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**Curriculum design for flexible delivery:
an assessment of e-learning approaches**

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Curriculum design for flexible delivery: an assessment of e-learning approaches

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Technological advancements have pushed the boundaries of tertiary education design and delivery across the globe. Flexible teaching and learning delivery approaches have proliferated in recent times without much attention to pedagogically-driven learning designs. This paper reviews various pedagogical designs used as part of e-learning and blended learning models in business education. It also maps the tenets of learning theories to selected e-learning designs. Tertiary educators face several challenges when implementing e-learning designs in business education. They include a traditional structured approach to learning, difficulties in catering to diverse student cohorts equitably, and choosing effective technologies that underpin a particular e-learning pedagogy.

Keywords: learning theories, business education, online pedagogies, e-learning, conversational framework, web 2.0, flexible learning

1. Introduction

Curriculum design for flexible delivery is at the forefront of a teaching and learning renewal of tertiary education, particularly in business education. Flexible delivery of teaching and learning covers a wide array of approaches including online teaching and e-learning, block-mode teaching delivery and distance education. Hunter et al. (2010) stress that if continuous improvements have not been made to business education, the society will lose significant economic contributions made by business graduates. On the one hand, there is a growing awareness in business education that the traditional approach to teaching and learning fails to meet industry demands (van Over & Stover, 1994; Westerbeek, 2004) and lags behind in equipping business students with skills to leverage the use of networks, optimal links and information (Hughes, 2006). The most common pitfalls include the strong emphasis on

technical content, inadequate application of knowledge and generic skills such as group work, communication, problem-solving, critical thinking and leadership (Albrecht & Sach, 2001; Carr & Mathews, 2002). On the other hand, today, tertiary education institutions offering business programmes face increased competition and chronic funding challenges (Hunter et al., 2010) forcing them to introduce flexible and innovative courses as a marketing strategy to bolster student enrolment.

Technological advancements have pushed the boundaries of tertiary education institutions towards new forms of knowledge construction and social interaction. The emergence of Web 2.0 based learning tools, which can augment superior computational and communication capabilities and foster collaboration and social interaction, have provided an impetus for a growing body of work on curriculum design for e-learning (Bower et al., 2009). Web 2.0 can be broadly defined as a second generation

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or more personalised communicative form of the World Wide Web that emphasises active participation, connectivity, collaboration and sharing of knowledge and ideas among users (Lee & McLoughlin, 2011). Web 2.0 is often associated with the use and practice of social software where multiple users can collaborate with one another, micro-contents such as blog posts, text-chats, video-clips, open web tools and other sophisticated web interfaces (Bower et al., 2009; Dabbagh & Reo, 2011). Tapscott and Williams (2010) state that “universities are losing their grip on higher learning as the internet is, inexorably, becoming the dominant infrastructure for knowledge—both as a container and as a global platform for knowledge exchange between people” (p.18).

The rapid spread of globalization and enormous developments in information technology (IT) have also led to dramatic changes in the business environment and business courses need to be responsive to these changes (Mohamed, 2009). Burdett (2003) highlights the importance of incorporating strategies such as group work into business teaching pedagogy² to ensure deep learning outcomes. It is also envisaged that a blend of technical and interpersonal skills are required to navigate and succeed in the modern working place (Hunter et al., 2010). New models and novel approaches to business education have been called for, which include the interests of industry, students and academia (Anderson and Rask, 2008). One of the approaches that has received attention in business education reforms is the use of e-learning and blended learning approaches.

² Although the term pedagogy is often regarded as the art and science of teaching, it is not without critics (Beetham & Sharpe, 2007).

The Joint Information Systems Committee (JISC) defines e-learning³ as ‘learning facilitated and supported through the use of information and communication technologies’ (Beetham, 2004, p.1). E-learning has also been presented as a continuum of face-to-face learning, which contains no e-learning, to distance education which can be fully e-learning (Bates & Poole, 2003). Blended learning which combines both face-to-face learning and forms of e-learning is placed in the middle of this continuum. Commonly cited reasons for incorporating e-learning into curricula include increased flexibility of learning environments, improvement of quality by increased access to information, reduced cognition load and authentic learning, ability to tap into the global market, widening access, competition and strategic reasons (Normand & Littlejohn, 2006).

Despite the initial enthusiasm, e-learning has not lived up to its expectations in both the university and corporate sectors (Driscoll, 2008; Granić et al., 2009). Past evidence of technology introduction to teaching and learning indicates that often such technology has been embraced with naïve enthusiasm only to be later discarded (Lowerison et al., 2008). It is also clear that the predicted decline in face-to-face teaching, due to the introduction of online teaching technologies, has not occurred (Beetham, 2004). However, the potential of online technologies has not yet been fully harnessed for learning.

Pedagogical problems, organizational barriers, technical issues and financial problems have been cited as the main impediments of e-learning development (Driscoll, 2008). A diverse array of

³ Although the meaning is relatively uncontested, there is no universally accepted definition for e-learning. Online learning is regarded as more narrow in scope than e-learning (Beetham, 2004).

theoretical perspectives which is alien and overwhelming to academics outside the field of education is another factor contributing to the lack of applications in pedagogically-driven e-learning designs (McNaught, 2003). The mere presentation of subject matter using multimedia does not, of itself, lead to better learning (Mayes & Freitas, 2004). Central to the issue is the mapping of sound pedagogical principles as outlined by Biggs (2000) into the e-learning curriculum design. Biggs (1996) emphasised that learners use their own activities to construct knowledge and the teaching design should specify the desired levels of understanding and activities that they need perform. There is little evidence of various learning theories being applied to effective pedagogically driven e-learning (Beetham et al., 2001; Clegg et al., 2003; Conole et al., 2004). There is also a need for studies that examine the extent to which the emergent technologies such as Web 2.0 support the educational process and to identify ways in which they can enhance student learning (Oskoz & Elola, 2011).

This paper focuses on e-learning in business education and how it can be adapted to diverse contexts including multi-campus teaching delivery. The paper reviews the specific pedagogical principles that can be used in designing business subjects for flexible delivery predominantly based on online technologies. The remainder of this paper is organised as follows. An overview of learning theory is presented in the next section. Then the tenets of learning theory are mapped to e-learning pedagogy. In the next section, some challenges and potential applications of e-learning to business education are discussed with special reference to multi-campus and flexible delivery. Some concluding comments are provided in the final section.

2. Overview of learning theories

Theories of learning outline three broad traditions to learning: behaviourism, cognitivism and constructivism (Mayer, 2003). These traditions are derived from broader fields, not just education, and are regarded as historical stages of enquiry into knowledge. The behavioural approach to learning posits that knowing is the result of objective experience whereas the cognitive approach purports knowing as the mental processing of information. The behavioural approach places a high emphasis on prescriptive instructions on well-defined learning objectives and rewarding learners as they progress incrementally toward larger learning goals (Lowerison et al., 2008). The constructivist approach subscribes to the view that learning is a subjective construction of knowledge. The basic premise is that meaning is not imposed or transmitted by direct instruction, but is created by students' learning activities (Biggs & Tang, 2007).

Anderson and Krathwohl (2001) provide a taxonomy of learning which incorporates a knowledge dimension and a cognitive process dimension. The knowledge dimension relates to the subject matter contents and incorporates factual knowledge (discrete pieces of elementary information), conceptual knowledge (interrelated representations of more complex knowledge forms), procedural knowledge (the skills to perform processes) and metacognitive knowledge which is the knowledge and awareness of one's cognition as well as that of others. The cognitive process dimension includes remembering, understanding, applying, analysing, evaluating and creating. These levels represent a continuum from lower order thinking skills to higher order thinking skills (Anderson & Krathwohl, 2001).

Various interpretations of the three learning theory traditions described above have been discussed in the literature. For example, Greeno et al. (1996) highlight three broad perspectives which make vastly different assumptions about what is crucial for understanding learning – the associationist perspective (learning as an activity); the cognitive perspective (learning as achieving understanding); and the situative perspective (learning as social practice). These three perspective (associationsist, cognitive, and situative) correspond to behaviourism, cognitivism, and constructivism in learning theory traditions, respectively. The associationist perspective, which encompasses the research traditions behavioural theory and neural networks⁴ (Mayes & de Freitas, 2004), contends that knowledge is organised accumulation of associations and skill components. Moreover, not only are the formation, strengthening and adjustment of association pivotal to learning but so is the reinforcement of connections through feedback. Albeit controversial, the associationist view also assumes that knowledge and skills need to be taught from the bottom up where smaller units are mastered as a prerequisite for more complex units. The cognitive perspective emphasises underlying processes of interpreting and constructing meaning and focuses on schema theory, information processing theories, the level of processing in memory, mental models and metacognitive processes. In sharp contrast to the associationist perspective, the cognitive perspective places a strong emphasis on the structures of understanding when acquiring new knowledge. The situative perspective advocates that learning must be personally meaningful and always subject to influences from the social and cultural

setting in which the learning occurs. One branch of situative learning emphasises the importance of context-dependent learning⁵ where every effort is made to make the learning activity authentic to the social context (Mayes & de Freitas, 2004).

Biggs (1999) emphasised the importance of consistency between the curriculum, teaching methods, the learning environment and the assessment procedures when designing curricula. Accordingly, a good pedagogical design is one with complete consistency of the above elements. The logical process should align the intended learning outcomes with learning and teaching activities and then design assessment tasks which will genuinely test whether the outcomes have been reached (Mayes & de Freitas, 2004). Albeit simple in theory, the application of Biggs' approach to curriculum design is not straightforward. Biggs (2009) advocates a constructivist approach prompting the designer to always focus on what the learner is actually doing. Hence, the guiding assumption about learning upon which various teaching methods and learning activities are built is constructivist theory.

Given the numerous interpretations of learning traditions and online pedagogies, applying learning theories to curriculum design becomes a non-trivial task. The core question for the curriculum designer is which learning theory and which perspective is useful for a specific teaching and learning context. Essentially, the task involves unpacking various online pedagogies so that their learning tradition roots can be uncovered. The next section applies these learning theories to selected online pedagogies.

⁴ Neural networks posit knowledge states as patterns of activation in a network of elementary units (Mayes and de Freitas, 2004).

⁵ For example, Problem-based Learning (PBL).

3. Applying learning theories to online pedagogies

The core research question addressed in this paper concerns the pedagogical approaches to e-learning design in business courses with diverse student cohorts. The focus is on what questions practitioners should ask when making e-learning design decisions. This invariably involves reflecting on the intended learning outcomes, the assumptions about the role of technology, the learning context and teaching modes. Contextual elements (Kember, 1997), in particular, appear to have different levels of influence on teaching and learning (Gonzalez, 2009). Salmon (2002) contends that “there are no e-learning models per se but only e-enhancements where technology is used to achieve better learning outcomes,” or a more cost-efficient way of bringing the learning environment to learners (Mayes & de Freitas, 2004). When applying theory to online pedagogies, it is also important to take into consideration the contextual factors including diverse student cohorts and teaching delivery modes and how they enable non-specialists to engage in effective e-learning curriculum design. Therefore, mapping learning theory onto various pedagogical approaches is the logical precursor to any attempt to identify pedagogies that are best suited for a particular teaching and learning context.

Table 1 summarises selected online pedagogies, their learning theory foundations and the relevance to flexible curriculum design. My intention here is to apply learning theory to a few chosen pedagogies that are relevant to diverse student needs or cohorts. The diverse needs include consideration of academic year (whether undergraduate or postgraduate), learning context (type of group, relationship) and the

nature of the task. Online pedagogies that subscribe to a behavioural tradition include most current e-learning tools, e-training modules and some intelligent tutoring models. Certain business courses by nature are interdisciplinary and thus pedagogical approaches that enhance learning through association and reinforcement, whilst building advanced complex tasks in a step-by-step manner, are useful. When catering to student groups with differing backgrounds and circumstances (e.g. full-time student versus part-time student who is employed), pedagogies that subscribe to cognitive traditions can be highly relevant. Under this learning theory tradition, several online pedagogies including Laurillard’s conversational model and Salomon’s distributed cognition model are described. Among the plethora of pedagogies that draw from constructivism, several relevant to business courses are discussed.

Pedagogies based on a behavioural perspective include instruction-based e-training models through which simulation of a process is carried out and problems or routines that have been carefully sorted according to the difficulty level are presented. These pedagogies are based on the premise that behavioural modifications are possible via stimulus-response pairs and trial and error learning. Instructional approaches are considered to be more appropriate when students have not yet formed an understanding about a particular topic (Magliaro et al., 2005). Most current e-learning development models which use digital media such as podcasting, Lectopia, lecture presentation, quizzes and web-based self-assessment subscribe to behaviourism. Intelligent Tutoring Systems (ITS) (Anderson & Reiser, 1985) and learning objects models (Wiley, 2000) also align with the behavioural theory as they essentially follow an instructivist approach (Mayes & de Freitas, 2004). Howev-

Table 1: Selected e-learning pedagogies and their learning theory traditions

| Learning theory (primary) | Learning theory (secondary) | Main features | e-learning pedagogy/tools | Possible application to research question | References |
|---------------------------|-----------------------------|--|---|--|--|
| Constructivism | Cognitive/Constructivist | Learning is understood as achieving understanding through dialogue and collaboration. New knowledge must be built on the foundations of already existing frameworks, through problem-solving activity and feedback | Laurillard's Conversational Model | Highly relevant in catering to different student groups and group-specific tasks (abstract or concrete) as learner groups may differ in their understanding and application of concepts. | Laurillard (2002) |
| | | Learning as transformation in internal cognitive structures with a pedagogical focus on processing and transmission of information through communication, inference and problem solving | Salomon's distributed cognition Intelligent Learning Systems | | Mayes & de Freitas (2004) Bower et al. (2009) |
| Constructivism | Constructivist | Learning as subjective construction of knowledge with a task-oriented pedagogical focus. Favours hands-on, self-directed activities oriented towards design and discovery. Focuses on a | Toolkits and other support systems that enable constructivist principles | The use of toolkit is largely driven by the subject content | Papert (1986; 1991); Conole et al. (2004) |
| | | Behaviourism | Most current e-learning development: Lecture presentations, Podcasting, Lectopia, library resources, quizzes, self-assessment | Useful when introducing new concepts, theories and facts. Relevant when designing inter-disciplinary courses for multi-student cohorts where competence in complex tasks can be built from a stepwise process. | Mayes & de Freitas (2004) |
| | | The competence in advanced and complex tasks is built step by step from simpler units of knowledge and skill, finally adding coordination to the whole structure. | E-training; learning objects, some intelligent tutoring models | | |
| | | Associative/ Instructional Systems Design (ISD) | | | |

Table 1(Cont'd)

| | | | | |
|---|--|--|---|---|
| Community of Practice/Situative perspective/ Socially situated learning Co-constructivist | Learning as developing social practice Learning as social participation emphasising interpersonal relationships involving imitation and modelling | CSALT networked learning model Peer-assisted dialogic pedagogies | The emphasis on organisational context and educational setting has a greater relevance to curriculum design | Goodyear (2001); Greeno et al. (2000); Mayes & de Freitas (2004) Vygotsky (1978) |
| Activity-based | Influenced by activity theory and focuses on an activity system and structures of activities. The Zone of Proximal Development (ZPD) - Allows students to extend beyond what they could have achieved in isolation | Dialogic pedagogy Students on a networked learning course collaborating on a project (e.g. A Wiki project) | Collaborative group activities and projects can embed generic skills such as team work | Jonassen (2000) Vygotsky (1978) |
| Experiential | Learning as the transformation of experience into knowledge, skills and attitudes. Reflection as a means of transforming experience | Asynchronous communication which is not time-bound and communication archives offer increased opportunities for reflection | Asynchronous communication tools such as Discussion forums | Kolb (1984) |
| Socially-mediated/Constructivist | A stimulus is given in the form of an online activity where individuals post contributions. Interactions among participants take place through cross posting and responding to other's contributions. A summary, feedback or critique is offered by a moderator. | Salmon's e-tivities or Salmon e-moderation model | Useful in framing the course designing process as it provides five logical steps of student engagement process. | Salmon (2002) Salmon (2004) |

er, pedagogies of behavioural origins often do not take advantage of the benefits derived from more socio-constructivist learning designs where the active engagement of students and socially constructed meanings are sought (Bower et al., 2009).

An approach which draws on both constructivist and cognitive theories is Laurillard's (2002) conversational framework. The conversational framework emphasises the importance of discursive or conversational flows to enable higher learning. It has been very influential in the development of e-learning in the UK. In this model, learning is understood as achieving understanding through dialogue and collaboration. The framework contends that learners form thorough understanding by apprehending the structure of discourse, interpreting forms of representation, acting on descriptions of the world, applying feedback, and reflecting upon the goal-action-feedback cycle (Bower et al., 2009). The conversational framework highlights five different media types to guide course designs: narrative; productive; interactive; communicative; productive, and adaptive (Laurillard, 2002). Table 2 describes these media types and related e-learning tools.

One of the main criticisms of the Laurillard framework is whether it is able to sustain the individual/group dialogue to enhance generic skills (Goodyear, 2002; Mayes & de Freitas, 2004). From a learning context point of view, narrative media types have the advantage of allowing the learner to access information at a time and in a place suitable for the learner. Since information is presented in more than one medium, the framework can overcome physical/sensory access problems. However, information overload and the need for a wider repertoire of information skills can be potential downsides. In communicative media types, learners have to communicate and take turns more explic-

itly drawing on different skills from spoken communication. The ability to record these dialogues for later reflection is an added advantage. However, demand for prompt responses in synchronous communicative tasks can be a burden for the learner.

A third approach that draws on both constructivist and Communities of Practice principles (Mayes & de Freitas, 2004) is the CSALT (Centre for Studies in Advanced Learning Technology) networked learning model (Goodyear, 2001). It emphasises the distinction between the tasks designed by the tutor and the activities carried out by the learner. The model disaggregates the implied pedagogy into a hierarchy comprising four levels: pedagogical tactics (the lowest level), pedagogical strategy, high level pedagogy, and philosophy (the highest level). The upper levels of pedagogy are considered conceptual while the lower levels are regarded as procedural or operational. Interestingly, the CSALT model, whilst integrating an element of the systems approach, places an emphasis on the organisational context and asserts its importance, particularly in the education setting. The pedagogical framework and the educational setting are contained within the organisational context. An educational setting is comprised of educator-designed tasks, student activities, and the 'learning environment'⁶ including educational technology. With a strong footing in collaborative learning, the CSALT model demonstrates that learning outcomes can be linked with specific learner groups and their activities (Mayes & de Freitas, 2004). Goodyear (2001) also emphasises the transformational and personal development aspects of networked learning (Mayes & de Freitas, 2004). Considering the merits

⁶ This can include the Personal Learning Environment (PLE) which can be a knowledge network, a cognitive space or technology associated with individual learning.

Table 2: Laurillard media type and e-learning tools

| Media type | Description | e-learning tools |
|----------------------|---|---|
| <i>Narrative</i> | Since formal learning depends more on interaction with representations than with the 'real world,' learners should produce representations of their own (notes, mind maps, class presentations and answers to comprehension questions) | On-screen text, image, video files, PowerPoint slides, DVDs, web pages, animations Multimedia authoring tools, word and image processing tools Electronic whiteboards, wikis, blogs, shared write/draw systems |
| <i>Productive</i> | Supports skills of analysis and application allowing learners to manipulate data consciously and explicitly, using their own parameters and protocols | Spreadsheets and other statistical tools, databases, qualitative analysis tools, online calculators |
| <i>Interactive</i> | Supports developing information skills and supporting research tasks. A special category of interactive tools are quizzes with feedback. | Quizzes, search engines, gateways and portals, interactive maps |
| <i>Communicative</i> | Asynchronous communication between individuals and groups can be used to promote reflective learning and allow ideas to be built collaboratively whereas synchronous communication has the benefits of immediacy and high motivation. | <u>Asynchronous</u> : Email, text, discussion forums, mailing lists, wikis, video and audio messages <u>Synchronous</u> : Online chat, video conferencing, instant messaging, mobile phones |
| <i>Adaptive</i> | Supports tasks that depend on continuous adaptation to user input where learners receive intrinsic feedback to their actions. Valuable in embedding experimental learning and higher order learning skills (e.g. problem solving, evaluation, research, etc.) | Simulations, virtual worlds, models, computer games, interactive tutorials |

Source: Modified from Sharpe and Oliver (2007).

of each learning stage and activity, Bower et al. (2009) developed an online pedagogy framework that focuses on four general learning design principles: transmissive; dialogic; co-constructive; and collaborative. This framework allows the learning design to be driven by the cognitive and collaborative requirements rather than the ever-changing technology (Bower et al., 2009).

Salmon's (2004) e-moderating model of course design splits student engagement into five stages: access and motivation, online socialisation, information exchange, knowledge construction, and development. This model describes the stages of progressing towards successful online learning both for students and e-moderators (Mayes & de Freitas, 2004). The model has been widely used as a way of sequencing activities in courses that rely on collaborative computer-mediated discussions (Sharpe & Oliver, 2007). Although the model does not align with a learning theory directly, it implies a commitment to constructivist tasks and the greatest possible degree of dialogue.

Whilst descriptions of forms of learning settings that support quality learning outcomes are common in the literature, detailed descriptions about learning processes in forms that can be easily applied by teachers are less available (Oliver et al., 2007). In this section, an attempt was made to examine the learning theory traditions of selected e-learning pedagogies. The intention here was not to provide an exhaustive discussion of various online pedagogies but to hand pick a few online pedagogies that may be relevant to business curriculum design targeted at diverse student cohorts. The next section discusses some of the main challenges of applying e-learning pedagogies to curriculum design from a business education perspective.

4. Challenges, contextual influences and potential applications to business education

Traditional approaches to business education often fail to harness the full power of information technology and they support the notion that the individual is 'a lone seeker of knowledge' (Kilpatrick et al., 2003). Often, technology is a simple 'add on' to the course. This idea stems from the notion that teaching is a highly structured and prescriptive form of instruction whereby learning objectives and activities are defined in a more concrete format. Such traditional didactic approaches tend to result in surface learning (Ramsden, 2002) where the emphasis is on coverage of content and the assessment system which tests and rewards low-level outcomes in the classroom (Hunter et al., 2010). Such surface learning approaches fail to meet the general market expectations for business graduates (Jackson, 2009).

To address some of these pressing issues, universities are exploring ways in which information and communication technologies can: (a) enhance students' learning, (b) address issues of multi-campus and flexible delivery, and (c) implement pedagogically-sound methods (Design for Learning, La Trobe University, 2009). Today, most business subjects offered in Australian universities have an online component delivered through various Learning Management Systems (LMS) such as Moodle and Blackboard. These subjects can be regarded as web-supplemented rather than e-learning which is fully online. Currently, many universities are moving towards blended learning approaches where a combination of face-to-face learning and forms of e-learning is used. The majority of subject offerings with a web presence follow

an instructional design pedagogy and behavioural theory. Providing lecture presentations, tutorial material, podcasting, audio lectures using Lectopia and library resources are common elements of web-supplemented business subjects. What is less clear in current offerings is how web-supplemented elements enshrine and support such stated graduate capabilities as writing skills, creative problem-solving skills, and critical thinking skills.

There is evidence that much of the technology incorporation into curricula is prompted by practical challenges such as catering to large classes (Davies et al., 2005). However, different types of problems are inherent to the concurrent delivery of a subject in several campuses⁷. The concurrent delivery or multi-campus delivery of subjects is not uncommon in most business courses in Australia. In such circumstances, all students must have satisfactory access to subject resources whether they are metropolitan or regional, full-time or part-time. Blended learning approaches such as block-mode delivery have become popular in recent times as they cater to different learning styles and time challenges faced by part-time students. The main advantage of such an approach is the accessibility of material for part-time students who are unable to make a time commitment during normal teaching hours. Block-mode delivery tends to contain intensive sessions with a heavy content focus. The obvious downside of such an approach is there is little time for classroom discussion and reflection due to intense time pressures. Block-mode delivery combined with e-learning or online learning can bring about new possibilities of extended interaction (Bretag & Hannon, 2007).

⁷ Ocak (2010) highlights the practical problems and impediments of blended learning from a faculty point of view.

To incorporate technology successfully into the curriculum requires the purpose of the course to be negotiated and made explicit (Sharpe & Oliver, 2007). According to this premise, 'one off' rational course design processes have been problematic. Integrating technology into curriculum requires careful consideration on what it attempts to support. For example, it is the type of activity or collaborative task and thinking processes in which students engage that determines the quality of learning and technology is simply the mediator for the task or collaboration (Bower et al., 2009). Laurillard (2009) asks the question: how do we ensure that pedagogy exploits the technology and not vice versa? Without a strong theoretical understanding about the nature of formal learning, technology is at risk of being merely used to enhance conventional learning designs.

From the discussion presented in section 3, it is apparent that one single pedagogical approach may not satisfy both the theoretical and practical considerations in flexible delivery curriculum design in business courses. Each e-learning pedagogy contains both positive and negative features when embedding technology into curricula. Out of the e-learning pedagogies reviewed, Laurillard's (2002) conversational framework offers much promise for business curriculum design. Drawing from both constructivist and cognitive learning theory traditions, the framework offers a logical process highlighting appropriate e-learning media types to guide course designs. However, in multi-campus delivery contexts, it is important to be cognisant of the limitations imposed by the use of multiple media forms because the IT infrastructure and accessibility may not be uniform across various campuses of the same university. Salmon's (2002) e-moderation model is particularly useful in framing the course designing process as it offers logical steps of student engagement.

E-learning activities need to be integrated into assessment in order to be regularly used by students (Sharpe & Oliver, 2007). This is consistent with Biggs' (1999) constructive alignment notion. Lowerison et al. (2008) argue that learning theories have to be adjusted to the realities of online teaching. Previous reviews of e-learning models have emphasised the need to refine the methodological frameworks that position various e-learning models in the pedagogical space (Mayes & de Freitas, 2004). Conole and Oliver's (2002) approach requires practitioners to describe their own uses of technology and then formalise this to help them decide whether they are using the appropriate technology.

Emerging web technologies present new opportunities and challenges for both students and educators. They include Web 2.0 tools such as social bookmarking, Wikis, shared document creation, blogs, microblogging, presentation tools, image creation and editing, podcasting, video editing and sharing, screen recording, mindmapping and digital storytelling. Although most new technologies are not designed specifically for educational purposes, educators and students can leverage these tools to enhance the learning experience. New technologies are prompting many educators to rethink pedagogy and current teaching and learning models. Conole (2007) argues that the gap between the potential of technologies to support learning and the reality of how they are actually being used may be due to a lack of understanding about how technologies can be used to harness specific learning advantages. She presents a taxonomy that characterises components of a learning activity—context, pedagogy, and task (p. 85)—and these could be used to support practitioners to make informed choices in their designing for learning.

Implementing flexible learning approaches involves a different set of challenges. Technology issues are the most common challenge in many e-learning contexts. They include the learning infrastructure (hardware, software, delivery mechanisms, and processes that deliver and manage learning programmes), which is pivotal to e-learning success. As mentioned earlier, the learning infrastructure of all campuses of the university may not have the same quality or capacity. This is highly relevant in multi-campus delivery of subjects. Learning infrastructure contributes to the complexity of e-learning in several ways. Key factors contributing to the complexity of the technology infrastructure include technology dependencies⁸, customisation issues, integration challenges, and learner volumes (Shank et al., 2008). Multi-campus settings with differing IT capabilities exacerbate these infrastructure challenges. In fully-online delivery, certain student cohorts may not be able to access 'bandwidth-hungry' applications. Web 2.0 tools and the changing needs of the learners, especially those who have grown up with the internet and a plethora of social media networks, also provide unique challenges to educators. The abundance of choice and content creates anxiety for both students and teachers. Change from the top-down instructional approaches that have dominated business education to more flexible ones that focus on the learner is needed.

⁸ The implementation requires the full support and expertise of the IT department to ensure the chosen applications run efficiently within the organisation's existing platforms, client workstations and computer networks, disk space, and bandwidth support (Shank et al., 2008).

5. Conclusion

Technological advancements and changing student needs have transformed teaching and learning worldwide. Business courses, in particular are forced to respond to some unique challenges in the face of educational reform and curriculum renewal in the tertiary sector. This paper reviewed the literature on e-learning pedagogies that have been used as part of blended learning and flexible delivery. An attempt has been made to link the e-learning pedagogies with their underpinning learning theories. The literature on online pedagogies is voluminous. Each pedagogy emphasises a different aspect of learning and most pedagogies often draw from more than one learning theory tradition. This paper draws together and presents the key pedagogies for e-learning in business education in a coherent form.

Adapting e-learning to business education contexts requires careful consideration to what the subject wants to achieve, namely deep learning outcomes. On the one hand, new web technologies expand the opportunities to design subjects informed by sound pedagogies that will instil graduate attributes and deliver deep learning outcomes. They also prompt educators to rethink current teaching and learning pedagogies. Particularly, pedagogical principles strongly support collaborative learning that emanates from a constructivist paradigm. On the other hand, institutional context, organisational structures and infrastructure issues can hamper e-learning success. E-learning in business education is still evolving and more research is needed to better understand how technology can be used to harness specific learning advantages.

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