

Designing online courses in the light of learning styles

Introduction

No one can deny the impact of technology upon the field of education. One of these impacts has been the online medium of delivery of education, often called e-learning, which can change the way one learns dramatically. However, this also raises concerns related to the strategies for designing learning environments.

The need to offer distance learning courses has led to instructional designers rushing to deliver content through web-based systems and little or no thought has been given to the quality of this content. The application of technology in education seems to be ineffective if it purely mimics the traditional face-to-face classroom. This paper argues that the way forward lies in addressing different learning styles when developing learning objects. This belief is consistent with the view expressed by Garland and Martin (2005:1) that the learning style of all students must be considered when designing online courses.

Learning Styles

Psychologist Howard Gardner's work, *Multiple Intelligences* (1993), has been effectively used by educators over a number of years. The successful application of this theory in traditional classroom environments has paved the way for its application in an online learning environment. The theory provides instructional designers and e-teachers with a stimulus for matching technology facilities to learning styles, thus improving students' adaptivity to learning systems.

Gardner (1993) views intelligence as the ability to solve problems or to develop products that are important in a given environment or cultural community. He (GARDNER, 1999, p.41-43) originally proposed seven types of intelligences: verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinaesthetic, musical-rhythmic, interpersonal-social and intrapersonal-emotional.

The aforementioned intelligences are both biological and acquired. Furthermore, they are capable of changing over time. Human beings possess all of these intelligences, having some more developed than others. According to Gardner (2003:13), it is "fundamentally misleading to think about a single mind, a single intelligence, a single problem-solving capacity".

Under no circumstances, should educators label a student as being only talented in a certain area. Their role should be of encouraging learners to have their multiple intelligences developed. Accordingly, web-based activities can serve this purpose as they offer a rich environment for enabling learners to develop their capabilities and potentialities.

Learning Objects

The possibilities for integrating educational technology with multiple intelligences are various. One example of educational resources being employed in technology-supported learning is called Learning Objects. The IEEE (2002) standardization draft defined learning

objects as any entity, digital or non-digital, that may be used for learning, education or training. New Media Consortium (NMC) defined learning objects as any grouping of materials that are structured in a meaningful way and are tied to an educational objective (Johnson, 2003 in Smith, 2004).

There are various attempts to characterise learning objects, but as the focus of this paper is on digital learning objects, the definition from Koper (2003) will be considered most suitable. He refers to learning objects as “units of learning” defined as digital objects with a specific educational purpose

The process of development of learning objects, which should aim, first and foremost, at providing efficient and customised resources, has to take into consideration primarily the student. Reigeluth (1999) says that apprentices must be at the top of the instructional structure.

The implementation of learning objects taking into account the theory of multiple intelligences provides an environment for the students to exercise their potentialities, allowing dynamic approaches to be adopted.

Designing learning objects which can cater for an array of learning styles may sound daunting but in fact it is far from being an insurmountable task. Backer (2001) suggests considering eight questions when doing so:

1. Who are the learners?
 - (a) What will be the learning outcomes of the multimedia subject, or course?
 - (b) What will be the content of the multimedia, subject, or course?
 - (c) How will the content be ordered?
 - (d) What teaching methods/learner activities will be used?
 - (e) What media will be used?
 - (f) How will the learning be assessed?
 - (g) How will the subject/course be evaluated for improvement?

Theoretical Foundation

The role of social interaction in the development of cognition is fundamental for learning to take place, either in face-to-face or online classroom. For Vygotsky (1978:57) it was the interaction with teachers or peers that allowed students to advance.

The Vygotskian theory of zone of proximal development, i.e. the distance between what students could accomplish by themselves and what they could accomplish when assisted by others, enables us to understand how socioconstructivist environments can provide fruitful learning opportunities. E-learners stand to benefit from the sociocultural approach, because it is through interaction with peers or teachers that they can develop understanding. Researchers have found that online discussions provide the conditions for students to practice their literacy skills in a non-threatening environment (Colomb & Simutis, 1996).

Nonlinearity

Technology-enhanced environments based on the constructivist models are amenable to a student-centred approach, mainly with the development of hypertext³ and hypermedia⁴, creating a non-linear mode of instruction. Therefore, such environments provide should permit learners with opportunities to create their own learning (Mergel, 1998).

As opposed to traditional text, information within a hypertext may be retrieved in a sequence specified by each user. Shapiro and Niederhauser (2003:605) state that there is a greater degree of learner control when engaged in hypertext-assisted learning (HAL).

Collaborative Learning

A successful online learning experience is also promoted when it is student-centred and focuses on collaborative work by fostering a sense of community and collaboration in the classroom (KAHMI-STEIN, 2000; PLASS & CHUN, 1996). Learning at a pace that meets the needs of the learner enables them to become more active in their learning. Jonassen, Carr, and Yueh (1998:13) regard learners as actively engaged in interpreting the external world and reflecting on their interpretations in the sense that they must participate and interact with the surrounding environment in order to create their own view of the subject.

According to Larsen-Freeman (2000:164), cooperative or collaborative learning essentially involves students learning from each other in groups. But it is not the group configuration that makes cooperative learning distinctive; it is the way that students and teachers work together that is important.

In collaborative learning environments, students have the chance to learn cooperatively, which allows the members of a community of learners to be able to teach each other something in a learner-centred fashion. Effective learning experiences are created when each group member is encouraged to feel responsible for participating and for learning. Learners' level of motivation is high and leadership is distributed, as they share experiences and solve problems.

Autonomy

Given the fact that constructive online environments enhance learning, in the sense that learners play an active part in their own learning, being able to make appropriate decisions, they start to gain higher degrees of autonomy.

Freire (1997) understands autonomy as the learner's capacity and freedom to construct and reconstruct the taught knowledge.

From the moment students have achieved autonomous learning, they are able to decide which learning objects will facilitate learning and attend to their needs. By using online search engines such as *Google*, they can choose from a wide range of learning objects available.

³ Hypertext is text which contains links to other texts.

⁴ Hypermedia is hypertext which can include graphics, video and sound.

Conclusion

The main concern must be not to simply reproduce traditional methods in an online learning environment. In doing so, one may run the risk of restricting the number of learners whose learning styles will be taken into account. Kaminski (2002:7) reiterates this idea in:

“Specific attention must be given to online student learning styles. The opportunities extended by distance education cannot be taken advantage of if, during implementation, they replicate the problems found in traditional classrooms”.

Technology-enhanced learning environments will only realize their potential if they provide learners with the necessary tools to become responsible for their own learning. In the long run, if due consideration is given to employing a flexible, adaptive, student-centred, non-linear, personalised, interactive and collaborative web-based learning system, the learning experience will be more likely to result in successful learning outcomes.

References

- BACKER, P. (2001) Instructional design for multimedia and the WWW.
- COLOMB, G. & SIMUTIS, J. A. (1996) Visible conversation and academic inquiry: CMC in a culturally diverse classroom. S. C. Herring (Ed.), Computer-mediated communication: Linguistic, social, and cross-cultural perspectives. Amsterdam: John Benjamins.
- FREIRE, P. (1997) *Pedagogia da Autonomia*. Rio de Janeiro: Paz e Terra.
- GARDNER, H. (1993) *Multiple Intelligences: The Theory in Practice*. New York: Basic Books.
- GARDNER, H. (1999) *Intelligence Reframed: Multiple Intelligences for the 21st Century*. New York: Basic Books.
- GARDNER, H. (2003) *Multiple Intelligences After Twenty Years*. Invited Address, American Educational Research Association.
- GARLAND, D., MARTIN, B. N. (2005) Do gender and learning style play a role in how online courses should be designed? *Journal of Online Interactive Learning*.
- JONASSEN, D. H., CARR, C., YUEH, H. P. (1998) Computers as mindtools for engaging learners in critical thinking. *TechTrends*, 43(2), p. 24-32.
- KAHMI-STEIN, L. D. (2000) Looking to the future of TESOL teacher education: Web-based bulletin board discussions in a methods course. *TESOL Quarterly*, 34, p. 423-455.
- KAMINSKI, C. (2002) Formative use of select-and-fill-in concept maps in online instruction: Implications for students of different learning styles. *Proceedings of the Association for the Education of Teachers in Science Conference*.

KOPER, R. (2003) Combining reusable learning resources and services with pedagogical purposeful units of learning. Reusing Online Resources. Kogan Page, London.

LARSEN-FREEMAN, D. (2000) Techniques and Principles in Language Teaching. 2nd ed., Oxford University Press.

MERGEL, B. (1998) Instructional design and learning theory. Professional and Theoretical Issues in Educational Technology: Occasional Papers.

PAIVA, V.L.M.O, (2005). Autonomy and complexity
<http://www.veramenezes.com/autmy.htm>

PLASS, J. & CHUN, D. (1996) A hypermedia system for CALL in a networked environment. M. Warschauer (Ed.), Telecollaboration in foreign language learning, p. 83-103. Honolulu: University of Hawaii Press.

REIGELUTH, C. M. (1999) Instructional-design theories and models. Volume II. Lawrence Erlbaum Associates.

SMITH, R. S. (2004) 'Guidelines For Authors Of Learning Objects'. New Media Consortium, McGraw-Hill Education.

SHAPIRO, A., & NIEDERHAUSER, D. (2003) Learning from hypertext: Research issues and findings. D. H. Jonassen (Ed.). Handbook of Research for Education Communications and Technology, 2nd ed. Mahwah, NJ: Lawrence Erlbaum Associates.

VYGOTSKY, L.S. (1978) Mind in Society - the Development of Higher Psychological Processes. Harvard University Press, Cambridge.

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