A Conceptual Learner-Centered e-Learning Framework

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e-Learning has increased rapidly in higher education. Most online education attempts to mirror the traditional face-to-face (FtF) classroom with less than favourable results. This paper proposes a conceptual e-learning framework based on andragogy theory, transformative learning theory, and media synchronicity theory. The conceptual e-learning framework supports the self-directed learning. e-learning based on this framework has the potential to out-perform not only current learning management systems such as Blackboard™, but also traditional FtF learning for adult education and with different and better outcomes. Results of early testing of the concept showed increased learner's online activity, innovation, and creativity.

INTRODUCTION

Increasingly, learners are turning to the Internet and online education to learn new skills. In 2009, online learners represented 25.3% of all post-secondary enrollments (Allen & Seaman, 2010), which was a growth of 17% from 2008. The results of current online education have been less than satisfactory with low retention rates, which Simpson (2005) blamed on the characteristics of the technology.

We define e-learning as any planned education that utilizes electronic media, which includes distance learning through the Internet. We consider e-learning to be synonymous with online learning. A hybrid-learning environment is simply e-learning that utilizes face-to-face (FtF) traditional education in conjunction with electronic media. Currently available commercial e-learning software reflects the efforts to create a replica of an FtF classroom in an online environment (Hameed et al., 2009). This assumes that FtF learning is the best way to learn. We posit that the FtF learning environment limits learners to the educator's course objectives. FtF learning does not allow the learner to go back and experience the class again to review and reflect on the time together with classmates and the educator. Drawbacks to FtF classroom learning that can be managed in the online environment are learner absence, shyness, and distraction. The software controls the e-learning process in the same way that the FtF environment controls the classroom learning process (Ozkan & Baykal, 2008; Sabry & AlShawi, 2008). The software controls what media is available and how it is used. It controls the interaction between the educator and the learner and the interaction between the learner and the world outside the e-classroom.

e-Learning requires an understanding of how adult learning takes place. This paper proposes a conceptual e-learning framework that can create an effective and efficient learning environment; one that allows the learner to go outside the boundaries that the educator defines. The conceptual framework

provides ontology or a specification of the concepts (Gregor, 2006; Gregor & Jones, 2007). The proposed framework can be classified as a virtual learning environment (VLE) or a learning management system (LMS). It is intended to operate in an organizational context and have the ability to utilize both copyrighted and open content material (Wilson, et al., 2006). The conceptual framework is not intended to address the concept of personal learning environment in the context of lifelong learning across institutions and platforms (Attwell, 2007; van Harmelen, 2006).

The proposed framework is developed with a theoretical base in andragogy, the art and science of helping adults learn (Knowles, 1980, p. 40), and Transformative Learning Theory (TLT) (Mezirow, 1997). It utilizes Media Synchronicity Theory (MST) (Dennis, Fuller, & Valacich, 2008) to explain how the media properties affect the relationship between the educator and learner. Section 2 reviews TLT, Andragogy, and MST. Section 3 discusses the motivation for this research. Section 4 develops the conceptual e-learning framework (CLELF). Section 5 evaluates the CLELF by comparing it to existing e-learning software and FtF learning, and section 6 presents conclusions, limitations, and future work.

RELEVANT LITERATURE

Transformative learning (Mezirow, 1997) results from a crisis. The crisis tells the individual that his view of the world does not coincide with reality. The individual's worldview based is on experience and is his frame of reference. The frame of reference is the structure that is formed from experience, feelings, education, associations, and concepts. It provides structure to assumptions and beliefs and an understanding of the experience. Through understanding and experience, the individual develops cognition, affection, and conation. The frame of reference defines the individual's problem space definition and subsequent solution space (Simon, 1981). When a solution to problems cannot be found, a crisis is created, which has demonstrated that the individual's frame of reference is insufficient. The new information is either rejected or the individual reflects on the current frame of reference. If reflection is chosen, the frame of reference is examined, re-evaluated, and transformed into one that will allow for the crisis and is broader, more flexible, and more discriminating. The transformation process creates learners who are increasing able to modify their frame of reference, examine assumptions, expectations, values, attitudes, and accept varying viewpoints. Transformative learning (Cranton, 2009) can happen inside or outside the classroom, because it is less about how the educator teaches and more about how the educator thinks about teaching and learning.

To foster transformative learning, the educator must support critical reflection and questioning among the learners. In an online environment, the media also needs to support reflection and questioning. The dimensions of the media need to be matched to the task and relationship between the educator and the learner. The learner must be the primary focus of online education designers (Levine, 2005). The educator must have a command of the media and an understanding of the learner. Andragogical theory provides guidance on how adults learn.

The assumptions andragogical theory makes about adult learners are (a) increasing self-directedness, (b) learners' experience is a rich resource for learning, (c) learning readiness is related to developmental tasks of social roles, (d) immediacy of application, and (e) problem-centeredness (Knowles, 1973). Self-directedness is the centerpiece of andragogy. It is "both the means and the end of education" (Mezirow, 1981, p. 20). It is the job of educators to help learners become self-directed. The terms autonomous and self-directed may seem synonymous but are not necessarily synonymous in learning. A learner's autonomy is situational; because a learner has been self-directed in one content area does not mean he will be in another, which emphasizes the importance of educator orientation, guidance, and support in the beginning of any learning project whether FtF or online (Candy, 1991). Self-directed learners prefer self-planned project work, discovery learning, and learner-directed discourse (Merriam, 2001). Self-directedness puts the learner in control of the method and pace of learning. The goal of education is to produce empowered, thinking people who participate in their own learning (Combs, Avila, & Purkey, 1971).

There are eight principles of practice for creating an online andragogical model. These principles can also be used to evaluate an existing model's alignment with andragogy (Isenberg, 2007). The first is preparing the learner, and the second one is establishing a climate conducive to learning in both the physical environment and the psychological environment (Knowles, 1995). Learning is at risk without trust (Henschke, 1998). The remaining six elements are learner centered and function as a checklist for the designer: (a) having a mechanism for mutual planning, (b) involving the learners in diagnosing their own learning needs, (c) formulating their own program objectives, (d) designing their own learning plans, (e) helping the learners carry out their own learning plans, and (f) involving the learners in evaluating their learning (Knowles & Associates, 1984). All of these elements position the educator as a helper, not as a director of learning. Good teaching is dependent on knowing the principles of practice; one's self, the learner, the content, and the methods (Galbraith, 2004).

Knowledge of self requires educators to follow an educational philosophy that combines educator beliefs, values, and attitudes (Galbraith, 2004). Philosophy determines what is created for an online learning experience and why (Elias & Merriam, 1980), and leads to a logical analysis of the process elements. A guiding philosophy counters the mindlessness that occurs when invention is based on traditional practices rather than on educational purpose (Silberman, 1970). Instead of creating an online experience that is as good as a traditional FtF classroom, the changing world of crises requires online learning that results in better or different learning outcomes (Latchem, 2005).

The opposite of self-directedness is dependency. Dependent learners prefer direct instruction and being told what to do or not do and when to do it. In contrast, the self-directed learners prefer self-planned project work, discovery learning, and learner-directed discourse (Merriam, 2001). Self-directedness puts the learner in control of the method and pace of learning. The speed of change requires educators to foster self-directedness in learners, not dependency, for tomorrow's answers are not taught in classrooms today. Whether FtF or online, institutional processes should be adjusted to support self-directed development (Niebuhr, 1981).

Taylor (1986) described the journey toward becoming self-directed through the learner's perspective. Details of the journey's four transitions and phases demonstrate the transformation that occurs within the individual when becoming self-directed. The journey begins with a *Disconfirmation* (phase transition) where there is a major disconnect between expectations and reality. *Disorientation* (phase) follows and is associated with confusion and lack of confidence leading to withdrawal. *Naming the problem* (phase transition) without blaming self or others comes next. During the *Exploration* phase, learners relax with the unresolved issue and start gathering insights. *Reflection* transitions the learner to the *Reorientation* phase when the learner has major insight with a new approach to the learning. The *Sharing the Discovery* phase is defined by testing the new understanding with others, which leads to the last phase, *Equilibrium* where the new approach is applied, evaluated, and refined (Taylor, 1986, pp. 59-67). This pattern of transition as perceived by the learner describes personal transformation, which informs the selection of online learning media.

Knowledge of the content is about having expertise and authenticity. To be authentic, educators must not only espouse concepts of adults as learners, but must also practice them (Knowles, 1989). Educators should be well grounded in their education philosophy and model what they teach. The educator must know not only the content being taught but also who is being taught, the human side of the equation (Galbraith, 2004). Authenticity of the online educator creates the relationship with the learner, and it is the relationship that teaches (Levine, 2005).

Knowledge of method is not *what* is being taught, but *why* it is being taught (Heimlich & Norland, 1994). Educators use their own personal beliefs, values, and education philosophy in deciding what methods to use and when. At the same time, the learner should have the ability to take control of the methods used in the education process. The interplay between the learner and the educator is an important part of the education process. The method is the media in online learning and should be choreographed to follow the natural self-directed way adults learn. Tough (1981) described the self-directed nature of adult learning as self-teaching. He found learners naturally following a learning process without guidance from an educator. Tough's (1981) natural process carried out by self-directed adult learners is described as a set

of learning tasks: (a) choosing the goal, (b) deciding which activities are appropriate, (c) obtaining the printed material and other resources, (d) estimating the current level of knowledge and skill, (e) dealing with difficulty in grasping parts, (f) deciding when and where to learn, (g) deciding how much money to spend, (h) dealing with lack of desire to achieve the goal, (i) disliking the activities necessary for learning and having doubts about success, and (j) deciding whether to continue. Learning should improve when the learners have media choices to carry out their learning tasks. Andragogy and transformation theories define the requirements the learner and educator place on the media to ensure a contemplative, meditative intelligence in online learners—the ability to think critically and create new meaning. Each type of educational media has a range of capability on each dimension. The effectiveness of the media is a function of the material, the learner, and the learning process.

Media Synchronicity Theory (MST) (Dennis et al., 2008) provides a basis and dimensions for evaluating online media communication performance. MST defines the physical capabilities of media that through their adoption and use affect how the individual can transmit and process information. The media capabilities affect the efficiency and performance of the information conveyance and convergence. Communication requires conveyance of knowledge from the sender to the receiver and convergence between them. Convergence requires verification that both the sender and the receiver understand the knowledge; and when both the sender and receiver apply the knowledge, they reach the same conclusion. MST defines media capabilities on five dimensions; they are transmission velocity (how fast a message can reach the recipient), parallelism (the number of transmissions that can take place simultaneously), symbol sets (the different ways a message can be encoded), rehearsability (the ability to fine tune a message before sending it), and reprocessability (the ability to retrieve and process again a received message for better understanding/reference). Conveyance and convergence have different requirements. Conveyance requirements for information transfer are large and diverse. Conveyance requires reprocessability, multiple symbol sets, and rehearsability. After the information is received, the sender requires time for information processing that allows for retrospection and deliberation. The retrospective and deliberative convergence requirements for transmission are smaller and condensed; the requirements for processing information require verification, modification, and negotiation. The media for convergence requires parallelism and high transmission velocity. The convergence often can be assisted by increased symbol sets, reprocessability, and rehearsability. In the conceptual e-learning framework, we address the role the media can play in allowing the learner to revise his/her frame of reference and reconcile the crisis that led the learner to begin the knowledge-seeking journey.

RESEARCH MOTIVATION

We teach in higher education in FtF classrooms. We became increasingly dissatisfied with FtF teaching and the ability to support self-directed leaners. We migrated to a hybrid-learning environment to attempt to give the learner an opportunity to reprocess and reflect. As in most higher learning institutions, we were not given any latitude in the LMS we were required to use. The LMS was completely educator centered and did not have the ability to support adult learning. We also had started teaching online and found the LMS was too restrictive and provided less support for the online learner than the hybrid-learning environment. We studied the problems our students were having and created the following learner-centered e-learning framework.

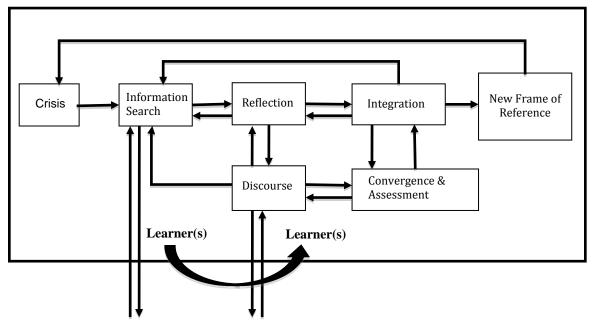## LEARNER-CENTERED CONCEPTUAL E-LEARNING FRAMEWORK

Through the application of transformative learning and andragogical concepts, a framework is proposed for e-learning. The framework includes transformative learning by integrating disorienting dilemmas, threshold concepts (Land & Meyer, 2010), concept mapping, dynamic and progressive assessments, social learning, variability, inquiry, conflict, and humor to achieve new perspectives and learning. The framework is synchronized with the appropriate media as well as appropriate learner and educator skills and knowledge of the discipline.

Transformative learning requires a change in perspective and an awareness of why preconceived ideas constrain thinking, understanding, and feelings about the world (Mezirow, 1990); and, this results in new attitudes and behaviors and. A transformation that takes learners from where they are to where they need to be is triggered by a "disorienting dilemma" and balanced by rational reflection with an emphasis on affective processes (Mezirow, 1990; Boyd, 1989; Boyd & Myers, 1988). In preparing to step through the threshold towards extreme changes in behaviors, knowledge, and attitudes, the learner must first be thrust into disorienting and challenging situations that open the mind to new ideas (Meyer, Land & Baillie, 2010). This approach releases the mind from preconceived ideas and bias, allowing for effective learning.

An environment in the online experience must be developed that involves a shift in thoughts, feeling and resulting actions. These experiences will dramatically change the way the learner interacts with the world (O'Sullivan, Morrell, & O'Connor, 2002). This environment is not considered an "add on" to the course, but integrated so the learner engages the knowledge through debates, discussion, and critical questioning. A learning experience should involve many strategies that ultimately move the learner to see an alternative view different from his own (Kelly & Crainton, 2009). The learners' learning experiences move them from their safe places and challenge them with unresolved issues, forcing them to test their view of reality (Brueggemann, 1995).

The e-learning processes are iterative and as knowledge is gained may often require additional information in order to achieve convergence and integration. The conceptual e-learning framework (CLELF) is illustrated in Figure 1.

FIGURE 1
CONCEPTUAL LEARNER-CENTERED E-LEARNING FRAMEWORK (CLELF)

The World Outside the E-Learning Framework

From Media Synchronicity Theory, the framework needs the support of the media to span from the crisis to the new frame of reference. Media has multiple dimensions and ranges within each dimension. The dimensions proposed in MST are transmission velocity, parallelism, symbol sets, rehearsability, and reprocessability. The media supports the constructs of the framework. The Information Search construct is primarily a process of conveyance; new information is conveyed from a source to the learner. Reflection is a process of confirmation. It involves examining the information and a decision of the

information's sufficiency and necessity. Discourse is a process of further examination and comparison. It involves deliberation with others to confirm understanding of the information. Convergence is the process of reaching a common understanding of the knowledge, and it is the process of knowledge creation from information. It also involves the assessment of the knowledge creation process. This can be a self-assessment or an outside assessment by the educator in a more formal process. Integration is the process of internalizing the knowledge and applying it to real world problems. From the framework, it can be seen that the process is clearly not unidirectional. It is a messy process that often requires multiple iterations between stages. The media dimensions that support the framework are illustrated in Table 1. The range of the dimensions is given in terms of low to high. For example, information search does not require a high transmission velocity or parallelism, but it does require a high level of symbol sets, rehearsability, and reprocessability. Discourse requires a high transmission velocity and parallelism.

TABLE 1
CONSTRUCT REQUIRED MEDIA DIMENSIONS

Construct	Transmission Velocity	Parallelism	Symbol Sets	Rehearsability	Reprocessability
Information Search	Low to medium	Low to medium	Medium to high	Low to Medium	Low to Medium
Reflection	Low to medium	Low to medium	Medium to high	Medium to high	Medium to high
Discourse	Medium to high	Medium to high	Medium to high	Medium to high	Low to high
Convergence & Assessment	Medium to high	Medium to high	Medium to high	Medium to high	Medium to high
Integration	Low to medium	Low to medium	Low to Medium	Low to medium	Medium to high

The educator and the learner share the choice of the media. The educator facilitates but the learner must have the freedom to choose the media and to access media outside the immediate learning environment. Freedom to choose the media recognizes the variability among learners regarding prior knowledge, experience, commitment, and self-confidence to the extent that some are able and willing to take on a co-educator role (Pratt, 1988). Freedom to choose requires much more engagement and motivation by the learners than simply doing what they are told by the educator. This is a requirement of the information search process and in accordance with andragogical principles. The self-directed learner takes responsibility for his own learning. Learning becomes more complex with media choices that take learning beyond just acquiring knowledge and skill, as in traditional educator-centered online learning. To simply memorize the knowledge or acquire a skill for a test (surface learning) is no match for deep-level processing approaches (Saljo, 1979) that address the other adult learning competencies - understanding, attitude, value, and interest (Knowles, 1980).

Taylor's (1986) four phase transitions and phases toward becoming self-directed as perceived by the learner seem to parallel the Construct Required Media Dimensions (see Table 1, Column 1) to create a common pattern. Recall that the cycle begins with a *Disconfirming* event that leads to *Disorientation*. Soon thereafter, *Naming the Problem* leads to *Exploration* (see Table 1, Column 1, Information Search). *Exploration* and Information Search could be thought of as parallel terms. *Reflection* or stepping back to think (this mirrors Reflection in Table 1, Column 1) leads to *Reorientation*—when the learner has major insight with a new approach to the learning. The *Sharing the Discovery* phase transition is defined by testing the new understanding with others (see Table 1, Column 1, Discourse). One use of discourse is to test new understanding with others. Discourse then leads to the last phase, *Equilibrium* (see Table 1, Column 1, Convergence & Assessment and Integration) where the new approach is applied, evaluated, refined (Taylor, 1986, pp. 59-67) and integrated into the learner's new reality.

Taylor's (1986) four phase transitions and phases, as perceived by the learner, also seem to parallel the learning experience as perceived by the researcher observing the learner (Isenberg, 2010; Kolb, 1984;

Lewin, 1997; Tough, 1981). In other words, there is another common pattern with one verifying the other. The learning content does not seem to matter. Mezirow's transformation cycle (1981) includes ten elements that seem to follow Taylor's cycle of phase transitions and phases that define the journey toward self-directedness (Isenberg, 2010). Taylor called the journey toward becoming self-directed a personal transformation for the learner, so perhaps the journey is transformational learning. To this end, the Construct Required Media Dimensions (Table 1) integrate both transformative learning and the andragogy centerpiece, self-directed learning. Though a common pattern of natural learning toward personal transformation has been identified by both the learner and by observers of the learner, current LMS such as Blackboard™ and WebCT™ have no mechanism or protocol to integrate the pattern into the online learning experience. The learning process is complex, but perhaps more so when media choice is factored into online learning. Discovering parallels and common patterns among self-directed learning, transformative learning, and Construct Media Dimensions make the whole greater than the sum of its parts. The Construct Required Media Dimensions provide a guide for designers to build smarter online frameworks that are tailored to the common pattern of self-directed learning.

The terms process and pattern assume a certain chronological order to the experience of learning. There is a general movement forward, but the pace of the learner varies (Taylor, 1986). Learners spend varying amounts of time with the content. Built-in flexibility allows learners to go back and forth through the process in a more natural way.

The framework in Figure 1 defines the process from discovery to integration and development of a new frame of reference. To operationalize the framework and facilitate the e-learning process, additional design areas need consideration; they include flexibility, ease of use, integration between constructs, and transparency. The learner is able to self-direct the process. The educator facilitates the process and provides initial orientation and direction. The learner is able to direct, optimize and self evaluate. The common dimensions are described in a further discussion of each construct.

Information Search

In searching for information, the learner interacts with multiple information sources. These include libraries, the Internet, and fellow searchers. In e-learning, the Internet provides access to library databases, blogs, news media, wikis, and individual experts. The information obtained through the search process needs to be stored and reprocessable. Because the search process can take time, the transmission velocity does not need to be high and the parallelism can be low. Through the search process, the learner develops the ability for discriminating between fact and fiction. The information is provided through multiple channels and through multiple symbol sets. Increased symbol sets allow for increased understanding of the information. The information can be text, video, audio, or a combination of the above. As new media channels are developed, they are incorporated. An online course is a temporary environment; therefore, it is the responsibility of the educator to help learners make the transition to the real world and apply the information to other environments (Taylor, 1986). If learners are the dichotomous opposite of self-directed, they are dependent; and may, based on a past traditional educational experience, see new information only in relation to the course assignment.

Reflection

Reflection is so important to adult learning that Mezirow (1981) called it critical reflectivity. Just as self-directedness is the centerpiece of andragogy, reflectivity is the centerpiece of perspective transformation. The ability to critically reflect is unique to adults (Mezirow, 1981). In the reflection process, the learner examines new information in detail. The learner can review it and reprocess the information. If additional information is needed, the learner can regress to information search re-iteratively until all necessary and sufficient information is collected. The learner needs to be able to examine and re-examine the information until it is comprehended completely. The learner moves from reflection process to discourse and back to reflection.

Discourse

The learner uses discourse to confirm understanding. The discourse can be with the educator/ facilitator, with other learners, or with a community of others. The community can be a social community or a community having specific interest in the topic the learner is studying, such as communities of scholars or practitioners, i.e., AIS special interest groups. The discourse provides the learner with a method for expressing understanding and getting feedback on completeness and sufficiency. Discourse requires high transmission speed, high parallelism, and a greater need for rehearsability. Discourse can vary and includes audio-visual conversation, synchronous discussion groups, asynchronous and threaded discussions, e-mail, chat, text messaging, instant messaging, and FtF discussions. As online media continues to develop, new methods of discourse will be added.

Convergence and Assessment

Through convergence, the learner understands that the new knowledge obtained is in agreement with the educator and others in the field. The learner has gained the ability to begin to use the knowledge. In addition to the development of activities and situations to provide transformative learning, a dynamic model of assessment is imperative to help a learner through the transformative journey. An integrated assessment approach helps confirm and respond appropriately based on the learners understanding. With progressive approaches to assessment, the learning experiences are designed to open new portals or thresholds to learning, or more unfamiliar areas, thus opening the mind to higher levels of transformation. Assessments must take into consideration that although learners may get the "right "answers, they may not truly understand the concepts. Transformative concepts require methods of assessment that allow the learner to evaluate the degree the concepts are integrated; assessment will require the development of new and creative methods (Land & Meyer 2010). Assessments will vary and can include informal subjective self-assessments, quantitative self-assessments, and formal examination type assessments. Final assessments are in the integration process.

Integration

The last stage of the e-learning process is integration of the knowledge into the learner's frame of reference. At this stage the knowledge is put into use and the user becomes confident in his/her ability. Use of the knowledge confirms the new frame of reference. If the knowledge use does not provide confirmation, the process reverts to a prior stage. The process remains iterative until the new frame of reference is confirmed. Even after confirmation, a new crisis that conflicts with the individual's frame of reference will restart the process. After a learner has been through the self-directed process of learning successfully, it becomes easier to repeat the process.

CONCEPTUAL LEARNER-CENTERED E-LEARNING FRAMEWORK EVALUATION

The CLELF was evaluated two ways. First, the CLELF was evaluated by a comparison with two existing LMS'. Second, an existing LMS was manipulated to provide an approximation of the CLELF, which allowed the LMS to become more learner-centered.

CLELF Evaluation Compared to Existing LMS

The conceptual e-learning framework (CLELF) was evaluated by comparing it with the commercial LMS Blackboard™. The evaluation was a qualitative comparison by interview and the author's examination of BlackBoard ™. The evaluation focused on the ability of the LMS and the CLELF to support self-directed learning. A focus group of ten educators with an average of 3 years of teaching online classes and 22 learners that had taken at least one online class was asked to participate in informal discussions. They were given the description of the CLELF and asked to compare past lived experiences with existing online education platforms to the description of the new CLELF. The focus group participants were provided elements of the existing LMS (e.g., Blackboard), as a review.

Each system was found to have varying levels of flexibility, ease of use, integration between constructs, and transparency. Often the ease of use and flexibility varied depending on whether the view was as a learner or educator. Most systems were rigorous in that they allowed only one method of accomplishing a task. The commonalities of all of the systems reviewed were twofold: all tried to duplicate an FtF environment and all were educator centered. None of the systems were learner centered allowing for self-directed learning. In order to duplicate the conceptual e-learning framework, a learner has to go out of the current online education platform, seek additional information, and find an outside community for discourse. A community for discourse ideally would include practitioners, learners, educators, and others with interest in the field. If each construct in the conceptual e-learning framework were divided into two parts with one half representing the educator and the other the learner, the educator's half would be filled in and the learner's half blank. None of the current online education platforms examined inherently allowed for self-directed learning. After the first evaluation of the CELF with the focus group, the authors were able to access Sakai. The comparison of the Sakai to the Blackboard ™ revealed that the open source LMS was also educator centered and did not support a self-directed learner.

The conceptual e-learning framework was also evaluated by theoretically comparing it simultaneously with an FtF environment and current LMS'. The theoretical constructs in Figures 2-4 illustrate the potential benefit of the new conceptual e-learning framework in fostering self-directedness. The construct in Figure 2 illustrates the educator bringing into the FtF classroom motivation, emotions, and varied media, but on the learner side there is little to no learner reprocessability other than class notes, handouts, or the occasional audio taping. The construct in Figure 3 illustrates the educator bringing into the current online education platform motivation, emotions, and varied media with a mirror image on the learner side. In other words, the learner cannot go outside the limitations of the educator. Figure 4 illustrates the educator bringing into the conceptual e-learning framework the same motivation, emotions, and varied media as in the other two figures, but this time the media allows the learner to be self-directed within the framework, thus engaging in learning that is transformative, unhindered by the limitations of the educator. This learning has the potential to result in better and different learning outcomes (Latchem, 2005) than current online and FtF learning. The more the learner is engaged in self-directed inquiry, the greater the learning (Knowles, 1980).
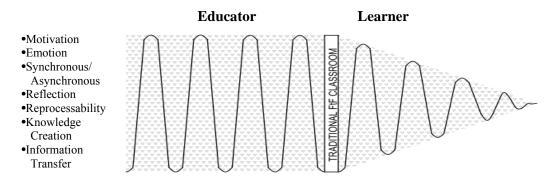
FIGURE 2
FtF CLASSROOM INTERFACE BETWEEN EDUCATOR AND LEARNER

FIGURE 3
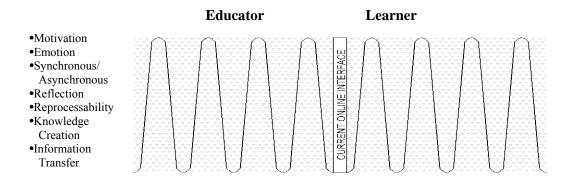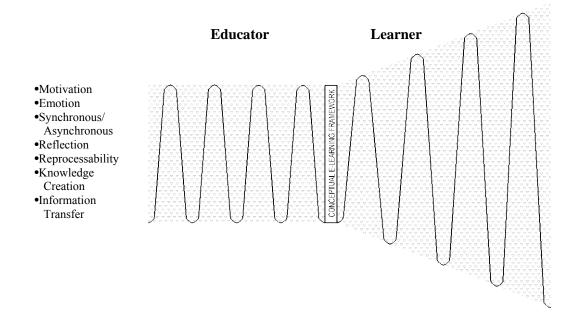**CURRENT ONLINE INTERFACE BETWEEN EDUCATOR AND LEARNER**

FIGURE 4
CONCEPTUAL LEARNER-CENTERED E-LEARNING FRAMEWORK INTERFACE BETWEEN EDUCATOR AND LEARNER

Testing of the CLELF Concept

In 2011, two semesters of an online course titled Applying Andragogical Principles to Internet Learning incorporated a new learner-centered strategy that challenged the educator-centered limitations of an LMS to test the CLELF concept. To foster learner self-directedness, reflection, and choice of media, a course-within-a-course strategy was conceived by the authors of this paper, implemented by the university's LMS director, and facilitated by the educator of the course for the course's final project — designing and creating an online course that applies andragogical principles. Course shells for each learner were created *within* the educator's course (the main course), which had never been done before at this university. Each learner's course was visible on the main course homepage. The learners' courses appeared in alphabetical order directly under the main course hyperlink. Each learner had *learner rights* to the main course, *instructor rights* to their own course, and *teacher assistant (TA) rights* to each co-

learner's course. *Learner rights* allow the learner to respond to facilitator directions only. *Instructor rights* allow the learner to choose media and add/change content. *TA rights* allow each learner to visit co-learners' courses and respond to the instructor's directions. A learning community structure was built and learners were encouraged to build their courses together by providing and receiving feedback, and in some cases taking on a co-educator role (Pratt, 1988) to help others.

In prior semesters, learners in this course were forced to go outside the LMS to find a way to create an online course to satisfy this course requirement. Some learners were university professors or had employers who had access to an LMS shell; but some learners did not and simply typed on paper an outline and narrative of what their online course would look like and how it would work. Some learners even drew pictures of page designs. In other words, prior to course-within-a-course, some learners created LMS courses outside the main course that classmates and the educator could not visit (without permission); and others simply described an online course they *could* create if they had a way to do it. Most importantly in prior courses, the learners had no way of working together to build their courses within Blackboard; they had no way to give and receive co-learner feedback within the main online course.

The learners' initial response to the course-within-a-course was mixed. The young learners were excited, enthusiastic, and confident as evidenced by their early and lively course-within-a-course activity and the number and content of their discussion postings. The older learners were more hesitant, frustrated, and slower to engage with the new strategy. The young learners seemed to lead the way and the older learners followed. All learners were surprised by the course-within-a-course and all demonstrated an increase in their online activity while building their courses together. The resulting online courses were innovative, creative, used a variety of media, and exceeded the expectations of the course facilitator. The results were different and better than those from the course before incorporating the course-within-a-course strategy.

CONCLUSIONS, LIMITATIONS, AND FUTURE WORK

The proposed conceptual learner-centered e-learning framework follows andragogy theory, especially the learner's need for self-directedness, and transformative learning theory. It supports the self-directed learner and the learning process. The CLELF supports learning that originates from transformative crises as well as the learning of transformative threshold concepts. Testing demonstrates the efficacy of the framework and its potential to improve online learning by concentrating on the learner and not on the educator. The CLELF does not exist today, but it provides direction for creation of an LMS that supports self-directedness that can lead to transformative learning. It gives a direction that can potentially improve FtF learning through the incorporation of the CLELF as a supplement to the traditional classroom.

It could be concluded that with orientation, guidance, and support from an educator in the early stages, the CLELF could be applied to online learning without an educator. Perhaps online learning environments could be open to everyone for college credit or to simply satisfy curiosity and the joy of learning.

A limitation of this work is that the evaluation was through informal interviews with educators and learners. The early testing was on the concept, not on the entire framework and involved introducing a new strategy to an existing learning management system. The andragogical concepts used to create the conceptual e-learning framework have been tested repeatedly. The CLELF needs development as an online education platform to evaluate its ability to support self-directedness and transformative learning. Future work includes creation of a prototype e-learning platform and empirical testing.

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