Learning Design in the Online Environment – Challenging the Norms

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Abstract
The last decade has witnessed e-learning evolving as a major force in higher education delivery. From its beginning, in 2001, U21Global’s mission has been to develop online postgraduate management programs which are at least as good as those of its affiliated universities. From a learning outcomes perspective, this has meant the development of graduates from its management programs who not only have the management knowledge and application gained from classroom learning, but also the necessary skills and capabilities to perform at a high level in the global business environment.

U21Global was founded in 2001 by the University Network, Universitas 21. Universitas 21 is a global network of illustrious, campus based, research intensive Universities. In establishing U21Global, Universitas 21 had a number of objectives, and two of these were first, to broaden the reach of high quality education to markets which are generally under served; and second, to pool capital to develop high quality online educational programs. It was established as a truly global management school.

This paper outlines the key approaches to pedagogy and learning design incorporated in U21Global’s educational programs. The design of a pedagogically rich learning environment, grounded in a constructivist model of learning was a particular challenge. U21Global’s learning design and student centred approach are key differentiators from other online education providers and also some traditional providers, and its objective to be a leader in the field of online education keeps it at the edge of learning technology and design.

In addition to the examination of the particular pedagogy, two challenges often identified for online education are discussed, drawing on recent research. First, critics of online education often espouse that the education is reduced as the value of faculty in the online setting is questionable. At U21Global, the role of faculty is critical to the learning design, and research of the faculty role has indicated value to the student’s perceptions of quality as well as to student learning outcomes.

Second, those less familiar with e-learning often advise that it cannot develop the so called managerial soft skills. This is of particular issue for any serious postgraduate management school such as U21Global. Research has shown that in the U21Global learning environment, soft skill development is not only possible, but is most likely to occur. This issue and the related research are also discussed.

Keywords
Online learning, learning design, learning environment

Background
U21Global was founded in 2001 by the University Network, Universitas 21. Universitas 21 is a global network of illustrious, campus based, research intensive Universities. In establishing U21Global, Universitas 21 had a number of objectives, and two of these were first, to broaden the reach of high quality education to markets which are generally under served; and second, to pool capital to develop high quality online educational programs. It was established as a truly global management school.

U21Global is an online graduate school owned by 17 affiliated universities of Universitas 21 network (Fudan University, Korea University, Lund University, National University of Singapore, Shanghai Jiao Tong University, Tecnologico De Monterrey, University College Dublin, University of Birmingham, University of Delhi, University of Edinburgh, University of Glasgow, University of Hong Kong, University of Melbourne, University of Nottingham, University of Queensland, University of Virginia and Waseda University) and Manipal Universal Learning International (MULI). 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) has been set up to maintain quality control. This external body has had a very strong influence on the direction taken by U21Global to the extent that there has been absolutely no compromise on quality.

The target audience for the MBA program is working adults, the large majority of whom hold middle management positions. Majority of our students are in the 31-40 years age group, work experience is 5-15 years, and the majority are married (79.3%). No fewer than 61% travel to other countries in the course of their jobs. These students fall into two camps: (i) individuals who are highly motivated and who have selected U21G from a list of possible educational providers; and (ii) employees of corporations that have selected U21Global to provide educational programs to suit internal corporate management development objectives.

These characteristics have been taken into consideration in the design of the courseware and the learning environment that is provided for the students. There is a determination to provide these time-poor 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 the learner. In this environment, learning is acquired through opportunities for reflection and active construction of knowledge as well as by means of social interaction and collaboration.

The U21G learning design has also received external recognition through the award of Certification of eLearning (CEL) for its MBA program by the European Foundation for Management Development (EFMD). The CEL accreditation standard is geared towards educational programs incorporating online learning. The EFMD created the European Quality Improvement System (EQUIS) which accredits tertiary management programs and is one of the main international accreditation bodies. The fundamental objective of the CEL program is to raise the standard of eLearning programs worldwide through the facilitation of standard setting, benchmarking, mutual learning and the dissemination of good practice. U21Global is one of the first accredited institutions along with the Open University in the UK.

U21Global is also working towards achieving accreditation by AACSB International, the Association to Advance Collegiate Schools of Business. It has passed through the eligibility stage, and the U21Global Accreditation Plan has been approved by the Initial Accreditation Committee of AACSB, putting it officially into what is called the Pre-Accreditation phase. U21Global is also a member of AACSB.

1 Introduction

A learning framework was set up to cater to the needs of delivering online education to distanced learners, particularly working adults. The notion was to deliver high quality product and service to learners who are geographically distanced without being disadvantaged in the learning experience. Through the use of technology, the learning design aims to provide the learners not only the same quality as but one that is better than in a brick-and-mortar campus. This framework considers the theories of adult learning, online learning and the constructive learning approach.

1.1 The adult learners

Many and earlier thinkers researched on learning in the area of pedagogy, the study of how children learn. Influenced by Carl Rogers and other thinkers, Knowles (1974) started the discussion on andragogy, the art and science of helping adults learn. It was premised on assumptions about the characteristics of adult learners that are different from the assumptions about child learners on which traditional pedagogy is premised. Knowles described the characteristics of adult in the area of self-concept, experience, readiness to learn and their orientation and motivation to learning. He described that as a person matures his self concept moves from one of being a dependent personality toward one of being a self-directed human being. He accumulates a growing reservoir of experience that becomes an increasing resource for learning. His readiness to learn becomes oriented increasingly to the developmental tasks of his social roles. His time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly his orientation toward learning shifts from one of subject-centeredness to one of problem centredness. As a person matures the motivation to learn is internal (Knowles, 1984).

Drawing on the works of Rogers and Freiberg (1994), Cross (1981) and Knowles (1984), seven key principles are identified that underpin effective adult learning:

- Significant learning takes place when the subject matter is relevant to the personal interests of the adult learner.
- Adult learning programmes can capitalise on the wealth of experience of participants.
- Adult learners must understand the rationale and purpose of their learning.
- Adults need to be involved in the planning and evaluation of their learning.
- The experience of adult learners (including mistakes) can provide the basis for learning
activities.

- Adults are most interested in learning material that has immediate application to their job or personal life.
- Adult learning is problem-centric rather than content-specific. (Teo & Williams, 2005)

With the advent of advanced technology, particularly the web-technology, discussion on online learning is brought to a new height. At the same time, constructive learning as opposed to instructive learning is brought into the centre-stage of learning. The focus is on learning rather than teaching, on the learner rather than the teacher.

2 The online learning framework

For effective online learning, the learning environment should be centred on the learner, should create a meaningful and memorable experience and adds value to the learning. To that end, we believe these are essential components in the learning environment: accurate, purposeful and effective instructions, a constructive environment, coupled with opportunities for evaluation and a supportive environment for the various domains.

2.1 The instructive environment

The adult learner decides the general direction of what he/she needs to learn and signs up for a program. In the instructive environment, we answer the question, ‘what is to be learnt in a program/subject?’.

The design of the instructive environment sets its foundation on the required learning outcome. It consists of the main instructions, the content in which the learner wants to learn. It may be a piece of knowledge, a skill set or an attitudinal challenge. To some, these are domains categorised as cognitive, psychomotor skill and affective respectively. This environment replaces the ‘sage on the stage’ in presenting the content to the learners. In the process of replacement, the subject matter experts provide the content and the instructional designer provides the appropriate instructional strategy and tactics for online delivery. It is a marriage of domain knowledge and learning strategies in the delivery.

The underlying principle of instructional design is to deliver the content in the way that the learning is effective and efficient, whereby the learner can grasp new knowledge in the shortest time and retain it for the longest time. For that, learning theories and strategies are consulted. Among many others, these include David Ausubel’s Advance Organiser, Benjamin Bloom’s Taxonomy for Educational Objectives, Richard Mayer’s Multimedia Learning, Robert Gagne’s Instructional Events, David Merrill’s Component Display Theory, Charles Reigeluth’s Elaboration Theory, Norman’s guidelines on Usability and John Keller’s ARC model of motivation.

In the learner-centred design, of foremost importance is the consideration of the target learner, the required learning outcomes, and the type of learning content. A detailed analysis of these areas is critical. For the target learner, we need to know the type of work they are in, their preferred learning mode and their proficiency in the use of technology. Their learning needs are translated to learning outcomes which are evaluated at appropriate junctures of the learning program. The content types are categorised as facts, concepts, principles, procedures, problem solving, or cognitive strategies (Merill, 1983 and Gagne, 1985).

The combination of the above three determines the way that the content is presented.

Presentation styles takes into consideration usability and readability of the content. Media used include any or a combination of these media: text, graphics, (photos, illustrated graphics, animated 2D/3D graphics), audio or video. They are selected appropriately for each learning objectives, learning type and learner characteristics. Practical issues with accessing heavy media over the internet are considered and balanced against the requirement for each presentation style. A principle of transparency and availability in content is ensured in the presentation. It is deliberately designed so that it is not compulsory for the time-poor student to go through all the content. He has the liberty to decide the content that he needs to read. A prescribed sequence and timeline for some activities are provided for ‘class management’ and to guide the student to ‘progress as a group with the class rather than an individual’. Other learning activities are designed to help the learner engage in a collaborative and constructive manner. (See the next section on The Constructive Environment for more details in this learning approach.)

In U21Global, content accuracy and adequacy are matched against the learning objectives. Assessment activities are designed to validate the achievement of the learning objectives. Learning activities are designed through taking into consideration all the above. In all the subjects in the MBA program, students are provided with learning opportunities through reading, reflection, discussion, case analysis and project works and assessment of their learning progress.

2.2 The constructive environment

Content in isolation of the context is just an object in the closet. In an increasingly diverse culture in community and practices, the content is viewed and
utilised in different contexts. It is vitally important that education should not be the teaching of mere dead fact, but that the skills and knowledge which students learned be integrated fully into their lives as persons, citizens and human beings (Dewey, 1938). Without beneficial experiences growing off prior ones, education would not be able to use these experiences to reflect on the past, work through the present and prepare for the future (Dewey, 1938).

Vygotsky proposed that the potential for cognitive development depends upon the “zone of proximal development” (ZPD). The ZPD is defined as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978). Development of the ZPD depends upon social interaction. The range of skill that can be developed with other more knowledgeable person or peer collaboration exceeds what can be attained alone. To that end, scaffolding by the more capable person is essential for the learner to attain his highest potential.

In the same notion, learning should not be viewed as simply the transmission of abstract and decontextualised knowledge from one individual to another (instructive approach), but a social process whereby knowledge is co-constructed (Lave & Wenger, 1991). Such learning is situated in a specific context and embedded within a particular social and physical environment.

John Seely Brown, Collins and Paul Duguid (1989) wrote that the model of situated cognition is based upon the notion that knowledge is contextually influenced by the activity, context, and culture in which it is used. They insist that learning is a process of enculturation and that activity and situation are integral to cognition and learning.

The constructive learning approach is carried out largely at two levels: 1. situating learners in possible contexts and 2. involving learners in authentic activities. In an online environment, the constructive approach is integrated into the instructive content and both individual and collaborative learning activities.

For the reason that it is too difficult to enculturate the learner in all possible situations, a large part of constructive learning in class is in situating the learner in near-real-life context. In situating the learners to possible context within the instructive environment, real-life examples and examples from different culture and industries are used. Students are exposed to the use of theories and concepts in different contexts, and to practice the application of the knowledge in a given context. These are generally designed for self-paced, computer assisted exercises with input from the subject matter experts and learning designers.

In constructing their knowledge, students use new knowledge learnt to solve problems in a given situation. In a social constructive environment, students from different countries are put together in a team. They learn to work as a diversified virtual team. They share from their own experience, and learn with others the use of theories and concepts in their own context and countries. The team works together and supports each other to develop solutions for a given complex problem.

Pushing the constructive learning approach further, learning activities provide opportunities for students to reflect and consider the use of attained knowledge in their life and work place, bringing relevance closer to the students. In a class discussion, students then share this application of knowledge with the class. This sharing of knowledge also builds up the team to be exposed to further relevance in the course of study. This additional knowledge may or may not be of immediate relevance to them at the point of sharing, but definitely a point of reference when they need it in future.

The use of more recent technology like wikis allow collaborative construction of knowledge in one place, in a more convenient manner as compared to the old way of sending the same document across multiple emails, filling up mailboxes. Sharing on the blogs allow others to comment on postings without changing the content.

2.3 The evaluative environment

The evaluative environment provides a space for the learner to consider if his learning has taken place. If so, what can he do with the new knowledge, how can he apply this learning in his life? If not, what should he do about it so that he can attain it and then transfer the learning to real life? As the saying goes, “the true test of the pudding is in the eating”.

Evaluation is done at different levels through different methods. Because evaluation is ultimately linked to the objectives one sets earlier in a course, the discussion about evaluation is usually not without the discussion of learning outcomes. So there is the different levels of cognition, namely knowledge, comprehension, application, analysis, synthesis and evaluation level (Blooms, et al, 1964). It is common to evaluate at knowledge and comprehension level using computer-assisted assessment. In this method, learners go through multiple-choice and similar type of questions. When the learner provides a correct response, the system-generated response provides a reinforcement to the student response. If it is incorrect, a feedback with hint is provided to guide the
learner to the correct response. For higher order learning, students are required to not regurgitate content from the lesson, but to reflect upon the knowledge learnt, and then apply appropriately the theories and concepts in a given situation. In the process, he is likely to be required to analyse the situation and then synthesise to provide a proposal. In the next level, he is required to evaluate various options and provide a recommendation in a decision making activity.

In U21Global, assessment includes self-assessments, team assessment, professor-assessed activities, such as discussion, assignments and end-of-subject examination. While self-assessment activities are generally formative and not graded, marks are allocated for discussion contribution, assignments, group projects and end-of-subject examination.

Self assessment opportunities are provided in the form of computer-assisted assessment: a set of questions at the end of each topic are provided for the learners to check against the lower level objectives of knowledge and comprehension, such as being able to describe and explain the theories and concepts in the content. Within the topic, at appropriate juncture, short exercises are designed to allow the learner to practice and check his own understanding of the lesson learnt. These questions are usually set in scenarios where real-life application of the particular knowledge is eminent. Media used may include graphics, audio and animation wherever suitable. Question types include the general computer-assisted assessment types, including multiple-choice questions (single correct and multiple correct options), drag and drop and fill-in-blanks. It is important to note that while these are generally computer-assisted, the design of the questions are carefully done through evaluation against the learning objectives, and validating of content accuracy by the subject matter experts. Commonly made mistakes are used in setting the incorrect options, providing a chance to explain the mistakes when the option is selected.

Another common formative-assessment activity is reflection. Reflection opportunities are provided in each topic when article-reading is required. Questions are developed to guide the learners to think as the professional does. Sample answers are provided by the subject matter experts to allow the learner to check and guide his reflections. Where necessary, the student can also communicate with the professor and classmates to discuss the reflection.

Discussion topics are designed for each segment in a subject, with open-ended questions. Students are required to respond to the questions with their own ideas and opinions. Grading criteria include the quality, originality, value-adding contribution of their posting, debate and defense of their contribution. They are also required to read other students’ contribution and comment on their postings.

The assignment usually asks the students to consider an article or a case with guided questions leading to near real-life problem-solving opportunity. The assignments may be an individual or group project, depending on the suitability of the subject matter and practicality of the project. When there is group project, team assessment is used to allow students the opportunity to judge each members’ contribution and quality of contribution to the final product. To that end, it also discourages free-riders in teamwork which prevails in many levels of education.

The above assessments are designed to be formative in nature, helping the learner to progress towards the final summative assessment in the form of an end-of-subject examination. Applying the constructive learning approach to the assessment method, the Open Book Open Web examination is adopted in U21Global in early 2005.

The defining characteristic of the OBOW approach is a commitment to authentic assessment. It fosters understanding of learning processes in terms of real-life performance as opposed to a display of inert knowledge, and learners are presented with unstructured problems that require the application of relevant skills and knowledge, rather than selection from predetermined options as is the case with multiple-choice tests, for example. Most importantly, it is a model that engages students which, in turn, educes deeper learning. (Williams and Wong, 2007) This provides opportunities for higher order objectives of synthesis and evaluation.

In summary, the assessment covers the range of cognitive levels, from the lower level of knowledge, comprehension, and application to that of analysis, synthesis and evaluation. Students do not graduate from the subject without opportunities to progress from learning of theories and concept to achieving deep learning in the subject, in various contexts.

Assessment in corporate education takes quite a different direction. The emphasis is not only on participant’s satisfaction, but also usually a requirement for a quantitative return on investment. Kirkpatrick’s 4-level evaluation and Philips’ 5-level evaluation are tools commonly used to receive feedback on training effectiveness. Participants’ feedback and the almost immediate application of their new knowledge are displayed in the form of their own presentation on how they have applied their knowledge in their current work through a presentation. Their claim is further validated by their supervisor who is in a good position to observe the change in performance at the workplace. At the same time, a review 6 months after the training program is used to check quantitative
improvement in the various measureable parameters.

2.4 The supportive environment

Learner support (other than cognitive scaffolding) is seldom mentioned in early research as an important component in the learning process. Different types of learning supports are required for different needs, at different phases and of different intensity throughout the learning process. It is clear that some form of support is required only on a temporary moment, while others may take a longer period. When the need is met, the learner continues with his learning until the next support is required.

For effective learning to happen, interruption to learning is kept to a minimum. There are internal and external factors to learning interruption. Internally, emotions and lack of motivation can retard the learning process. Externally, such as problems in using the technology can discourage the learner from learning in the online mode. Not having questions answered by the instructor or facilitator can also cause frustrations to the learner. General observations show that when the initial inhibition in technology is removed, the emotional support required is also minimized.

Online learning includes an intricate and complex interaction between neural, cognitive, motivational, affective and social processes. (Azevedo, 2002). Students are in need of different level of support in these processes at different junctures of the learning process. The facilitator not only acts as a cognitive support, but is also able to provide the motivational and affective support.

In the research on the impact of facilitators made on students’ satisfaction, it was found that Personal attributes, learning facilitation and quality of feedback contribute to both overall performance and satisfaction (Wong & Fitzsimmons, 2008).

In her book on E-moderating, Salmon (2001), advises that learners go through in sequential order of 5-stages in the online teaching and learning: access and motivation, online socialization, information exchange, knowledge construction and development. In this model, individual access and the ability of participants to use online system are essential pre-requisites for conference participation. Each stage requires the participant to master certain technical skills. When he reaches the development stage, his need for technical support is reduced.

In the online arena, there is an added responsibility of the distanced learner and that is to be an independent, self-directed learner. In a geographically and physically distanced environment, there is a tendency to ‘feel lonely’ in the online learning endeavour. There is therefore a need to create a sense of community, a sense of belonging. The need for a support is met with the use of a highly connected communicative environment.

In U21Global, the support structure includes cognitive and technological support. The professor provides additional scaffolding to students who need additional help in the studies. He may be provided with a direction to articles in the library or websites that might help with his queries. All new students receive a welcome letter from the student services with access details to their online learning environment, and importantly how to get help when they are in need. Students are required to attend an online orientation program. In this program, they learn about the program design, the online learning environment, which includes navigating through the environment, the courseware, library and ways to communicate with different groups of people in the environment. So before the program proper, the students are put-at-ease and would have already used the various tools they will need to use when they are in class. In any case, students are assured of help through a helpdesk to provide assistance when required, even after the orientation program, at any juncture of their studies with the school.

While most of the student support services are handled by Student Care group, the instructor in U21Global are also expected to help the student in as much the same way, but particularly to provide the cognitive support and scaffolding.

3 Results

In the last 5 years, U21Global has operated successfully with a practical implementation of this holistic online learning framework. Emphasis on quality for each environment is uncompromised through qualified and experienced personnel and properly managed processes. From preparation of the content, design of constructive learning activities, to authentic assessment, to providing support from enrollment to taking the course to graduation, the student takes centre-stage and is provided the necessary scaffold for effective learning to take place. Each environment in this framework is considered to be as important as any other one. Each environment does overlap in its nature of support to the student. Each student requires the support of each environment by relevant people at different phases of their time in learning process and at different intensity.

At the point of this paper, there are more than 3500 students in the university. The feedback from student evaluations of subject and faculty has been very positive. The aggregate student evaluation of faculty (SEF) score from 145 sections from 2005 – 2007 was 4.21 out of a possible 5.0 (an approval rating of 84.2%), and the aggregate student evaluation of
subject (SES) score was 4.28 out of 5.0 (an approval rating of 85.6%). Evaluation of the subject includes areas like the depth and sufficiency of content, usability and learning design. Questions asked about the faculty include:

In a recent survey in mid 2008, MBA students were asked if “the knowledge you are gaining on the programme helping you develop a better appreciation of business and management?” The result is a resounding yes. Out of 383 students, 60.6% said ‘Yes, definitely’ and 33.7% said “Yes, mostly”.

In the same survey, 98.7% of the respondents think that the subject matter and associated assessment are suitably challenging for a reputable postgraduate programme.

In the area of student services, 84.8% of the students said that their queries are resolved within 3 days or less. 87.5% said that their queries were dealt with in a professional manner.

Research into the development of soft skills by U21Global students, carried out in 2005-6 found that as students progressed through their U12Global MBA program, they improved their managerial soft skills, as measured through their grades on team work as well as through peer evaluation scores. Moreover, analysis of the survey results of students conducted for the study revealed that students believed that their soft skills had improved as they progressed through their studies (see Spinks, Lange and Chan, 2006).

4 Conclusion

The holistic learning environment framework for the distanced adult learner has proven to be successful for our students in the various programs. Students have benefitted from the overall environment: instructive environment, the collaborative and constructive learning approach, the assessment methods and the various supportive components in a highly connected community. Through this learning environment, they have been able to attain a meaningful learning experience, with high satisfaction on the content and assessment, faculty and the support system.

Further research should be carried out to gather evidence for the support of each sub-environment in this holistic learning environment and inform learning designers of specific areas that need further improvement.

References


