

Learner Continuum Technology Enhanced Learning Model via Technogogy

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Abstract: Despite the lip service paid to individual differences, traditional education has failed to move away from the group mentality that has driven it for so many years. The very language of education, which separates students into grades, classes, honors, average, even learning styles, forces the mind into perceiving groups, not individuals. Technogogy is defined as the convergence of technology, pedagogy and content in the transformative use of technology to foster learning. The relationship between technology, pedagogy and content in a converging role has been deliberated from a three-dimensional perspective such that we can teach a certain (learner-based) content in a certain way using a certain technology, giving rise to the creation of a unique learning object. The application of technogogy will now witness the presentation of content in a continuum rather than a segmented approach for a specific cohort., each level taking into account the learner characteristics, learning styles and preferences and the production of a variety of appropriate media components to support, complement or for the purpose of teaching and knowledge retention, giving rise towards individualised learning and personalisation. Then on, we can create a 'directory' of learning objects.

Key-Words: Technogogy, Personalisation, Directory, Learning objects, Learning styles, Individualisation

1 Introduction

Many aspects of the computer mediated environment has been ventured, whether in a stand-alone fashion, online, offline, synchronous, asynchronous, virtual reality or any blended model. Various pertinent issues such as ones relating to the learners where Stephenson [1] pinpointed the ever pressing relationship between online pedagogy and good e-Learning design, modality preferences of the students in a web-based environment [2], the development and utilisation of learning objects [3], as well as works on literacy in the integration of technology in the teaching environment [4].

Educational technology has overtaken us in terms of the provision of a transformative learning environment. Learning management systems (LMS) as well as learning activity management systems (LAMS, undated) is now made available to us for immediate use, leaving us to further interject with more transformation in the educational environment to foster learning. It is time that we apply fully the immense versatility, diversity and depth that technology can muster and honour the very rich interplay from, and intersection of technology, content (the subject-matter) and the pedagogy (the means of teaching it). Too, e-learning which is a vehicle that covers a wide range of technology-

delivered instruction to enhance traditional approaches to learning can be elevated to a new level of excellence in the learning environment.

2 A Matter of Student's Learning Styles

This bring us to the ever crucial area of how do we educate on students. Put succinctly, teaching and learning do not improve because of improved technology [5]. Specifically, content is meaningless without context. And context is not created by sitting in front of a computer reading content [6]. Learning is improved when it is grounded in practical learning theory. By itself, more technology will not make education more efficient. For these reasons, it is imperative that the learning environment of the digital era is developed or the present environment be redesigned so that it is relevant to the power, potential and versatility of the gamut of educational technology available today.

Different students have different learning styles and this occur in a wide variety of ways, including the types of instruction to which they respond best, the ways they approach their individual studies (strategies to studying and learning approaches), and their perception and attitudes about the nature of

knowledge and their role in constructing it (cognitive levels).

An objective of education should thus be to help students build their skills in both their preferred and less preferred modes of learning. The learning theories provide good frameworks for designing instruction with the desired breadth. The goal is to make sure that the learning needs of students in each model category are met at least part of the time. When mismatches exist between learning styles of most students in a class and the teaching style of the teacher, the students will 'disengage' from the educational environment.

This was corroborate by the works of Ulieru et al [7] when they determined the range of learning styles of the first year of Electrical Engineering and Materials Engineering, Mechatronics, and Robot Equipments students from Valahia University of Targoviste in 2007 and found that they corresponded to six learning styles of participative, collaborative, competitive, retractile, independent and dependent as the main learning style of each student. The mission of the teacher was to help students in realizing their own learning style and to adopt adequate teaching strategies.

3 Technology

The transformation of the learning environment is a crucial element in the definition of technogogy as it signifies the power and function of information and communication technologies and its use in the teaching and learning process. Coming back to the use of educational technology, we always view the functionality of technology from the standpoint of the student on the pretext of it being learner centred. Together with this notion, we adopt the concept of facilitation and transmission of learning that we contend are not an effective approach as we subsume a lot of the initiative and creative use of technology on the student's characteristics (supposedly). There is no concrete direction of encouraging an individual to engage in practices that will result in meaningful learning, due to the incapability of the students to venture beyond what is presented by faculty.

The power of technology, as portrayed in a convergent mechanism via multimedia computing and the Internet must go beyond presenting facts with more razzmatazz, colour, audio, visual, simulation and animation, but must have the capability to converge in the educational environment transaction, the function of the teacher, the needs of the students, the learning styles, the

learning theories and the various pedagogies and the different functioning technologies.

Technogogy is the convergence of technology, pedagogy and learner-based content where the three components have a three-dimensional relationship resulting in a specific learning object design. Although we talk about a personalised learning environment and learner-centredness, we have not even analysed the learning styles and preferences of students; let alone incorporating learner needs in our lesson design. Technogogy can be applied in any area or discipline as it forces the consideration of the three components in the design of the lesson plan and subsequently enrich the learning environment with more specific learning objects the subjects taught. Technogogy was also illustrated [8] in action in engineering education in order to strengthen the unique needs of engineering students and the design for their instruction.

4 Reorientation of Technology

Technogogy can incorporate the teaching elements pertinent to the children as well as that of the adult learner towards the transformation of the environment to foster learning. In effect it is, looking from the standpoint of technology, converging the components of technology, pedagogy and content for all ages [9].

We also need to re-orientate technology from the conventional direction of resource development (Figure 1) to an approach where the direction, preferences and development evolves through the facilitation of educational transaction, with technology playing a pivotal function in the integration of the pedagogy, content, teacher and the learner.

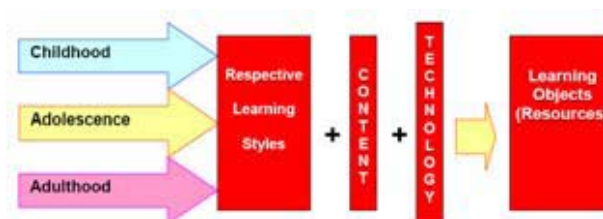


Fig. 1 The conventional direction of resource construction

Figure 1 shows a traditional approach in the creation of a learning resource, or also known as a learning object. Each cohort would be addressing each own circumstance in the design of the resource separately from the previous or next level (cohort). If we consider a reverse view in the direction of the

resource construction, we will observe a very different outlook, as shown in Figure 2.

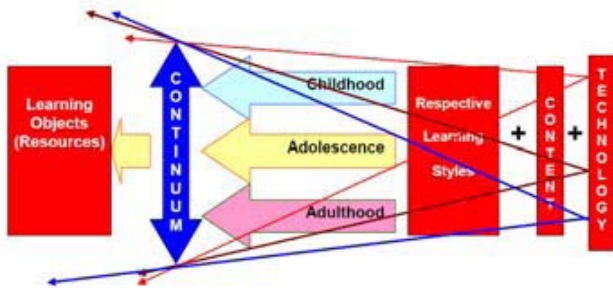


Fig. 2 Resource constructions pivoting on technology

Rather than having each cohort from childhood to adolescence and into adulthood move separately in the direction of technology, pivoting on technology will enable one to proceed with the design of a topical learning resource that view the various cohorts in a continuum. In the case of Figure 2, it is possible to design a certain topic in a continuum of cohort, taking into account the inherent styles and preferences of one cohort and continuing the design of the same topic for the next cohort and to the next cohort. The design will construct the degree of difficulty as one progress along the continuum. In this way, it is possible cater for the self-paced learning of each cohort with the ability to go forth or refer to an earlier content in their learning endeavour.

Via technology, will now witness the presentation of content in a continuum rather than a segmented approach for a specific cohort., each level taking into account the learner characteristics, learning styles and preferences and the production of a variety of appropriate media components to support, complement or for the purpose of teaching and knowledge retention. We can now witness the design of content (learning object) for the learning environment that is based on many learning theories such as situated learning, multiple intelligences, experiential learning, constructivist theory, cognitive load theory as well as connectionism [10], to name a few.

Ultimately, based on technology, a student can enter a site and be administered an interactive learning style self-assessment and subsequently be led to a sector where appropriate learning resources/objects (based on the student's style and preferences) awaits.

There the student is served with a buffet of learning that has been laid out to choose or try in his educational transaction; the logistical difficulties in

creating learning experiences to suit every situation and learning style, notwithstanding. This will give rise to new paradigm in the design of the learning environment and experiences in technology that pivots on technology for the presentation of a pedagogy-rich learning environment.

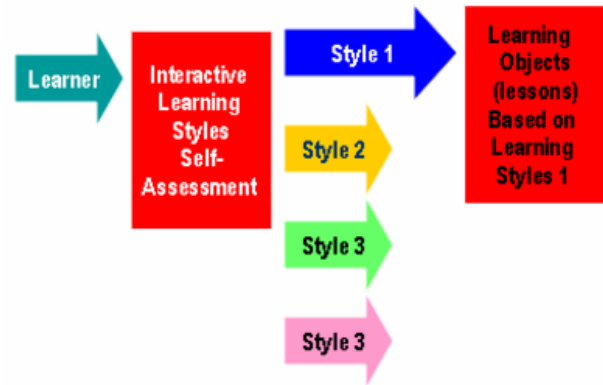


Fig. 3 Learning style-based learning objects

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5 Conclusion

The power of multimedia computing makes it possible for technology to cater for the needs of pedagogical elements that can be viewed from the standpoint of technology. Technology will allow for a continuum from childhood to adolescence and into adulthood in a way that addresses both learning needs and activities. This is crucial as we talk about student-centredness; we should offer multiple paths to learning as cited research also shows that students are more successful in school and find it more satisfying when they are taught in ways that are responsive to their readiness levels, interests, and learning profiles [11]. Technology and the Learner Continuum Technology Enhanced Learning Model provides the framework to personalize instruction, enhances learning by considering the technology available and help learners construct new knowledge via pedagogically articulated strategies. Otherwise, we are not doing justice to rich interplay of technology, pedagogy and learner-based content.

References:

- [1] Stephenson, J., Learner managed learning: an emerging pedagogy for online learning? *Conference paper delivered to BECTA*, November 2001, retrieved July 17, 2006 from <http://www.johnstephenson.net/becta.pdf>, 2001
- [2] Kaur, P., Atan, H. & Idrus, R.M., A comparison of student's achievements between different modalities in the web-based learning environment. *Malaysian Journal of Educational Technology*, 2003, 3 (2), pp. 33-40.
- [3] Jovanovic, J., Knight, C., Gasevic, D. & Richards, G. (2006). Learning object context on the semantic web. In *Kinshuk et al (Eds.) Proceedings of the 6th IEEE International Conference on Advanced Learning Technologies*, IEEE Computer Society, 2006, pp. 669-673.
- [4] Jilks-Racine, J. (2005). Literacy and technology infusion: Multimedia projects for teachers and students. In *Kommers, P. & Richards, G. (Eds.) Proceedings of the World Conference on Educational Multimedia, Hypermedia & Telecommunications (Ed-Media 2005)*, AACE, 2005, pp. 241-246
- [5] Jamieson, P., Improving teaching by telecommunications media: Emphasising pedagogy rather than technology. In *Collis, B. & Oliver, R. (Eds.) Proceedings of Ed-Media 1999: world conference on Educational Multimedia, Telecommunications*, Charlottesville, VA: AACE, 1999, 85-90
- [6] Downes, S. (2002). The learning web, retrieved July 17, 2006 from <http://www.downes.ca/cgi-bin/page.cgi?post=3851>
- [7] Ulieru, V.G., Draghicescu, L. & Stancescu, A.M.P.I, Metacognition and Learning Styles, 5th *WSEAS/IASME International Conference on Engineering Education (EE'08)*, 2008, pp. 49-54.
- [8] Idrus, R.M, Transforming Engineering Learning via Technogogy, 5th *WSEAS/IASME International Conference on Engineering Education (EE'08)*, 2008, pp. 33-38
- [9] Idrus, R.M. & McComas, K., Technogogy: Facilitating the transformation of learning. *Special Issue of the International Journal of the Computer, the Internet and Management*, 2006, 14 (1), pp. 5.1-5.9.
- [10] Kearsley, G. (undated). Explorations in learning & instruction: the theory into practice database, retrieved July 17, 2006 from <http://home.sprynet.com/~gkearsley/tip/theories.html>
- [11] Stansbury, M., Technology Empowers Differentiated Learning, eSchoolNews, retrieved May 13, 2009 from <http://www.eschoolnews.com/resources/empowering-education-through-technology/empowering-education-through-technology-articles/index.cfm?rc=1&i=57064>