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A Theoretical Framework for Effective Online Learning

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ABSTRACT

A key, overarching goal for any committed educator is to ensure that the learner has a meaningful and memorable learning experience while achieving the desired learning outcomes. In this paper it is argued that in order to achieve such a goal, a strategy needs to be put in place that is capable of providing students with a fully integrated, all-encompassing learning environment. The reasoning, simply, is that learning will not necessarily emanate from one specific source and when it happens, it will occur through different means, for different people. One of the great strengths of the online learning space is that, harnessing the power of the various information and communication technologies (ICTs), there is greater scope for catering for individual learning needs. With this in mind, the paper puts forward a framework that comprises a number of overlapping ‘sub-environments’ which, together, provide the scaffolding considered essential for the construction of a truly holistic learning environment. To illustrate how this framework for effective online learning can be operationalised, the authors refer to the case of Universitas 21 Global, an institution which offers completely online programs to post-graduate students in more than 40 countries around the world.

INTRODUCTION

Online delivery of education can no longer be regarded as a fad or the realm of the nerd. The point of departure in this paper is that after centuries of very little change, we are now on the brink of a major paradigm shift; a key factor being the ‘disruptive technology’ of eLearning (Hart & Christensen 2002). This development is to be welcomed because of the vast opportunities it presents to people who are currently poorly served, or not served at all by educational institutions. However, while the benefits of this technology-facilitated liberation of education are well-documented (see, for example, Williams & Goldberg 2005), eLearning continues to suffer from the ‘Shangrila’ syndrome – people talk about it but they do not know how to get there. One of the reasons for this is that eLearning, while now firmly established in practice, is still in its infancy as a science. It is possible to draw to a certain extent on the distance education literature, but as Calvert (2005: 227) observes, ‘its models and methods are under challenge by the online revolution’. A grand unifying theory of eLearning thus

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remains elusive and eLearning practitioners continue to operate largely on the basis of trial and error (Nichols 2003).

This paper represents a modest attempt to contribute to the fledgling body of knowledge with respect to eLearning theory. It puts forward a 'holistic learning environment' framework that is neither grand nor unifying, but one that is useful in terms of organising one's thinking when contemplating online learning design. Comprising a number of overlapping 'sub-environments', this framework provides the scaffolding that the authors consider essential for the construction of a truly integrated and effective online learning environment.

The 'proof of the pudding is in the eating', of course, and to demonstrate how this theoretical framework can be operationalised, the authors refer to the case of Universitas 21 Global (U21G), a completely online institution offering degree-level courses to over 1000 post-graduate students in more than 40 countries around the world. The flagship program is the Master of Business Administration (MBA) program which has been offered since mid-2003. The learning design for this program is based on the theoretical framework described in this paper.

BACKGROUND

U21G (<http://www.u21global.com>) is an online graduate school owned by 16 member universities of Universitas 21 consortium (<http://www.universitas21.com>) (McGill University, University of British Columbia, University of Virginia, University of Birmingham, University of Edinburgh, University of Glasgow, University of Nottingham, Lund University, University of Freiburg, University of Melbourne, University of New South Wales, University of Queensland, University of Auckland, National University of Singapore, University of Hong Kong, and Fudan University) and the world's largest publisher, Thomson Learning (<http://www.thomson.com/learning/>). As long-established and highly reputable institutions, the universities are particularly concerned with preserving their international reputations, hence, a separate external quality assurance body, U21pedagogica (U21p) (<http://www.u21pedagogica.com>) has been set up to monitor quality control. This has had a very strong bearing on the direction taken by U21G to the extent that there has been absolutely no compromise on quality. The institutional culture that has developed as a consequence is captured by the oft-quoted phrase within U21G: "someone has to get it right, and it might as well be us!". This sentiment takes on greater significance, of course, in the context of a number of celebrated eLearning failures (e.g. UKeU; NYU online; and Fathom).

The target audience for the MBA program are working adults, the large majority of whom hold middle management positions. The average age of students is 35 years old, average work experience is 11 years, and the majority are married (72%). No fewer than 83% travel to other countries in the course of their jobs. These students tend to fall into two camps: (i) individuals who are highly motivated having selected U21G from a list of possible educational providers; and (ii) employees of corporations which have selected U21G to provide educational programs to suit internal corporate management development objectives. The latter category of students tend to be motivated as much by external factors, such as their company's policy on graduate-level continuing education and promotion, or social factors within the organisation.

These characteristics have been taken into consideration in the design of the courseware and the learning environment that is provided for the students. It is not just a question of delivering online courseware and letting the student 'sink or swim'. There is a determination to provide these adult distance learners with a holistic environment in which knowledge is presented in an authentic context with the settings and applications that would be of immediate relevance to him or her. In this environment, learning is acquired through opportunities for reflection, active construction of knowledge as well as by means of social interaction and collaboration.

LEARNING DESIGN: GUIDING PRINCIPLES

The U21G learning design considers the principles of adult learning, the distance learner and their learning styles. From the work of Rogers et al (1994), Cross (1981) and Knowles (1984), common principles are identified applicable to adult learners:

- Significant learning takes place when the subject matter is relevant to the personal interests of the learner.
- Adult learning programs should capitalise on the experience of participants.
- There is a need to explain why specific things are being taught.
- Adults need to be involved in the planning and evaluation of the instruction.
- Experience (including mistakes) provides the basis for learning activities.
- Adults are most interested in learning subjects that have immediate relevance to their job or personal life.
- Adult learning is problem-centred rather than content-oriented.

In addition, the U21G model also incorporates the requirements of an adult learner when he or she learns from a distance. In these circumstances, isolated and faced with many competing interests on their time such as family commitments and work in the office, the element of motivation is a crucial issue. Major challenges include the lack of face-to-face communications with classmates and professor, and the absence of an instantaneous response. In an effort to overcome these challenges, a key element of the U21G learning design is opportunity for regular interaction, be it accessing self-assessment exercises, Macromedia Flash animations, simulations and hyperlinked multimedia, or engaging in asynchronous discussion with fellow students and professors. The goal, simply, is to ensure that learning is meaningful and focused, and that the learner 'stays the course' as a result of becoming motivated to take responsibility for their own learning. Importantly, this occurs while remaining very much connected with a learning community in which students' motivation of one another to progress becomes a daily phenomenon. In the process, the self-esteem of the learner is maintained and increased as they proceed through the course.

The strategy, therefore, is to ensure that the learner has a meaningful and memorable learning experience while achieving the desired learning outcomes. To this end, U21G is committed to providing a holistic learning environment; a fundamental assumption being that learning will not necessarily emanate from one specific source and that when it happens, it will occur in diverse ways, for an equally diverse group of people. In such a holistic learning environment, the following scaffolding is considered

essential: the instructive environment, the situating environment, the constructive environment, the supportive environment, the communicative environment, the collaborative environment, and the evaluative environment (Teo 2003). These ‘sub-environments’ are designed within, outside and around the courseware, the onus being on the transfer of knowledge to the learner’s current or future work setting, as opposed to a learning of knowledge within the confines of subject content. In so doing, students can cultivate the habits of effective managers: reading, reflecting, analysing, communicating, debating, collaborating and providing recommendations about future directions.

THE INSTRUCTIVE ENVIRONMENT

The basic element in learning – the content – is developed according to specific learning needs and achievable objectives. These are essential components of a meaningful learning experience, providing learning satisfaction and motivation for moving on to complete the whole subject. This is treated very seriously at U21G, to the extent that each topic normally ends with a summary of the knowledge learnt which serves as a ‘take-away’ for the learner.

Domain knowledge is provided by leading academics from around the world drawn largely (but not exclusively) from the U21 universities. These people are experts who are intimately acquainted with the current trends and global developments in their discipline areas. Significantly, the content ultimately produced amounts to a little more than text outlining concepts and theories. Various instructional strategies are employed using appropriate media (graphics, animation, simulated scenarios and exercises) to bring this text to life. Supported with real cases and examples of business successes and failures, the domain knowledge is thus presented to the students in a highly engaging manner that serves to facilitate their learning.

Overall, the emphasis is on the application of the concepts and theories to real life situations. In terms of Bloom’s taxonomy of cognitive objectives (Bloom 1956), learners are exposed to learning outcomes that contribute to knowledge and comprehension, to application and analysis, but more often to synthesis and evaluation. Learning activities are designed to ensure that the learner grasps the knowledge easily, retains the knowledge for a longer period, and is capable of transferring the knowledge through application in a real world situation. To do this effectively, U21G provides the learner with situating and constructive environments, in the form of cases, discussion, in summative final projects, and even in final examinations.

THE SITUATING ENVIRONMENT

At U21G it is considered important that subject content not be treated as something self-contained, quite separate and independent of the situations in which it is learned and used. The activity and context in which learning occurs is, in fact, an integral part of the process rather than something ancillary to learning. In other words, ‘knowing what’ and ‘knowing how’ go ‘hand in hand’.

The model of situated cognition is based upon the notion that knowledge is contextually situated and is fundamentally influenced by the activity, context, and

culture in which it is used (Brown et al 1989). Learners need more than abstract concepts and generic examples – they need ‘full-blooded’, authentic activity.

This is acknowledged in the U21G case, in that the transfer of knowledge from the instructive environment to the real-life environment is made concrete by situating the learner in the environment of their own culture and context through authentic activities. Embedded within these authentic activities are the working practices and culture of the real world, which serve to initiate the learner in ways that would not be possible in a more traditional learning environment. Situating learning allows the student to gain a better appreciation of the unstructured nature of real world problems, and how to go about breaking down the task into operations, and then to actions. Importantly, at the conclusion of each simulated situation, the learner is brought back to the key learning objectives through a closing summary. This allows for reflection and reinforcement of the lessons learnt.

In an increasingly dynamic international business environment, U21G is conscious of the need to situate the learner in a multi-cultural setting. To this end, there is a commitment to make subjects truly international, where necessary providing a counter-balance in the courseware to any perceived US or Euro-centricity that may evident in the prescribed text book for a subject. This commitment extends beyond the use of international examples and cases to scenario design, where there is an attempt to strike a good balance in terms of the race and ethnicity of the characters in animations and simulations. Whenever audio is used, there is also a determination to select voice-over with an accent that is not readily identifiable with any particular country. As suggested by those advocating situated cognition, care is taken to ensure that the learning scenarios devised by U21G are varied in format and style to avoid the danger of ‘over-situating’.

THE CONSTRUCTIVE ENVIRONMENT

In keeping with the burgeoning academic literature on constructivist learning that has come to dominate mainstream educational thinking, particularly over the last decade or so, U21G is firmly of the view that learners should not be passive receptacles of information. Led by Marton and Säljö (1976a, 1976b), Biggs (1987, 1993) and Ramsden (1992), this educational philosophy posits that meaning is not imposed or transmitted by direct instruction, rather it is created (constructed) by the students’ learning activities. This perspective diverges from the instructivist (objectivist) view of education that presumes knowledge exists independently of the knower, and that understanding is coming to know what already exists. The constructivists argue that deep learning will occur only when the learner is actively engaged in, operating upon, or mentally processing, incoming stimuli. In short, constructivism focuses on knowledge construction, not knowledge reproduction (Herrington and Standen 2000).

Collins and Ferguson (1993) propose epistemic tools be the basic building blocks for knowledge construction to help learners recognise, judge and organise patterns of information, and engage in constructive inquiry. These epistemic forms (or ‘target structures’) appear in the U21G courseware in the way of interactive exercises, such as listing, development of comparison tables, and mind-mapping.

The constructivist philosophy is also evident in the case-based, problem-solving approach favoured by U21G. The main vehicles for student learning within this context are contributions to discussion forums and the assignments that students work on. As they engage in learning activities, U21G students construct their own knowledge, but also return this newly constructed knowledge back to the system, adding to the knowledge base (Looi 1998). Exhaustively-debated discussion topics provide students with the chance to constantly refine their knowledge as they share in one another's experiences of successful and failed projects, boardroom battles, and other 'war stories'. There are opportunities to learn from mistakes too as students compare their efforts in assignments against those of their peers identified as exemplary works and published for public view. Overall, the structure of the learning design is such that it capitalises on the vast collective experience of adult learners, serving as context-rich simulated scenarios and case studies in their own right.

The learning activities in any given subject at U21G culminate in the final assessment item – the open-book, open-web (OBOW) examination (<http://jeremybwilliams.net/authentic/fretrade/720-0402-1.htm>). This serves as the capstone on the building blocks for knowledge construction. Unlike the traditional examination instrument found in many higher education settings, here too, there is a concern for authenticity of inquiry and the learner's work culture and context (Williams 2005).

To summarise, the constructive environment, in concert with the instructive and situating environments, provides a cohesive setting for learning to the extent that the acquisition of new knowledge, its application, and its transfer to different contexts is made as seamless as possible.

THE SUPPORTIVE ENVIRONMENT

There are two basic categories of support available to assist learners in their accomplishment of learning outcomes: performance support and cognitive support. Performance support comes in the form of tools for the execution of certain tasks that are required for achieving certain objectives, either specific to a topic or segment of study, or general to the subject or course. Examples of such tools include management software, cost-calculation tools, project scheduling tools, tables of formulae and economic status tables, all of which are standard features of the U21G model.

Cognitive support is provided mainly by people who supply the coaching, mentoring and feedback to the learner. Given the adult learning context of U21G, this is not limited to the professor. Once a learner establishes and builds upon their knowledge base, they can assist with the development of others without necessarily having to first acquire 'expert' status. Students learn from many different sources and while the professor is one such source, U21G students are actively encouraged to take advantage of one another's expertise; expertise that they have acquired through their experience of different roles and responsibilities.

Further cognitive support is provided through the e-resources that are available, literally and metaphorically, at the students' fingertips. Each subject has its own subject-specific library where, for example, all companies discussed, journals used, and associations mentioned in the course of a subject are systematically listed for easy

reference. Hyperlinks to respective websites are also included in the list. In addition, students have an option to add such frequently visited links to their own personalised online library.

While performance and cognitive support is provided through the courseware, through peers, and through professors, the ‘time-poor’ adult distance learner also needs easily accessible pastoral support to assist with any personal challenges they may encounter. Technical support to minimise technological disturbances to their learning experience is also of paramount importance. To this end, the U21G Student Services provide proactive support, together with other relevant departments in the organisation.

THE COMMUNICATIVE ENVIRONMENT

Distance education has long been associated with the notion of the ‘hermit learner’, and an experience akin to the ‘loneliness of the long distance runner’; i.e. a student learns on their own, largely remote from other learners. As people, generally speaking, are social beings with a sense of belonging, it is possible to become alienated from the learning process if interaction with other learners is minimal. In such circumstances, the communicative environment takes on added importance.

At U21G, there has been a determination to deliver a brand of distance education that embraces the communicative environment to the extent that, while a student may be in a remote location, they should not feel remote from their fellow learners. The courseware, throughout, is written in a ‘conversational’ style to create a more personal and approachable interface for the student. Email and threaded discussion, meanwhile, form the bedrock of the U21G communicative environment, aided and abetted by the increasingly widespread use of instant messaging and audio-conferencing (with the option of web-cams), all of which have contributed to development of a buoyant and energetic community of learners.

The mere existence of such tools does not mean, of course, that there will necessarily be active participation by all concerned, but the proactive stance taken by the faculty and student support services at U21G has served to create a culture where this is the norm rather than the exception. To this end, the attrition in the MBA program is around 5 per cent over a two-year period, when distance education is notorious for high drop-outs rates, particularly in the case of the more traditional, paper-based programmes. Active personal guidance through feedback from professors and support staff that is timely and constructive is critical in this regard: there is an expectation that emails will be attended to within 24 hours, learners are assured of the receipt of assignments submitted to the professors, and evaluation of the submitted assignment is provided to the learners with a seven day turnaround.

THE COLLABORATIVE ENVIRONMENT

Working in teams has become a common feature of modern workplaces (Senge 1990). As a result, many tertiary institutions have sought to develop this particular generic skill among their graduates. Aside from its perceived value in the world of business and commerce, there appears to be little argument about the value of working

in teams from a pedagogical point of view because of the benefits that accrue from peer learning (Kadel & Keehner 1994).

At U21G, team work is an integral part of the curriculum. Groups are not just a convenient way to aggregate the individual knowledge of their members. They give rise, synergistically, to insights and solutions that may otherwise have not come about. This mode of problem solving is therefore regarded as a critical source of scaffolding for learners in the knowledge acquisition process.

End of segment assignments and final projects are designed to promote collaboration among learners, and there is dedicated work space for teams to make announcements, engage in threaded discussion, and share files. It is not assumed, however, that all students will be willing or able to work effectively in teams. To this end, tips on how to work successfully in online teams are provided wherever collaboration is required. The collaborative environment is, of course, highly contingent upon the communicative environment, and vice versa. The completion of team assignments provides an all important social dimension to learning, but this can be counter-productive if the collaborative and communicative environments are ineffectual.

THE EVALUATIVE ENVIRONMENT

At U21G, formal and informal formative evaluations take place throughout any given subject. There are pre-content exercises to let learners gauge the level of their expertise before engaging with the content, there are exercises after an expository topic to allow learners to practice the principles learnt, and there are discussion topics and review questions to foster critical and constructive evaluation of one's thinking. Assignments, both individual and collaborative, are assessed by the professor. Self-assessment at the end of each topic helps the learner to check their own understanding before moving on to the next topic.

All these mechanisms are designed to provide the learner with a consistent and accurate indication of their progress in the course. Adult learners place emphasis on learning effectiveness to ensure that what is learnt is of immediate relevance to their job or personal life. Here, again, the situating and constructive environments play an important role.

For evaluation of all collaborative work, team members are required to complete peer assessment at the conclusion of the project. The peer assessment tool (which draws on SPARK (<http://www.educ.dab.uts.edu.au/darrall/sparksite/>) developed by the University of Technology, Sydney) determines the individual's share of the team grade. If it is clear that there is value in peer learning, and there are learning objectives about students' ability to work as part of a team, then there has to be some effective means of assessing teamwork.

SUMMARY AND CONCLUSIONS

The main objective of this paper has been to contribute to the theoretical debate on eLearning. As a relatively young and evolving science we may be some way off anything resembling a grand unifying theory of online learning, but some sort of theoretical superstructure is clearly required if eLearning is to truly 'come of age'. This paper represents a modest attempt on the part of the authors to add some momentum to this theoretical inquiry. The case study of U21G has been used to illustrate how, within an institutional culture characterised by its strong commitment to quality assurance, it is possible to develop a successful eLearning model by design rather than by accident. Significantly, the holistic learning environment framework described above has produced a sustainable model for eLearning. The program of study that has grown from it is proving to be popular with the adult distance learners U21G aims to attract largely because it caters for the diverse needs of individual students. In such an environment, learning is acquired through opportunities for reflection, active construction of knowledge, as well as by means of social interaction and collaboration. The careful and deliberate consideration given to the planning and design of the learning events so that the various sub-environments are integrated and blended makes for an authentic and meaningful learning experience.

REFERENCES

- Biggs, J. (1987). *Student Approaches to Learning and Studying*, Australian Council for Educational Research, Hawthorn, Victoria.
- Biggs, J. (1993). What do inventories of students' learning process really measure? A theoretical review and clarification, *British Journal of Educational Psychology*, 83, 3-19.
- Bloom, B.S. (Ed) (1956). *Taxonomy of educational objectives: the classification of educational goals: Handbook I, cognitive domain*, London, Longman Group.
- Brown, J.S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-34.
- Calvert, J. (2005). Distance education at the crossroads. *Distance Education*, 26(2), 227-238.
- Collins, A. & Ferguson, W. (1993). Epistemic forms and epistemic games: Structures and strategies to guide inquiry. *Educational Psychologist*, 28(1), 25-42.
- Cross, K.P. (1981). *Adults as Learners*. San Francisco: Jossey-Bass.
- Hart, S. & Christensen, C. (2002). 'The great leap: driving innovation from the base of the pyramid'. *MIT Sloan Management Review*, 44(1), 51-56.
- Herrington, J. & Standen, P. (2000). Moving from an instructivist to a constructivist multimedia learning environment, *Journal of Educational Multimedia and Hypermedia*, 9(3), 195-205.
- Kadel, S. & Keehner, J.A. (1994). *Collaborative Learning: A Sourcebook for Higher Education*, Vol. II. University Park, PA: National Center for Postsecondary Teaching, Learning and Assessment.

- Knowles, M. (1984). *Andragogy in Action*. San Francisco: Jossey-Bass.
- Looi, C. K. (1998). Interactive learning environments for promoting inquiry learning. *Journal of Educational Technology Systems*, 27(1), 3-22.
- Marton, F. & Säljö, R. (1976a). On qualitative differences in learning – 1: outcome and process, *British Journal of Educational Psychology*, 46, 4-11.
- Marton, F. & Säljö, R. (1976b). On qualitative differences in learning – 2: outcome as a function of the learner's conception of the task, *British Journal of Educational Psychology*, 46, 115-27.
- Nichols, M. (2003). A theory for eLearning. *Educational Technology & Society*, 6(2), 1-10, Available at: <http://ifets.ieee.org/periodical/6-2/1.html> [Accessed 15 September 2005].
- Ramsden, P. (1992). *Learning to Teach in Higher Education*, Routledge, London.
- Rogers, C.R. & Freiberg, H.J. (1994). *Freedom to Learn* (3rd edn). Columbus, OH: Merrill/Macmillan.
- Senge, P. (1990). *The Fifth Discipline*, London: Century Business.
- Teo, S. (2003). Towards a total learning environment for the distanced adult learner. *World Conference on E-Learning in Corp., Govt., Health, & Higher Ed.* 2003(1), 1213-1216.
- Williams, J.B. (2005). 'The place of the closed book, invigilated final examination in a knowledge economy', *Educational Media International*, 42(4), 375–387.
- Williams, J.B. & Goldberg, M.A. (2005). The evolution of eLearning. 22nd Ascilite conference, Brisbane, Australia.

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More details about U21Global can be found at www.u21global.edu.sg

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