 1) presented here is an eclectic one where the

Table 1: Constructivist tasks versus web tools

Constructivist tasks	*Web tools*
Establishment of personal and group objectives/goals	Emails, discussion groups, note pads
Discuss and debate ideas and receive feedback	Emails, discussion groups, voice-chat
Seek and collect information	Web page, search engines, digital drop boxes, book marking
Organizing information in a coherent framework	Software to analyze data, prepare labels, charts and concept maps
Integrate different external information to internal conceptions	Note taking, annotations etc
Generate/construct new information	HTML editors, web page creation tools, word processors, etc
Manipulate external information and variables	Simulation and animation on the web
Understanding real world phenomenon	Streaming media technology for audio and video

Source: Based on Oliver (2000)

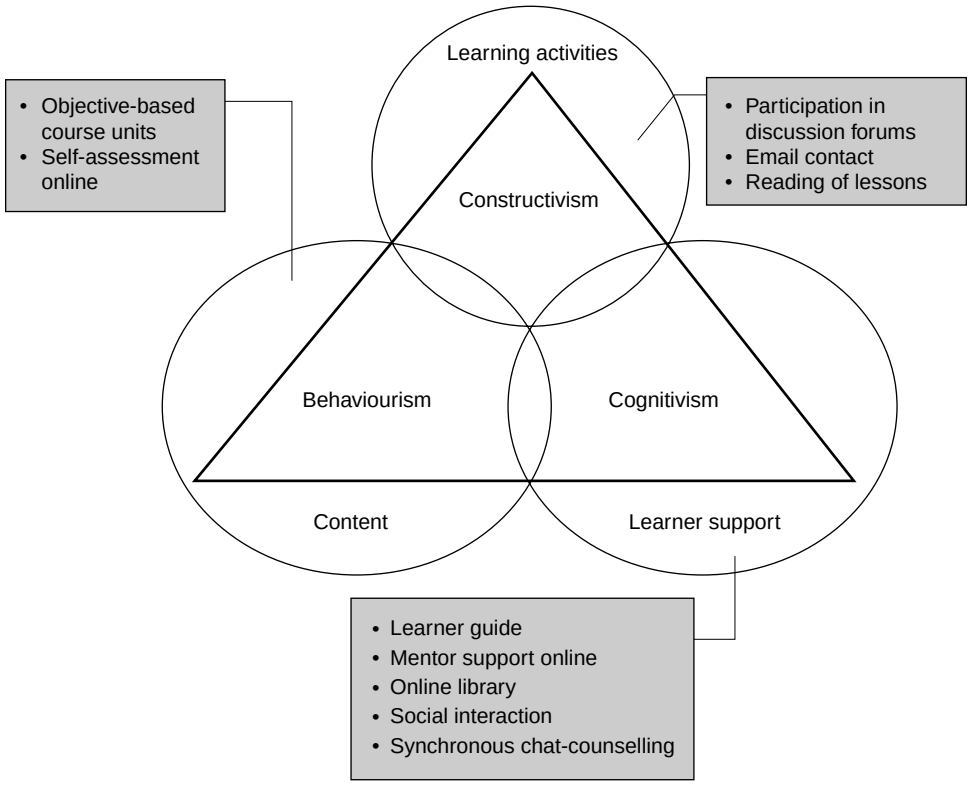

Figure 1: Design framework for online learning environments

Table 2: Approaches to instruction

Learning Theories	*Overall assumption*	*Basic instructional approaches*	*Online approaches*
Behaviorism	• Basically, behaviour is a function of its consequences. Learning is achieved through frequent response and immediate reinforcement of appropriate behaviour • Essentially, behaviour and performance are either seen as synchronous or performance is seen as the useful outcome of learning behaviour	• Instruction is designed to promote individual pacing and progress • Instruction is designed using a task analysis, which breaks down the behaviour into a sequence of observable actions • Assessment practices measure objectives in which behavior is operationally defined and measured according to some performance indicators	• Lessons with explicit objectives in behavioural terms in the web pages • Use of embedded self-assessment questions as interactive activities in the learning materials itself • Step-by-step description of learning materials in small chunks
Cognitivism	• New information is built on existing structures • Relevant processing activities are stimulated and specific strategies are taught to assume that the learner efficiently acquires the information or solves the problem	• Instruction is designed to promote processing activity akin to that of an expert • Assessment practices rely on observable behaviour but infer specific mental operations based on the design of the test	• Use of note-taking and annotation • Instructions for learning to learn • Peer-assessment of learning • Information seeking through search engines
Constructivism	• Learning is understood as interpretative and emergent, and under the control of the learner. Cognition is situated and must be understood in terms of the setting, purposes, tools, and tasks in which the knowledge is to be learned • Knowledge is to a large extent a negotiated meaning as cribbed to reality and should be achieved via collaborative group work	• The goal structure need to be negotiated through teacher-learner interaction • Learners are at the centre of the design activity. Some form of constructivism stress cooperative learning • Assessment practices are designed around real-life problems and promote self-evaluation and reflection and to maximize learner responsibility	• Use of discussion forums and chat (both synchronous and asynchronous techniques) • Email transfer amongst learners • Group projects • Streaming media use • Provision for social activities on the net

Source: Based on Villalba and Romiszoski (2001)

three learning theories and their basic instructional approaches (Table 2) have been integrated into one system.

Application of the framework

The framework depicted above has been used in developing the online learning facilities for a six-month Post-Graduate Certificate in Management of Displacement, Resettlement and Rehabilitation (http://www.rronline.org) offered by the Indira Gandhi National Open University, India. The programme, developed with the support of the World Bank, is now in the process of its impact evaluation. Using the framework, an attempt has been made to provide a complete learning environment to the distance learners through the use of the web technology. Being a social science programme requiring much discussion, it demanded more of constructivist approach. However, this framework provides a blend of all the best features of different approaches available with us. It is expected that this framework will also be useful in online delivery of other subjects.

References

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situated learning framework. The learning environment comprised a multimedia program for preservice teachers on assessment in mathematics, together with recommended implementation conditions in the classroom. Eight students were observed and interviewed to explore their perceptions of the situated learning environment.Â 3 There have been several attempts to use the findings of the research into contextualised learning to design a model of instruction. For example, Resnick (1987) pre-empted later models by proposing that bridging apprenticeships be designed to bridge the gap between the theoretical learning in the formal instruction of the classroom and the real-life application of the knowledge in the work environment. A Learner-Centered Design Framework for E-Learning. International Journal of Online Pedagogy and Course Design (IJOPCD), 4(4), 44-59. doi:10.4018/ijopcd.2014100104. Chicago. Fasso, Wendy and Cecily Knight, and Bruce Allen Knight.Â This paper presents a design framework for online learning. The framework is based upon the taxonomy devised by Dettmer (2006). In a learner-centered focus, it draws together the cognitive, affective, social, and sensorimotor domains of learning, and is situated with the concept of online personal learning spaces and environments. It is at this intersection of learning domains that the graduate attributes and general capabilities of students are able to be intentionally supported and demonstrated. I decided that learning how to design, facilitate, and manage an online discussion is critical for success in online teaching. CONTINUING - WITH THE SECOND AUTHOR While rarely phrased in this way, one of the more important goals of education, and for life-long learners in or out of formal educational settings, is thinking-to use the mind to arrive at a conclusion, make a decision, draw inferences, to reflect, to reason, to solve problems.Â This framework is placed within a broader context of discussion within a constructivist, online environment. We will present a selection of discussion questions that were gathered from experienced online instructors are presented with the goal of preparing students and teachers to participate effectively in online discussions.