

Respecting Diverse Talents and Ways for Learning

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BACKGROUND

Information technology is used to help learners gain the knowledge, confidence, and credentials they need to succeed. Contemporary approaches to online learning offer technology-mediated courses. The educational programs offered take full advantage of the power of the Internet to foster communication, learning, and skill and knowledge acquisition. Online distance education technologies are expanding at an extremely rapid rate because of the following advantages, it:

- removes geographical boundaries;
- provides direct access to the right/required information, that is, there is no need to go to the library;
- ensures flexible learning, for example, learning styles, interaction, timing, space, audience, and feedback;
- provides a better opportunity for learning processes via self-management;
- eliminates time constraints for learning particular (part of) course/material(s);
- supports an individual approach for each student, which is defined by the student via the course/subject navigator, that is, a focus on the individual student;
- provides a selection of different teaching/learning strategies; and
- ensures just-in-time learning, for example, sudden changes in company policy (or re-structuring) required by conditions in the marketplace often require changes in employee training.

Infrastructure for the online system should ensure facilities that could provide support for effective learning processes. The infrastructure consists of the basic Web technologies (i.e., e-facilities) such as Web courses, communication systems, system security,

and tools (e.g., software, navigators) that enable it to function. This technology should support the following key powerful forces in education: learning activity, the learner's expectations, cooperation, interaction, diversity, and the learner's responsibility. Online learning is the process of imparting or acquiring particular knowledge or skills electronically and remotely. Electronic versions of educational courses are the basis of online distance education. They provide a repeatable, consistent approach to managing the educational process online and on-target. Most of the electronic versions of education courses provide flexible, interactive learning materials for distance education.

Expressing knowledge by software is a major focus of online education systems development. Contemporary theoretical approaches to development of infrastructure for online distance education systems deal with methods and strategies for designing and delivering instructions at a distance to increase interactivity and active learning.

It is recognised that factors such as learners' cultural and socio-economic backgrounds, interests, experiences, and their educational levels are critical variables for online learning. However, most existing approaches do not provide support for consideration of these factors and do not help learners to identify how the available material satisfies their needs and educational goals and how the complexity level of the material is appropriate to their available (knowledge/skill, learning) capabilities. That is, there is not only the problem of expressing knowledge by software, but also the problem of presenting this knowledge at the required complexity level. Therefore, in order to ensure effective educational and learning processes, infrastructure for online education has to be engineered.

Utilisation of modern technologies in education is having an increasing effect on teaching and learning approaches. New strategies, methods, and tech-

niques in education improve educational and learning processes via interactivity and active learning. Online distance education is a distinct approach to educating learners who are removed in space and/or time from the teacher. The independence of place and time of educational systems, flexibility in teaching approaches, along with the variety of options offered by technology have opened up exciting possibilities. There are many e-learning technologies that are available for various teaching and learning approaches.

BASIC PEDAGOGICAL APPROACHES

Online technology supports three basic pedagogical approaches to learning processes, that is, instructional/traditional, constructivistic individual, and social constructivism approaches.

Unlike the traditional approach, where the focus is on the teacher and the course materials, the e-learning infrastructure supports communication media via Web sites that may present textbooks/journals on the Internet, lecture notes and PowerPoint slides, interactive tests, computer graphics, animations, sound and videos.

In the student-centred or constructivistic individual approach where the student develops his/her knowledge and personality, the online courses must encourage the student to take responsibility for his/her own studies. The teacher acts as a facilitator and advisor.

The social constructivism approach focuses on the interaction between the individual and society and how they influence each other. Therefore, the online technology must support the learner interaction via communication/collaborative tools such as e-mails, telephone, virtual group rooms, videoconference facilities, and chat facilities to ensure synchronous and asynchronous interactions.

BASIC TEACHING MODELS

Theories and philosophies of distance education (Horton, 1994; Keegan, 1986; Perraton, 1988; Prawat

& Floden, 1994; Savery & Duffy, 1995; Scardamalia & Bereiter, 1994; Schlosser & Anderson, 1994) define two opposing approaches (Bredo, 1994; Sherry, 1996) to the teaching models: symbol-processing and situated cognition.

These approaches impact both ways—the way in which information is transmitted to the learner and the way in which the learner constructs new knowledge from the information that is presented.

Symbol-Processing Approach

The traditional, information-processing approach or symbol-processing approach is based on the concept of a computer performing formal operations on symbols (Horton, 1994; Seamans, 1990). The key concept is that a teacher transmits a fixed body of information to the learners via an external representation/medium. The learner develops his or her own image and uses it to construct new knowledge, in context, based on prior knowledge and abilities.

Situated-Cognition Approach

The alternative approach is based on constructivist principles, in which a learner actively constructs an internal representation of knowledge by interacting with the material to be learned. The learner must work in a very structured way. This is the basis for both situated-cognition (Streibel, 1991) and problem-based learning (Savery & Duffy, 1995) models.

In this approach, distance education systems involve a high degree of interactivity between teacher and learner, and the distance teacher becomes an advisor and facilitator of learning, rather than a communicator of a fixed body of information (Perraton, 1988). The learning process proceeds as knowledge building between teachers and learners.

Traditional teaching and learning strategies are supported by a wide range of e-learning technologies. The challenge of the most current research, teaching, and learning projects is the development of e-learning technologies to support constructivist and social constructivism in teaching and learning approaches.

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