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Editorial

Higher Levels of Learning

Donald G. Perrin

Industry uses a process called *Quality Function Deployment* to develop new ideas and structures in engineering and science. It involves creative processes such as brainstorming, mind mapping, and affinity grouping, to generate lists of elements related to the focus of study. These items are organized, usually on Post-Its, into groups and hierarchies that look like pyramids of knowledge. There may be more than one pyramid, and the ultimate goal may reach beyond the top of a pyramid. This is where the process becomes really interesting.

The engineers and scientists strive to determine what is beyond the top. Perhaps there is a cap that joins two pyramids? Are the tops of the two pyramids at the same level or is one or more levels missing? Are other pyramids involved? They build them. The walls are filled with these growing structures, infinitely flexible, puzzling and mysterious. The team strives for days and nights. Days expand to weeks until the mystery is solved. The result is a new science or discipline or innovation for deeper exploration and research. A new product. A new beginning.

Learning communities in education use *critical thinking* to expand the knowledge base. Critical thinking goes beyond problem solving because its scope invariably reaches into different disciplines and requires innovative thinking - "thinking outside the box!" The surge of interest in Kelly Bruning's article, *The Role of Critical Thinking in the Online Learning Environment* in the May issue of this Journal is expanded by two more excellent articles on this topic*: Insights into Promoting Critical Thinking in Online Classes* by Daithí Ó Murchú and Brent Muirhead, and *Critical Thinking in Asynchronous Discussions* by Greg Walker. Each of these articles makes unique contributions to this important aspect of learning. Kelly also has an article on Mid Course Feedback. Also, read new articles on research, theory and practice from Newfoundland, Ireland, Turkey and Cyprus, Sri Lanka, and USA that comprise the remainder of this issue.

If you are not familiar with earlier structures for developing and organizing knowledge, such as Bloom's Taxonomy of Behavioral Objectives, read the Tutorial paper on Creative Online Learning Environments in the April 2005 issue.

And here is a parting thought to challenge agreement and disagreement among your colleagues about the fundamental nature of online interactions. It comes from a 1999 listserve dialog between S. Gray and Stephen Downes:

> *Good – even great – online teaching will not be – will never be built – because you can not build interaction. You enter into it, like a warm bath (shades of McLuhan) like a familiar suit, like a comfortable home. The online materials are only the tools and components of online instruction – hammers and screwdrivers and saws and doorframes and kitchen cupboards and furnaces and wall-to-wall carpeting. They do not – cannot – constitute a home. The pausing, the pacing, the pushing, the pulling, the selection, maybe of this movie, that online resource project, such-and-such project – all of these occur in a dynamic fashion in the classroom, and indeed even to a large degree in online learning. Great teaching adapts and flows. The more personalized, the more context-sensitive such adaptations become, the more full the educational experience becomes, the more like a home, the less like a pile of tools.*

Reference: Gray, S. (1999). Message. ListServ WWW Courseware Development. Retrieved October 16, 2004 from http://listserv.unb.ca/bin/wa?A2=ind9907&L=wwwdev&T=0&F=&S=&P=2146

Editor's Note: Murchú and Muirhead have related key theories to best practices in teaching and learning. Critical thinking is crucial to facilitate higher levels of learning. It goes broader and deeper than problem solving, and "often requires reflecting on information from several academic disciplines or knowledge domains."

Insights into Promoting Critical Thinking in Online Classes

Daithí Ó Murchú and Brent Muirhead

Introduction

At the beginning of the 21st. Century, all educators and all educational institutions, at all levels of education provision, are faced with the greatest time of possibility for change and evolution or stagnation and regression. Barker, 1978 in New York, stated that "action with vision can change the world" and the authors, based on their many years of experience working in both traditional and managed or virtual, E-Learning, lifelong-learning environments contend that the promotion of critical thinking is a key element in meaningful, responsible and soulful learning. Our 'raison d'être' as educators is to prepare our students for the society which does not yet exist and in doing so, provide them with opportunities to critically assess and transform their experiences into authentic learning experiences (Ó Murchú, 2005). This article explores the thought processes, realities and perceptions of the authors' on-going experiences in on-line classes and gives their insights into promoting critical thinking in these Managed Learning Environments (MLEs).

Importance of Critical Thinking

Today's traditional higher education institutions are coming under greater public scrutiny as people wonder about their ability to deliver their educational promises. Smith (2004) notes that "all too often our colleges and universities treasure tradition at the expense of today's knowledge, research, and needs. We practice an outdated model of education. Its effectiveness is limited. And it's time for a change" (p. xxii).

Courts and McInerney (1993) conducted an extensive investigation on student perceptions of their college instruction and students were disappointed with a heavy reliance upon lectures and lack of meaningful interaction with their instructors. Additionally, students related the following concerns:

- Students were not self-directed learners. They were not confident in their ability to approach a problem and figure it out on their own.

- The students evidenced a powerful sense that they were not learning as much as they should be.

- Many of the students voiced a belief that their college teachers do not really care much about them or about promoting their learning or interacting with them.

- The result? Students did not engage fully or energetically in learning something they did not want to learn or see any reason for learning (pp. 33-38).

Many of today's administrators and teachers realize the importance of developing a new contemporary vision of learning (Muirhead, 2001). Adult educators affirm a new teaching and learning model that stresses student-centered instruction (Sherry, 1996). The traditional role(s) of

teachers are being changed from information transmitters to guides who design, and design for, meaningful, responsible, soulful and reflective learning experiences (Salomon, 1992, Ó Murchú, 2005). The term education describes a teaching and learning concept that transcends sharing facts but it assumes that a capable teacher will know where he or she is going (goal-oriented). The wise teacher seeks to guide his/her students toward greater maturity which translates into new skills and knowledge. The soulful teacher recognizes the holistic nature of meaningful learning and appreciates the multiple intelligences of his/her students. The 21st, Century teacher, irrespective of his/her learning environment, recognizes the value of critical thinking at all levels of meaningful learning.

What is Meaningful Learning - ML?

In order to effectively integrate technology into a meaningful learning experience in on-line classes, we must first have a clear understanding of what a meaningful learning experience is. Meaningful learning (ML) occurs when learners actively interpret their experience using internal, cognitive operations. ML requires that teachers change their role from sage to guide, from giver to collaborator, from instructor to instigator (Ó Murchú, 2003). Since students learn from thinking about what they are doing, the teacher's role becomes one of stimulating and supporting activities that engage learners in critical thinking (Bhattacharya, 2002). Teachers must also be comfortable that this thinking may transcend their own insights. Meaningful learning requires knowledge to be constructed by the learner, not transmitted from the teacher to the student (Jonassen, *et al.*, 1999).

Figure 1: Attributes of Meaningful Learning
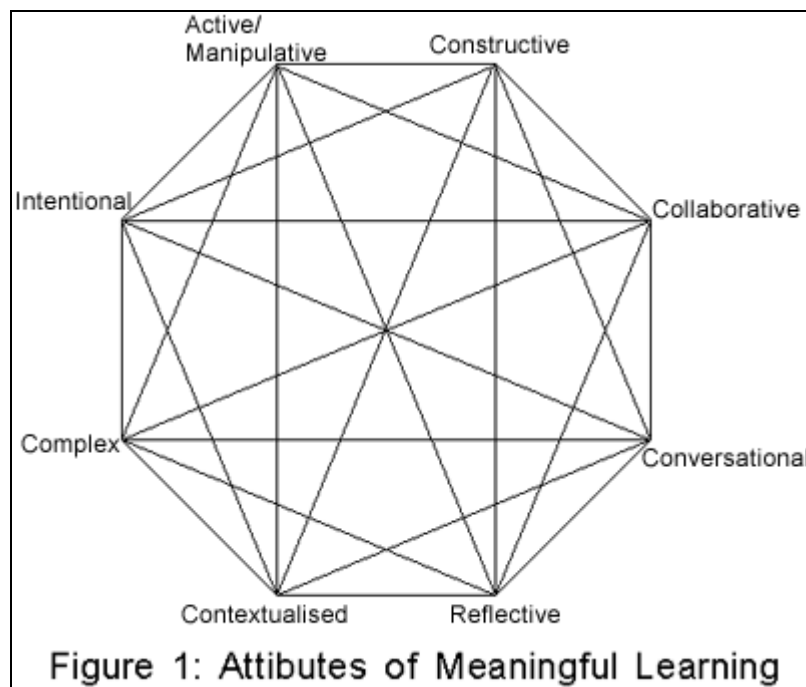
According to Jonassen, *et al.* (1999), meaningful learning is:

- **Active (manipulative):** We interact with the environment manipulate the objects within it and observe the effects of our manipulations.

- **Constructive and reflective:** Activity is essential but insufficient for meaningful learning. We must reflect on the activity and our observations, and interpret them in order to have a meaningful learning experience.

- **Intentional:** Human behavior is naturally goal-directed. When students actively try to achieve a learning goal that they have articulated, they think and learn more. For students to experience meaningful learning, they must be able to articulate their own learning goals and monitor their own progress.

- **Authentic (complex and contextual):** Thoughts and ideas rely on the contexts in which they occur in order to have meaning. Presenting facts that are stripped from their contextual clues divorces knowledge from reality. Learning is meaningful, better understood and more likely to transfer to new situations when it occurs by engaging with real-life, complex problems.

- **Cooperative (collaborative and conversational):** We live, work and learn in communities, naturally seeking ideas and assistance from each other, and negotiating about problems and how to solve them. It is in this context that we learn there are numerous ways to view the world and a variety of solutions to most problems. Meaningful learning, therefore, requires conversations and group experiences.

To experience meaningful, authentic learning, students need to do much more than access or seek information—they need to know how to examine, perceive, interpret and experience information and think critically at all times.

Meaningful and Soulful Learning

To the ancient Greeks the root word for "soul" is the same as the word for "alive", and to them the soul was what made living things alive. Plato considered the soul to be the "essence" of a person that reasons, decides and acts. He considered the soul to be a separate entity from the living body and to be immortal. In early Hebrew thought, "soul" represented the life force. However, over time it began to be seen as something independent of the physical being. According to the Hebrew bible, when God created Adam, he "breathed" into his nostrils the breath of life; and man became a living soul. The Hebrew word for "breath" is often used to mean "spirit" and "inspiration". "Soulful learning" is therefore defined as being the essence of breathing life into transformative reflection, which comes from the inside –out (Sorensen & Ó Murchú, 2005).

Learning for learning's sake isn't enough. We may learn things that constrict our vision and warp our judgment. What we must reach for is a conception of perpetual self-discovery, perpetual reshaping to realize one's goals, to realize one's best self, to be the person one could be. (Gardner, 1983)

The concept of "meaningful learning" may be defined from several perspectives. From the point of view of Colaizzi (1978), "meaningful learning" is authentic learning. In agreement with Colaizzi, Wiske (1998).

Critical Thinking

Describing the critical thinking process has challenged individuals from a diversity of academic disciplines. Huitt (1998) highlights how various groups have made significant contributions which have improved our understanding of this complex concept:

Cognitive psychologists – developed vital distinctions and differences in thinking such as creativity.

Philosophers – thinking is a process that must based on criteria and standards and it is an important activity that influences a person's beliefs and behavior.

Behavioral psychology – provided have established detailed definitions that categorize critical thinking elements which have enabled teachers to create instructional student activities that enhance reflective thought.

Content specialists – have created relevant teaching methods for a diversity of subject areas (i.e. reading).

An excellent critical thinking definition is offered by Lipman (1995) who states "….critical thinking is skillful, responsible thinking that facilitates good judgment because it (1) relies upon criteria, (2) is self-correcting, and (3) is sensitive to context" (p. 146). It is one of the best definitions on critical thinking because Lipman integrates the concept of standards (criteria to measure achievement), skills (especially cognitive) and personal judgment (making wise choices). Moreover, Lipman argues for a comprehensive instructional approach that acknowledges the importance of both teachers and learners fulfilling their respective roles in the educational process. Teachers must consistently affirm the independence and autonomy of their learners by enabling them to freely pursue meaningful, authentic learning objectives. Students are given the power to assume greater responsibility for their educational experiences and cultivate self-directed learning strategies. Therefore, the context of learning critical thinking skills is interactive and builds upon individuals who are dedicated to improving their academic performance by continuously enhancing their ability to acquire new knowledge and implement creative problem solving skills.

Lipman's (1995) definition should be viewed as a reference point that describes the essential features of critical thinking. It requires individuals to be proactive, determined to work through complex problems and be open-minded to explore alternative ideas and solutions. Critical thinking is a dynamic learning process that can be stimulated by a variety of formal and informal activities. Perhaps, educators have placed too much emphasis on logical aspects of reflective thought and neglected the soulful, role of emotion. Brookfield (1987) warns people that it is risky to ignore emotions when making decisions. The critical thinking process has a built-in emotional element because people are often engaged in assessing the need to change their values and beliefs. This can bring anxiety and even resistance to implementing potential changes that appear threatening. Those who discard flawed assumptions can experience feelings of liberation, self-confidence and joy as they learn how to effectively make changes in their personal and professional lives.

The process of promoting critical thinking in online classes involves facing the realization that students must be meaningfully motivated and encouraged to change their thinking skills. Deutschman (2005, p. 55) shares five powerful myths about changing behavior:

- **Crisis is a powerful impetus for change**. Ninety percent of the patients who've had coronary bypasses don't sustain changes in the unhealthy lifestyles that worsen their severe heart disease and greatly threaten their lives.

- **Change is motivated by fear.** It's too easy for people to go into denial of the bad things that might happen to them.

- **The facts will set us free.** Our thinking is guided by narratives not facts.

- **Small, gradual changes are always easier to make and sustain**. Radical, sweeping changes are often easier because they quickly yield benefits.

- **We can't change because our brains become 'hardwired early in life**.' Our brains have extraordinary 'plasticity,' meaning that we can continue learning complex new things throughout our lives- assuming we remain truly active and engaged.

Deutschman argues that inspiration for changes arises from positive visions of the future based on metaphors that provide a meaning to facts. People must begin by changing how they think, which requires adjusting their mental frames of how they process information. Unfortunately, the concept of critical thinking has been confused with being something quite abstract from daily living. In reality, adults utilize critical thinking skills in a host of situations: individuals raising questions within a relationship, employees who explore the rationale behind their work assignments, managers experimenting with delegation of duties, citizens posing difficult questions to their political leaders, and families discussing the merits of various television shows (Brookfield, 1987).

Critical Thinking & Reading

The distance learning environment mirrors traditional classrooms in requiring their students to read an assortment of books and articles for their classes. Research studies reveal three major differences between good readers and poor ones. Byrnes (2001) notes that good readers can recognize words automatically which enables the individual to focus on higher order thinking by utilizing sentence integration and make semantic connections. Secondly, good readers quickly recognize words. "Speed is important because readers need to be able to operate on information in working memory before it dissipates" (Byrnes, 2001, p. 144). A third characteristic of a good reader is their ability to recode words into phonological representations. The phonological skills help the individual to create a code and stable pathway for the working memory to effectively access word meanings.

Anderson (2005) stresses that reading comprehension follows a specific sequential order that starts with perception, then moves to parsing of words and closes with utilization. Language studies highlight the principle known as immediacy of interpretation. It refers to people pulling meaning from each word before finishing the sentence. A study conducted by Just and Carpenter (1980) examined study participants as they read a sentence and people were fixated more on words which were unfamiliar or perhaps surprising to them. Immediacy principle indicates interpretation of sentences can begin even before the verb appears and people will devote more time at the end of a phrase. Cognitive psychologists have investigated the reading of textual narratives and their findings reveal the structure and order of the material has important implications for readers. Thorndyke's (1977) project created two stories: one with what is considered a natural order which had a logical progression of the story and another with the story being scrambled. Study participants were able to recall 85% of the original story but only 32% were able to recall the chaotic story. It is interesting that Anderson (2005) uses a series of single sentences within a chapter to highlight key ideas to help individuals acquire a better understanding of the material. Pressley and Schneider (1997) found that students can enhance their ability to identify important ideas in passages through reading activities which offer both practice and feedback. Students learn to use their metacognition skills to regulate their reading practices. Teachers can assist students by helping them broaden the range of cues that are associated in encoding and retrieval of information so they can effectively recall the information in a larger range of situations. Research on students' reading a textbook in class have found that by asking why questions and having guided peer discussion of the material enhances learning. Distance educators can create online dialog questions that stress material from student textbooks. A natural concern among all educators is whether students are reading their course materials. The questioning process increased the student's elaboration of the information which made the knowledge more meaningful and helped them to better categorize and recall it (King, 1994).

The authors create lesson plans that are designed to enhance the student's study strategies and increase their understanding of foundational knowledge. Teachers can develop instructional plans that increase the student's cognitive information processing skills (Driscoll, 2005, p. 104):

- provide organized instruction

- arrange extensive and variable practice

- enhance learner's encoding and memory

- enhance learner's self-control of information processing.

Anderson (2005) argues that combination of distributed practice and learning the information in different contexts will increase retention. The level of information processing and using elaboration techniques are essential to effective recall of knowledge. Students find recall of knowledge easier from a novel than from a textbook. In reality, they are able to elaborate on material in the novel which enhances the learning process because the students are making the information more relevant (Schacter, 1996). Teachers can remind students of study techniques: such as being active readers, taking concise notes and using elaboration techniques to make the material more meaningful. Essential cognitive processing elements "…include understanding main ideas, generating inferences that link these ideas together, and relating them to related information in the memory" (Bruner *et al*, 2004, p.31).

Cognitive psychologists have attempted to create a basic problem solving model that could be relevant in a diversity of academic subjects. Bruning *et al* (2004) observes that a common feature of the models is developing a set of general procedures to work through a problem and the application of metacognitive skills which help individuals to monitor their work. Anderson (2005) sees problem solving as having a goal-directed orientation involving a problem space "which consists of various states of the problem. A state is a representation of the problem in some degree of solution" (p. 245). A focus on goals reveals that individuals will divide a major goal into a set of sub goals by utilizing operators. "The term operator refers to an action that will transform the problem state into another problem state. The solution of the overall problem is a sequence of these known operators" (Anderson, 2005, p. 245). Cognitive experts consider problem solving skills to have unique qualities. Halpern (1997) observed that problem solving involves specialized use of knowledge for a clearly defined problem (i.e. word problems) which depends upon subject expertise. In contrast, critical thinking often requires reflecting on information from several academic disciplines or knowledge domains. Often, the problems are open ended, have potentially numerous solutions and sometimes might not have a known answer.

The problem solving process requires individuals to learn how to use operators to develop potential states through search techniques that eventually lead to the goal of resolving the problem. Anderson (2005) reveals that individuals acquire operators primarily through three means: discovery, analogy and direct teaching. Yet, each of these represents possible barriers to acquiring operators. The discovery method requires higher order reasoning skills and can be time consuming and quite frustrating. Individuals can implement analogies for resolving problems with only a limited amount of instruction. This is an important advantage which enables problem solvers to begin practicing to refine their skills. Anderson (2005) sees two vital issues with analogies that involve identifying appropriate examples and helping students avoid making superficial comparisons with previously used analogies. Ross' (1987) research on study participants who were learning about probability principles they were given an illustration of tossing two dice to produce the number seven. The study participants were given what appeared to be a similar problem using the dice. Individuals made a superficial comparison to their previous example and they only were successful when a new problem reflected early probability principles. The experiment illustrates the need for students to cultivate creativity, patience and determination to avoid trying to solve a problem too quickly.

Critical Thinking & Writing

Writing is known as a complex activity that involves an assortment of cognitive tasks. Bruner *et al* (2004) states it includes "…working and long-term memory, procedural and declarative knowledge, motivation, self-regulation, and beliefs and attitudes" (p. 291). A theoretically sound cognitive model of writing is able to effectively recognize variances in writing such as different types (i.e. poetry, letter or essay), variety of tasks which have different intent, narrative length and creative expectations, writer's goals, experience and age and degree of complexity.

Flowers and Hayes' (1984) writing model reflects a focus on three major phases: task environment, long-term memory and working memory. The task environment involves a description of the writing assignment which would include a specific topic and target audience. Motivational cues are often grades such as an essay being worth one test grade. Teachers must strive to make clear assignments because confusing directions can cause students to miss the original purpose of the task and not produce their best work. The external storage is second aspect of the task environment which is the text produced and the use of resources such as student notes from articles, drafts of paper and the student's previous papers. External storage plays a key role in reducing the writer's memory load which enables individuals to work on new knowledge to write and revise new material. The writer's long-term memory according Flowers and Hayes impacts the entire writing process. "Cognitive processes interact continually in working memory and long-term memory as writers think through their goals, search for ideas and vocabulary, and evaluate and review text that they have written (Bruning *et al*, 2004, p. 294).

It is important for teachers to balance their teaching activities to provide students with subject content knowledge, instructional guidance to assist in learning research and writing skills. The working memory is where the majority of the writing tasks take place and three major processes are associated with it: planning, translating and reviewing. Planning requires individuals to develop goals and generating ideas which might arise from their long-term memory. Generating content and relevant ides flows throughout the writing process as individuals organize their material into coherent structures. Working memory does involve the writer's translation of ideas by accessing their semantic memories and locating the vocabulary to express their thoughts. Researchers have noticed a trait of good writers is their automatic translating skills enable them to reduce stress of items on their working memory (McCuthen, 1996). The reviewing process in the working memory pertains to evaluating and revising the writing. Good writers are better at understanding of how to integrate their subject content and discourse knowledge. Also, good writers are able to identify flaws in their work such as the choice of words. Graham and Harris (1993) noticed that less sophisticated writers had problems seeing the value in editing their first draft. Often, those who struggle with writing will neglect devoting adequate attention to revising papers. This affirms the need for teachers to help students cultivate self-regulation cognitive skills.

Hillocks' (1989) investigation identified the four effective instructional approaches to student writing:

> **Models** – share good examples of writing and assisting students to identify parts of the model and stress is placed on the producing a quality product.

> **Sentence-combining** – students learn to combine several sentences into one complex sentence and the emphasis is on the process of writing.

> **Scales** – students learn how to evaluate the quality of compositions and revise the weaker works and the stress is upon revision.

> **Inquiry** – students are given data and they are given directed to use the data in their writing which can range from descriptive to theoretical essays on the data. It encourages students to develop plans and organize their ideas.

Studies reveal that an excessive emphasis on grammar can actually promote weaker writing skills. A review of the literature on best writing practices affirms that importance of avoiding instructional approaches that create passive learning situations. Students should be challenged to use their metacognition skills to learn about the writing process (i.e. planning and revising) and provided with opportunities to compare good and poor written materials to gain insights into quality narratives (Brynes, 2001).

Distance educators can share writing resources with their students. Clark's (2004) web site contains practical information and advice for today's writers whether they are novices or more advanced in their skills. The author's students have benefited from using Sawer (2000) and Hostetler's (2004) writing advice.
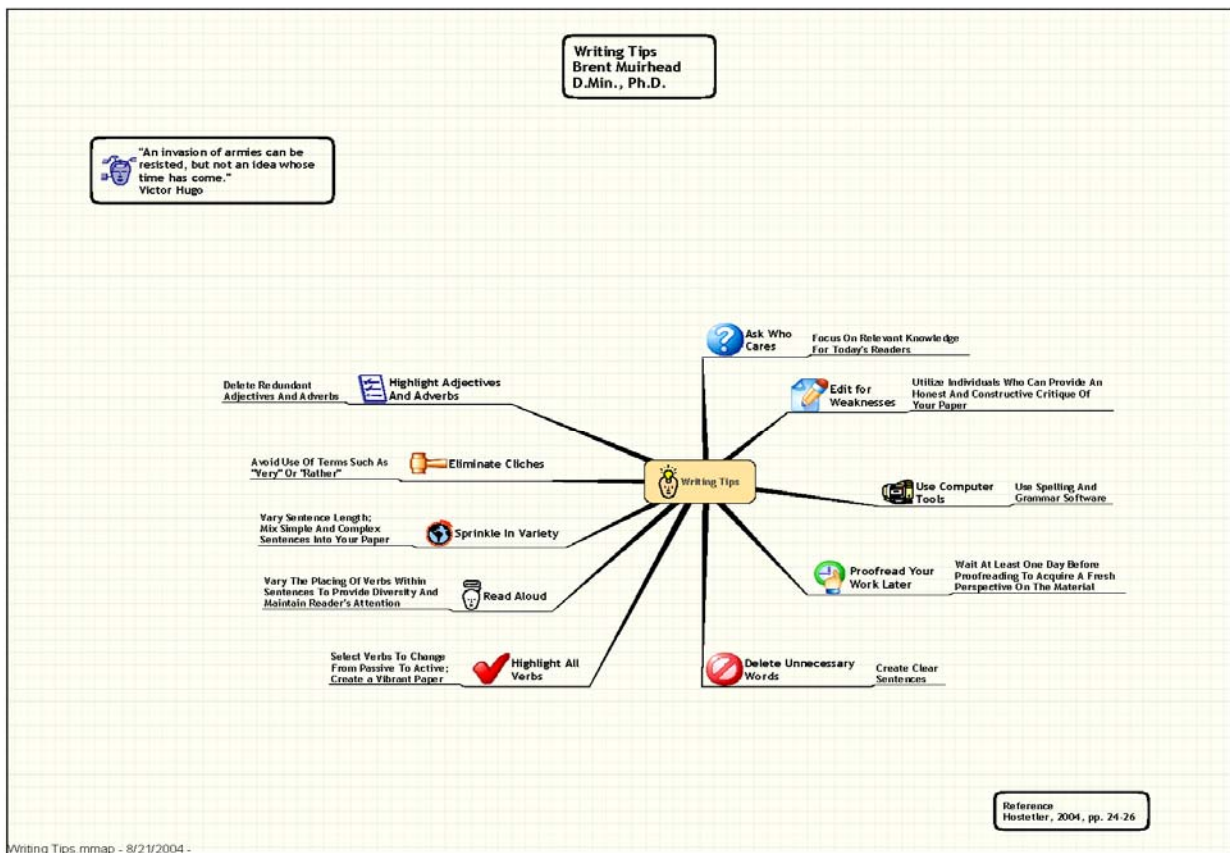

Figure 2. Writing Tips

Conclusion:

The authors have endeavored, based on their many years of working and practical experiences in both traditional and managed learning environments, to give their insights into promoting critical thinking in online classes. From the abstracted perspectives of authentic, soulful and meaningful learning, to the concrete aspects of multiple intelligences and effective instructional, metacognitive approaches to critical thinking in reading and writing, they have striven to further the debate surrounding the outdated model of education practices in many traditional universities to the detriment of 21st. Century, life-long learning. The challenges of today's society demand of educators and education institutions, whether traditional or virtual, to seek out, explore and utilize new horizons and new possibilities for the provision of authentic, meaningful learning. Be this as it may, the authors contend that void of the belief that critical thinking skills must infiltrate this vision for education, the possibilities for soulful learning are negated and students will continue, with their mentors to regurgitate information, *ad nasium, ad finitum.* Remember, 'Action with Vision WILL change the world'.

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Editor's Note: Greg Walker applies critical thinking theory and practice to asynchronous online discussions. As with the Murchu and Muirhead article, he explains the importance of writing, vocabulary, and reflection, and activities such as questioning and role plays. He also explores the facilitator role and how this differs in asynchronous online as compare to traditional classroom activities.

Critical Thinking in Asynchronous Discussions

Greg Walker

Critical thinking is a process that allows learners to gain new knowledge through problem solving and collaboration. It focuses on the process of learning rather than just attaining information. It involves discovering how to analyze, synthesize, make judgments, and create and apply new knowledge to real-world situations.

Critical thinking is important in the learning process since it presents opportunities to learn through discovery. When learners think critically they become actively responsible for their own learning. This can be a liberating experience that often leads to wisdom, and not just the learning of new information.

Higher levels of interaction in asynchronous discussions are needed to encourage learners to think critically. The rapid growth of online discussions has shaped current research on how higher order thinking, and learning, can be promoted through interaction between instructors, learners, and learning content (Blignaut & Trollip, 2003). This paper will examine strategies and challenges to encourage learners to think critically in asynchronous discussions.

Strategies for Using Critical Thinking in Asynchronous Discussions

Asynchronous discussions can be improved with the use of critical thinking strategies. Information needs to be clearly stated for learners to critically reflect upon, and review, at their own pace. Pre-established guidelines are needed to shape the use of critical thinking. A variety of writing activities can be employed to promote critical thinking. Discussions need to focus on issues as problems to work out rather than subject topics learners discuss. Subject matter experts and role playing can enhance critical discussions. The use of convergent, divergent, evaluative, and Socratic-questioning strategies can encourage critical dialogue.

Critical Reflection and Review

Information in asynchronous discussions needs to be clearly stated in writing, reflected upon, and reviewed by learners at their own pace. When participants communicate with text, required criteria can be simply stated, differences between facts and opinions can be clearly outlined, assumptions can be examined, and explanations, causes, and solutions to problems, can be detailed by referring to specific issues (Jones, 1996).

Certain strategies should be followed for critical reflection and review. Instructional objectives should be posted at the start of the discussion. Learners should be able to select their own path of review and investigation. Learners should be able to interact frequently at a high level of cognitive involvement, and alternative paths should be available (Jones, 1996). Assignments should be relevant to encourage reflection and critical thinking. Integrating critical thinking into the online learning process requires information to be presented from a variety of perspectives that involves both the cognitive and affective learning domains (Muirhead, 2002).

Shaping Asynchronous Discussions with Pre-established Guidelines

A variety of pre-established guidelines can shape critical thinking in **asynchronous discussions.** Clark (2004) uses a scaffolding strategy to stimulate critical thinking. Scaffolding begins with a discussion of the advantages and disadvantages of a single concept, and then the discussion builds on the knowledge presented by learners. After discussing the first concept, another concept is added, and the discussion centers on analyzing which concept is better. Then, one or two more concepts are added and the discussion centers on the gray areas, and the pros and cons, of multiple concepts. Finally, learners choose the best concept and link them to another discipline.

Morgan (2001) provides pre-established guidelines as a strategy to encourage critical thinking along logical lines of thought. First, a learner presents a claim. Next, a second learner provides evidence for the claim. Then, a third learner counters the claim. Finally, a fourth learner provides evidence for the counter claim. This strategy works well for debates and exchanging explanations and stories, but doesn't encourage dialogue through critical reflective exchanges.

Morgan (2001) also uses guidelines to form a social argument as an experiment. First, a group of learners claim a hypothesis as an experiment. Next, other groups test the experiments validity. The groups have a choice of accepting the experiment and its results, providing another experiment that may be rejected, examining the validity of the groups experiment and providing further evidence, or providing an alternative hypothesis. Morgan uses arguments as an experiment to discuss learner exchanges, to summarize online discussions, and as an introduction for the next discussion session.

Guidelines can be and effective strategy to present an issue to solve rather than a topic to discuss. Online discussions need to be designed around specific issues, and cases, to help learners ground their discussion on shared data, and sequence and build upon them in later discussions (Morgan, 2001). Learners often respond to issues as topics that can be recited. Many do not understand that issues are problems that need to be investigated, and that it takes time to frame an issue. Guidelines need to be established to shape issues by sequencing them over numerous discussions. According to Morgan an issue is first presented for learners to respond to. Next, the facilitator reviews the responses and complicates the issue for more discussion. As the discussion advances the facilitator encourages dialogue towards the issue by identifying quality exchanges, and explaining why they are good. Finally, the facilitator reviews and summarizes the discussions.

Writing Activities that Promote Critical Thinking

Using a variety of writing activities can help promote critical thinking in asynchronous discussions. Common writing assignments include answering and responding to other learner's discussion questions, analyzing case study's, writing reports, research papers, projects and weekly summaries. Collaborative written assignments such as developing team reports on specific topics, group answers to discussion questions, joint research papers, debates, and critiques of arguments can also enhance critical thinking.

One strategy to promote critical thinking is to have learners choose issues or topics that relate to their interests and course content, and post completed assignments for discussion and evaluation by other course participants. Other strategies include relating assignments to personal experiences, reinforcing and synthesizing course materials by personalizing them to specific professional, academic, and personal needs, and communicating a variety of perspectives and subjects that are personally useful (Illinois Online Network, 2003). It is strategically important to provide writing activities that allow learners to take positions, and state their perspectives on subjects that relate to the course objectives.

Strategies for Using Subject Matter Experts

Using subject matter experts with asynchronous discussions can be an effective strategy to enhance critical thinking. Muirhead (2002) found that learners enjoy reading about individuals and subject matter experts who relate to the course materials. Subject matter experts provide a human element to discussions, and can make issues more meaningful.

Pennsylvania State University uses mock interview exercises as a strategy to promote critical thinking (*Creative use of on-line discussion areas*: *Suggestions to integrate technology*, 2002). First, learners locate and read about a person who is an expert in an area that is relevant to the subject matter. Next, they formulate critical questions to ask, and justify the reasons for the questions by relating them to the course material. Finally, the questions and justifications are posted for learners to debate and critique.

Asynchronous discussions can also be used to interview subject matter experts. Learners at Penn State interview subject matter experts at key points in the course after they have done online background research (*Creative use of on-line discussion areas*: *Suggestions to integrate technology*, 2002). The asynchronous interview is facilitated by the instructor to ensure questions are not repeated and similar questions are merged into one question. Penn State also uses subject matter experts as guest facilitators to lead asynchronous discussions for a set period of time. Before the discussion learners read a paper or article written by the guest facilitator that relates to a subject in the course. Then questions are prepared to ask the guest facilitator. Next, the questions are posted to the online discussion, and learners justify their questions by relating them to the guest facilitator's work. Next, the questions critiqued before they are presented to the guest facilitator. Finally, after the guest facilitator has answered the prepared questions, learners analyze and evaluate the process.

Role Playing Strategies

Role playing can be an effective strategy to promote critical thinking in online discussions. One strategy is to have small groups of learners develop scenarios around specific course content, and assume roles within the scenarios (The Illinois Online Network, 2003). Another strategy is to have small teams of learners analyze a case study scenario with role playing (*Creative use of on-line discussion areas*: *Suggestions to integrate technology*, 2002). First, a scenario is presented in the online discussion and each team develops questions based on the scenario. Next, teams interview the facilitator, who assumes a role, by posting questions to the discussion. Next, each team member takes on a role representing different sides of specific issues and presents them by suggesting, interpreting, analyzing, evaluating, inferring, or explaining their positions. This helps learners critically compare their reasoning with other learners. Next, each team summarizes their findings and presents them online for feedback. Finally, learners post their ideas for a solution and receive feedback from other learners on how their ideas could be applied to another discipline, or how they could be expanded.

Questioning Strategies

Effective questioning strategies guide asynchronous discussions and promote critical interaction. Blanchette (2001) found that asynchronous discussions allow for a higher level of cognitive questions that encourage critical thinking. Learners have more time to process questions and develop responses, and the learner's cognitive level of response often matches the cognitive level of the questions asked. Higher level cognitive and affective questions encourage learners to interpret, analyze, evaluate, infer, explain and self regulate. According to Wilson (2002) there are four types of questions that encourage learners to use higher levels of cognitive, or affective, processes for critical thinking. They are convergent, divergent, and evaluative questions. Blanchette (2001) found that evaluative questions were asked most often in asynchronous

discussions. Divergent and evaluative questions generated the most interaction, and evaluative questions provided the greatest motivation for discussion.

Convergent Questioning Strategies

Convergent questions normally ask learners to analyze issues, and their personal awareness of issues. Learners often become more conscious of the learning process when convergent questions are framed around relationships between concepts, ideas, and information (*Crafting Questions for On-line Discussions*, 2002). Key words used in convergent questions are support, translate, judge, classify, select, match, explain, represent, and demonstrate. Convergent questions ask learners to analyze information by breaking down parts, recognizing patterns, forming assumptions and identifying relationships (Wilson, 2002). Convergent questions are used to check for understanding by asking learners to identify content information or interpret information in a new way. Blanchette (2001) found that convergent questions did not generate a great deal of interaction in online discussions.

Divergent Questioning Strategies

Divergent questions explore different possibilities, variations, and alternative answers or scenarios, and require learners to analyze, synthesize or evaluate knowledge, and project, or predict different outcomes (Wilson, 2002). Divergent questions generally stimulate creativity, and are used to investigate cause and affect relationships. Wilson points out that answers to divergent questions often have a wide variety of acceptability since they are subjective and based on the answers possibility or probability. Divergent questions often challenge learners to synthesize information through creative and original thinking. Learners integrate knowledge and combine essential elements into patterns that were not previously noticeable (*Crafting Questions for On-line Discussions*, 2002). Divergent questions are used in online discussions to provide opportunities to expose learners to alternative possibilities, and new solutions presented by different learners.

Evaluative Questioning Strategies

Evaluative questions require comparative analysis from different perspectives before learners can synthesize information and reach conclusions. Evaluative questions usually require higher levels of cognitive and emotional judgment (Wilson, 2002). Evaluative questions promote critical thinking in online discussions by providing reflective opportunities. Learners evaluate issues by assessing, appraising, and defending information according to a set of criteria, and justification of their beliefs, and then reflect and gather resources to support their opinions (*Crafting Questions for On-line Discussions*, 2002)**.** Discussions can often become intense and emotional, and facilitation is critical to prevent argumentative interactions.

Socratic-Questioning Strategies

According to The Foundation for Critical Thinking (n.d), the best known teaching strategy for promoting critical thinking is Socratic-questioning since it highlights the need for using clarity and logical consistency. Socratic-questions encourage critical thinking when learners look deeply into assumptions, points of views, perspectives, and evidence to analyze assumptions, and examine reasons, concepts and consequences. They help learners to understand the implications of what they discuss online. Socratic-questions ask learners to identify cause and effect relationships, probe by asking "so what", and look for relevant responses (Stepien, 1999). They ask learners to clarify, look for meaning, and provide justification and evidence. Socratic-questions ask learners to consider and evaluate different paths.

Challenges for Using Critical Thinking Strategies
in Asynchronous Discussions

Learner challenges for promoting critical thinking in online discussions include time constraints, and a lack of motivation and self-directed learning skills. Faculty can be a challenge for using critical thinking strategies when they do not understand their role as a facilitator. Faculty members need to acquire facilitation skills to help learners think critically. Faculty attitudes toward facilitation can also be challenge for the use of critical thinking strategies. Finally, it can be a challenge to integrate methods of learning and interaction that stimulate critical thinking in asynchronous discussions.

Learner Challenges

Time constraints and a lack of learner motivation and self-directed learning skills can restrain critical thinking in online discussions. According to Morgan (2001) learner interactions are often trivial or superficial. The same positions and perspectives are simply restated rather than reflected on and critiqued. Dialogue doesn't develop between learners since responses are just a series of ongoing monologues that are directed to the instructor. Learners respond to writing assignments as topics rather than issues, and they have difficulty creating issues that prompt discussions. Learners do not engage in exploratory, reflective, or constructive dialogue and often use discussions for communicating personal opinions, and become defense when they are evaluated or offered other points of view. Learners often do not take the time to process questions and develop responses. As a result, they communicate with lower level cognitive responses.

Faculty are Facilitators

The rapid growth of the Internet has created a huge increase in the use of asynchronous discussions for online learning, and many faculty members are facilitating online discussions with little or no experience, or training. Many faculty members have only taught in a classroom and do not understand their role as a facilitator in asynchronous discussions. Facilitating critical thinking goes beyond many classroom experiences, and some expert's fear that several classroom experiences are harmful to the development and cultivation of critical thinking (Facione, 1998). Facilitators require training and experience to promote interaction and critical dialogue that leads to reflection, and a deeper understanding of issues. Faculty development training is critical to help learners develop, and nurture, their critical thinking skills in online discussions.

Facilitation Skills

Facilitators need to acquire skills to help learners think critically in online discussions. They need to understand how to continue and reintroduce issues in later discussions without taking away from new issues. They need to understand how to facilitate dialogue, since it can be unpredictable, and can quickly change based on the opportunities that are presented in the discussions. It can also be difficult for facilitators to read and interpret critical and rhetorical exchanges since there is no formal criterion that describes how high-quality critical dialogue is disclosed (Morgan, 2001).

Faculty Attitudes toward Facilitation

Faculty attitudes toward facilitation can affect the use of critical thinking strategies in online discussions. Training in the facilitation of asynchronous discussion may be a major challenge for faculty members who are satisfied with the way they instruct. Many instructors feel their teaching methods have been successful in the past, and feel there is no reason to change their approach. Some have become accustomed to delivering lectures in the classroom, and have not provided opportunities for learners to practice critical thinking, or use active learning. Faculty members may ignore training they receive to help them facilitate critical thinking since they do not think there is anything wrong with the way they currently teach. In the past, faculty attitudes have

frequently undermined the success of instructional development programs (Brown & Meuti1, 1999).

Integrating Methods of Learning and Interaction

It can be a challenge integrating methods of learning and interaction to stimulate critical thinking in asynchronous discussions. Often courses are designed with just one method of interaction, such as answering and responding to questions. When the question approach is used excessively it creates predictable online discussions that often lack critical thinking (Muirhead, 2002). Online discussions can be designed to stimulate creative and critical thinking, and appeal to different learning styles, by integrating a variety of links to sounds, music, pictures, cartoons, simulations and graphics. Methods of learning that can be integrated into online discussions include; case studies, role playing, interviews of subject matter experts, guest facilitators, team activities and short projects that are based on the learner's goals and interests. Blanchette (2001) believes one of the greatest challenges in asynchronous discussions is to provide opportunities for learning and interaction that actively engages learners. For learner to be creative, and think critically, methods of learning and interaction need to focus on reality, and relate to the work environment.

Conclusion

Critical thinking in online discussions can often be difficult since learners have different needs. Learners need to be encouraged to think critically by promoting a higher order of interaction in asynchronous discussions. When learners use a variety of critical thinking skills the probability of a higher order of interaction increases. Learners need to be able to formulate and justify their own ideas in writing, share knowledge through collaboration, and evaluate results to see if their goals have been reached. Processes need to be relative and appropriate to each learners needs. When learners are able to collaborate in a socially interactive constructivist environment, they will be able to develop their critical thinking skills

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Editor's Note: The dynamics of a discussion go beyond the content to interactions based on personalities and relationships within the discussion group. This study breaks new ground in its exploration of latent content and analysis of responses, intent, and paths followed. Data on individual motivations and strategies show how these impact content and direction of the online discussion.

Reading Between the Lines:
Understanding the role of latent content in the analysis of online asynchronous discussions

Elizabeth Murphy and Maria A. Rodriguez Manzanares

Abstract

This paper reports on an exploratory case study related to analysis of an OAD (online asynchronous discussion) that focuses both on manifest content and latent content. The purpose of the study was to explore the role of latent content, or individuals' intentions and motives, in providing insight into the behaviors of participants in an OAD. Participants were ten graduate students who used an online discussion designed for engagement in Problem Formulation and Resolution (PFR). The transcripts of the discussion were analyzed using an instrument with two categories, five processes and nineteen indicators. In addition, interviews with all participants were conducted at the end of discussion. Analysis of latent content provided additional insight into participants' behaviors in the discussion. In some cases, it confirmed results from analysis of manifest content, such as participants' emphasis on solutions. The focus on latent content also uncovered why they engaged in certain behaviors more than others, for example why they did not engage in critiquing other participants' solutions. Analysis of latent content also offered insight into participants' different ways of conceptualizing the solution process, and their emphasis on use of experience. In other cases, analysis of latent content did not further explain participants' behaviors. Limitations of the approach used to analyzing latent content are presented.

Keywords: online asynchronous discussions; content analysis; distance learning; latent content; problem solving.

Introduction

Content analysis of transcripts of online asynchronous discussions (OADs) can support observation and identification of discussants' engagement in behaviors related to social processes such as interaction, collaboration, and teacher presence. As well, it can provide insight into cognitive processes such as knowledge-building, metacognition, and problem-solving. Regardless of the behaviors or processes targeted, the analysis involves observing instances of behaviors related to a construct. The starting point for the analysis is an analytical model, framework or instrument that defines, characterizes and encompasses the construct (e.g. what is metacognition?, what is interactivity?). These models, frameworks and instruments detail specific indicators or markers of the construct that might be observed and coded for in a transcript. The indicators or markers serve to operationalise the construct in terms of behaviors.

This approach to analysis involves focusing on what can be referred to as the manifest content of the transcript, or "elements that are physically present and countable" (Gray & Densten, 1998, p. 420). Analysis of manifest content is premised on the assumption that discussants' engagement in social or cognitive processes is manifest and observable in the text of the discussion. An alternative perspective argues that discussants have intentions and motives for their behavior which are not necessarily or always observable in the text. We can refer to this type of content as latent content. This distinction between manifest and latent content was highlighted in a general

context of content analysis prior to the existence of online discussions. Berelson (1952) argued that content analysis should be limited to analysis of manifest content. Consistent with this perspective, he described content analysis as "a research technique for the objective, systematic, and quantitative description of the manifest content of communication" (p. 18). Content analysis proceeds in terms of "what-is-said", and not in terms of "why-the-content-is-like-that (e.g., 'motives') or how-people-react (e.g. 'appeals' or 'responses')" (p. 16). Hair, Anderson, Tatham, Ronald and Black (1995) argue, like Berelson, that content analysis should focus only on manifest content. They referred to latent content as "hypothesized" and "unobserved" concepts that can only be approximated through observable or measured behaviors.

These arguments in favor of a focus on manifest content may explain why analysis of online discussions often focuses only on observable manifestations or indicators of behaviors in the text. The purpose of the case study reported on in this paper was to explore the role of latent content in providing insight into discussants' behaviors in an OAD. We considered latent content as the discussants' intentions or motives for behavior. To gain insight into latent content in the OAD we relied on interviews with discussants.

Methodology

The volunteer participants in the case study were seven graduate students and three undergraduate students enrolled in Counseling Psychology courses in the Fall of 2004. The unmoderated discussion in which they took part was a component of a four-week-long online learning module designed to engage them in Problem Formulation and Resolution (PFR). The problem or issue discussed was how to promote parental involvement in schools. The discussion consisted of eight tasks. The first five tasks were designed to support engagement in Problem Formulation and the remaining three tasks to support engagement in Problem Resolution. Once participants completed all eight tasks, their transcripts were compiled, then printed off, and manifest content coded for PFR using the second iteration of an instrument created by Murphy (2004). The instrument includes two main categories, Problem Formulation and Problem Resolution, five processes and nineteen indicators of PFR related behaviors. For example, one of the processes within Resolution is "Identifying solutions," which has two indicators, "Proposing solutions" and "Hypothesizing about solutions."

The transcripts of the discussion were grouped by a participant and coded by two independent coders against the nineteen indicators of behavior associated with PFR in the instrument using the paragraph as the unit of analysis. The transcripts were also coded a third time jointly by the two coders and the creator of the instrument and principal investigator. This third coding is used in this study to report aggregate results of engagement in PFR in the online discussion. Cohen's Kappa was used to calculate interrater reliability. Codes assigned by the first coder compared against the third coding gave a value of 0.776, and codes assigned by the second coder compared against the third coding gave a value of 0.773. A total of 80 messages were coded, totaling 355 paragraphs and 35,654 words. The subject headlines of messages were excluded from the coding.

Following analysis of the transcripts for manifest content using the instrument for PFR, individual interviews were conducted to focus on latent content or participants' intentions related to PFR. Each interview lasted approximately one hour. At the beginning of the interview, participants were given a copy of their transcript. They were asked to read their first message. The interviewer then asked them to talk about their intentions or motives in writing the message and about what they were trying to accomplish. Once the participants discussed their first message, they were asked to proceed to the other messages until all eight messages in their transcript had been discussed. The interviewer prompted the participants using the indicators associated with PFR in the instrument. The instrument served as a structured guide for the interviews. Results of the coding of manifest content for each participant were available to the

interviewee prior to the interview. These results also guided the interview. For example, if the analysis of one participant's transcript evidenced engagement in one behavior over another or little engagement in one behavior, the interviewee directly asked questions related to the results of the analysis of the transcript, such as "Were you trying to critique other people's solutions?" or "Were you hypothesizing about solutions?" After the interviews were conducted, we looked for patterns using keyword analysis (Miles & Huberman, 1994).

Presentation of results

Results are provided in two separate sections, in relation to the two main categories identified in the instrument: Problem Formulation and Problem Resolution. Each section is further subdivided to present results in relation to manifest and latent content. In this regard, the first part of each section includes results of the coding of the discussion transcripts using the instrument for PFR, and the second part reports on the interviews conducted to gain insight into participants' intentions and motives.

Problem Formulation: Manifest content

The total number of units coded in the discussion transcripts for behaviors associated with Problem Formulation was 188, which corresponds to 53% of the total number of units. Participants privileged two behaviors associated with Problem Formulation, accessing and reporting on sources of information (14%) and identifying causes of the problem (9%). They also engaged in identifying the value of knowledge, and reflecting on one's own thinking (9% and 7% of units coded respectively). Within Problem Formulation, participants engaged the least in agreeing with the problem as presented, specifying ways in which the problem manifests itself, redefining the problem within the problem space, articulating a problem outside the problem space, and minimizing or denying the problem, identifying the extent of the problem, and identifying unknowns in knowledge. Results from coding the transcripts of the discussion in relation to Problem Formulation are presented in Table 1 in the form of aggregate or group measures of participants' engagement.

Table 1:
Results of Analysis of Manifest Content for Problem Formulation

Processes	# units /355	% units /355	Indicators	# units /355	% units /355
Defining problem space	78	22%	Agreeing with problem as presented	11	3%
			Specifying ways the problem manifests itself	7	2%
			Redefining problem within problem space	4	1%
			Minimising and/or denying problem	6	1.5%
			Identifying extent of problem	6	1.5%
			Identifying causes of problem	31	9%
			Articulating a problem outside problem space	13	4%
Building Knowledge	110	31%	Identifying unknowns in knowledge	3	1%
			Accessing and reporting on sources of information	48	14%
			Identifying value of information	33	9%
			Reflecting on one's thinking	26	7%

Problem Formulation: Latent content

Participants expressed various goals related to their engagement in Problem Formulation. P10 aimed to "summarize the problem" using his "own words" in his first message, and P11 initially approached the problem by "rephrasing" it because this helped her understand "what exactly is the issue." Other participants referred to their initial behaviors in the discussion as expressing agreement with the problem as given, and recognizing its importance. P13, for example, stated that her intention in her introductory message was "to show the other people that, yes, [parental involvement] is actually a problem." Participants also focused on identifying causes of the problem at the beginning of the discussion. In this regard, P06 commented: "I was trying to get some insight into the problem, what I felt might contribute to challenges parents have with getting involved in their children's education."

Participants emphasized why they felt it was important to consider the perspectives and experiences of others in order to understand the problem in more detail. They highlighted the importance of illustrating the problem by drawing on their own or others' experiences. With regard to her introduction, P13 commented: "I wanted to show … an example of one of the problems that I face." P09 connected personal experience with other experiences because "different aspects of the problem become more clear" and one realizes "how many pieces of the puzzle there actually are." Some participants mentioned that they specifically engaged in "looking" at other people's viewpoints alongside their own to compare them with their knowledge. Commenting on one of her first messages, for example, P11 stated: "I'm getting more information and I have to look at how information corresponds to what I already know." Similarly, P09 initially "had a picture of how other people see the problem" and then concentrated on "seeing how it relates to some experiences in my work."

In addition to referring to their individual increasing awareness of the different perspectives of the problem, participants also commented on their interest in "sharing" and "collaborating" in relation to the knowledge-building process and to "expanding" and "furthering" knowledge. They not only stressed how they had personally become more aware of different viewpoints and expanded their knowledge, but they also described the various ways they intended to expose other participants to different perspectives. For example, some participants shared experiences to help others broaden their views. P08 shared a personal experience because others "may only have had the perspective from the school." In one of her messages, P08 indicated that she wished to "share the main points" of her article, and that her intent was "to share the article with everybody and summarize what it was saying … so that people would want to read it."

Problem Resolution: Manifest content

The number of units coded for behaviors associated with Problem Resolution was 167, which corresponds to 47% of the total number of units in the discussion. Identifying causes of the problem, with 22% of units coded, was the behavior most privileged among all the behaviors associated with Problem Formulation and Resolution. Within Resolution, agreeing with solutions proposed by others was the second most favored behavior (12% of units). Participants also engaged in hypothesizing about solutions (4%) and reaching conclusions (3%). The other behaviors within Resolution, weighing and comparing alternative solutions, critiquing solutions, rejecting solutions judged unworkable and planning to act showed lower percentages of engagement. Results from coding the discussion transcripts in relation to Problem Resolution are presented in Table 2 in the form of aggregate or group measures of participants' engagement.

Table 2:
Results of Analysis of Manifest Content for Problem Resolution

Processes	# units /355	% units /355	Indicators	# units /355	% units /355
Identifying Solutions	92	26%	Proposing solutions	77	22%
			Hypothesising about solutions	15	4%
Evaluating Solutions	58	16%	Agreeing with solutions proposed by others	43	12%
			Weighing and comparing alternative solutions	4	1%
			Critiquing solutions	10	3%
			Rejecting/eliminating solutions judged unworkable	1	0.3%
Acting on Solutions	17	5%	Planning to act	5	1%
			Reaching conclusions, or arriving at an understanding of the problem	12	3%

Problem Resolution: Latent content

The focus on latent content provided an opportunity to gain insight into why participants focused on Resolution of the problem from the beginning of the discussion, even though the discussion was designed for engagement in Problem Formulation prior to Resolution. P15 described how, in her first posting, she was "looking at the potential for solutions." The rationale P15 offered for this early focus on solutions was based on her approach to problem solving: "Automatically I just think to myself 'What can I do to solve this problem?'" P14 exhibited a similar approach to problem solving. He described himself as being "more of a solution person" because "in life there are always going to be problems." He justified his early focus on solutions by noting that, when confronted with a problem, he "internally" asks himself, "What I think is going on?" and "What do I think we can do about this?"

Participants also provided insight into their approaches to Problem Resolution. P14 described his approach to solutions as "global." He referred to his solution as a "global perspective in prevention," or "preventative medicine." P06 described his approach similarly as an "overall" perspective or umbrella approach from which to identify different solutions which are "all linked:"

I was looking at [the problem] from an empowerment point of view overall, to empower the parents...and things to do in order to meet that .... There is a central bridge that will connect administrators of this program and parents and the bridge is parental self-advocacy.

P09 explained her approach to solutions as one that focused on specific parts of the problem and its causes: "In my plan of action I was trying to tackle as many of the key pieces of the problem as I could." She described her approach in detail:

I felt you needed to break it down, look at the specifics of certain things, why this big problem happened in the first place, and then I broke it down that way and added pieces to the plan of action that I thought would address those smaller issues in detail ... really to make sure that everything was addressed in there.

Rather than addressing different causes of the problem, P13 focused on addressing one specific obstacle to parental involvement in her solution. She proposed organizing a concert as a way of overcoming the obstacle of "get[ting] parents physically into the building." She chose to link her solution to one particular cause, although she also indicated that "it is not the only one." P13 gave

a practical rationale for her focus on one cause of the problem: "I thought that trying to find solutions to each one of the specific problems [the other participants] mentioned was way and above the scope of what we could possibly do with the amount of time." P02 used a different approach to identifying solutions that involved redefining the problem as follows: "It is not that parents have to be at the school always," and then proposed a solution based on schools promoting educational opportunities "not necessarily at the school."

Participants also expressed their interest in using experience to identify possible solutions to the problem. For example, P15 stated that, when presented with the problem at the beginning of the discussion, she drew on her "own individual context" to identify possible solutions: "Doing my internship in education, a lot of the teachers didn't show up … so from there I kind of developed my action plan." Participants, such as P09, referred to why she relied on experiences to identify solutions: "I really identified with the problem and different solutions that we come up with at work … [I was] dealing with my own experience and what other people said. I just kind of built on that."

The focus on latent content also highlighted why participants did not engage in certain behaviors. Some participants explained that they tried to critique other people's solutions, or that they felt they could have critiqued more or that they had to make an effort to critique without making others feel uncomfortable. P14 explained that he critiqued another participant's solution by discussing its limitations, but at the same time he "was trying to be nice." Similarly, P10 mentioned with respect to one of his messages: "I disagreed with [P15] to a certain extent so I was trying to get that. I remember when I was writing that comment I spent a lot of time rewording ... so that it wouldn't come off as being too critical." P09 relied more on highlighting the strengths of another participant's solution than its weaknesses: "I could see a whole lot of weaknesses … but other than that I just focused on what I thought was pretty good about her plan." Similarly, P08 explained that, in one message, she gave some suggestions to "energize" people, and "not to insult them or critique them, just put my spin on things," because she preferred to concentrate on the positive:

> When I reflect back to people, a lot of times it is to congratulate, them, support them, and compliment them. I might have some suggestions but I like patting them on the back .… If you're working in a team you want to point out to people "Hey, that's a good idea!' … not "That's no good!" That's not the way I operate in real life.

P08 emphasized how the intent of her final message was to implicitly critique. In her message, she concentrated on collaboration in the discussion. However, indirectly she wanted to criticize what she perceived as the need for more collaborative learning environments:

> I wanted to express thanks … and my strong thoughts about how teamwork and collaboration should be a part of the program .… My point is that I want to see more of it. I'm expressing an opinion here and maybe a bit of a critique of the faculty at the same time. When I think back to what I was thinking … I was kind of not happy with the way some courses were laid out. I didn't want to be blatant. I know some of the people I'm talking to think the same way, so I was comfortable doing that.

When describing their reactions to other people's solutions, two participants did not use terms such as "critique" or "criticize." P06 explained that he wished to "further" another participant's explanation in one message, and, with respect to another message, his intention was to "offer additional information." P11 differentiated "giving feedback" from expressing a "reaction" or "criticism," or "breaking someone else's bones." However, she described how she found it was "easy to give feedback" in the discussion, whereas, at her work, she needs to "be careful" when giving feedback.

Discussion

Results are presented with respect to the categories of Problem Formulation and Problem Resolution. Emphasis is placed on the findings within each category in relation to manifest and latent content and on the ways in which analysis of latent content confirmed, supplemented, complemented, or did not further explain results of analysis of manifest content.

With regard to participants' engagement in Problem Formulation, analysis of manifest content of the discussion transcripts using the coding instrument revealed that they engaged little in the behaviors associated with this category. Percentages of units coded for six out of the seven Formulation behaviors were low, ranging from 1% to 9%. Only one behavior, accessing and reporting on sources of information, accounted for a higher percentage, 14%. The exploration of latent content offered some insight into why participants engaged little in Formulation behaviors. Participants focused on solutions rather than on Formulation from the beginning of the discussion, even though it was designed for engagement first in Formulation. Additionally, as participants themselves highlighted, their approach to problem solving was solution-focused. Only P11 declared a preference for Formulation, or "consult[ing] first," over Resolution. The rationale she offered was that "the greater the understanding of the problem the more chance you have of coming up with effective solutions." She also noted that, whereas half way through the discussion she was still trying to understand the problem, "other people … were already in the solutions."

Analysis of latent content revealed participants' reliance on experience. Participants referred to use of personal experience or to other people's experiences in relation to their engagement in various behaviors associated with Formulation, such as identifying causes of the problem and illustrating the problem. In some cases, participants drew from their experience in order to "show" the others aspects of the problem that they may not be familiar with or have previously considered. In relation to this interest in sharing experiences, participants referred to the importance of seeing others' perspectives and sharing and comparing perspectives in the process of problem solving.

In contrast, analysis of latent content did not seem to give insight into why participants privileged accessing and reporting on sources of information over any other behaviors associated with Formulation. Conversely, it did not explain why they engaged the least within Formulation in identifying unknowns in knowledge. The extent of engagement in these behaviors may be explained by the nature of the tasks included in the discussion. It could also be a result of limitations of the interview protocol. In this regard, eliciting information about intentions and motives in the discussion required participants to bring them to a conscious level, which required them to engage in a form of metacognition. Engagement in metacognition requires self-interrogation and self-regulation (Brown, 1978), skills that may not always be well developed in adult learners such as those participating in the study's discussion (Niehaus, 1995).

With regard to participants' engagement in Problem Resolution, latent content both complemented and supplemented the manifest content with regard to participants' preference for identifying solutions. Analysis of latent content confirmed participants' focus on identifying solutions, which was the behavior favored in the discussion as a whole, with 22% of all units coded for this behavior. It also offered additional information as to why participants privileged solutions. They offered as a rationale for their emphasis on solutions the fact that their approach to solving problems is one focused on solutions. As one participant explained, from the moment he is faced with a problem, what first comes to mind is "What can I do to solve this problem?" An additional insight gained from analysis of latent content was that participants tended to use experience to assist them with identifying solutions.

Analysis of latent content also provided insight into the different ways that participants approached solutions. One approach to solutions identified by participants was to see an overall solution or perspective from which to view the problem and from which to adopt specific solutions. For example, P14 referred to his approach to solutions as a "global perspective," and P06 described his as an "overall" perspective. Analysis of latent content also revealed that different participants related causes and solutions differently in their approach to Problem Formulation and Resolution. For example, P09 tackled specific "key pieces" or causes of the problem and later in another task she tried to match up solutions with the causes she had identified, whereas P13 addressed one specific cause of the problem in her solution.

Regarding the behaviors related to evaluating solutions outlined in the instrument, agreeing with other people's solutions accounted for 12% of units coded, whereas the other three behaviors related to evaluating solutions, critiquing solutions, rejecting solutions judged unworkable, and weighing and comparing solutions, were considerably low, ranging from 0.3% to 3%. This would suggest that, in terms of solutions, participants did not go beyond identifying solutions or agreeing with solutions. The analysis of latent content helped explain results of manifest content related to evaluating solutions, specifically as to why participants agreed with other people's solutions and why they did not critique other people's solutions. Participants provided a variety of reasons for not criticizing others' ideas. For example, they did not want to make others feel uncomfortable. Additionally, they themselves felt uncomfortable about expressing criticism, as evidenced by one participant's comment that he spent a long time rewriting a posting in which he wanted to critique another person's solutions. Another reason for not wanting to critique was that the discussion was not anonymous and participants knew each other from class. Finally, participants preferred to concentrate on the positive rather than the negative, which may explain why they agreed with solutions more than they critiqued solutions. Analysis of latent content did not reveal why participants engaged little in the other behaviors associated with Resolution outlined in the instrument, specifically why they engaged little in hypothesizing about solutions or in behaviors associated with acting on solutions, such as planning to act or reaching conclusions.

The approach to focusing on latent content provided insight into participants' motives and intentions in the online discussion. However, the approach presented some limitations. One limitation related to the retroactivity of the interviews which were conducted one week after the discussion was completed. This retroactivity introduced a special challenge, as in some cases, participants were being asked to think about a message they had posted four or five weeks before. Another limitation related to eliciting information from participants that required focusing on intentions and motives. Asking participants why they posted a particular message or what they intended by the message required them to engage in a form of metacognition. As noted previously, participants may not easily be able to engage in this type of activity.

Conclusion

Transcript analysis of online discussions using coding instruments is often concerned with describing what behaviors participants engage or do not engage in a discussion, but not with explaining the intentions or motives driving their behavior. The purpose of the case study reported on in this paper was to explore the role of latent content, understood as participants' intentions and motives, in providing insight into discussants' behaviors in an online asynchronous discussion designed for engagement in PFR. Results of the study highlighted how latent content can help explain why participants did or did not engage in certain behaviors or why they privileged some behaviors over others. In our study, analysis of latent content helped explain participants' emphasis on identifying solutions and their lack of emphasis on criticizing other

participants' solutions. The focus on latent content also revealed behaviors related to participants' motives and intentions with regard to PFR which were not evident through a focus on manifest content alone. In this regard, latent content provided insight into participants' different ways of conceptualizing solutions, and their emphasis on use of experience for understanding and solving problems.

To overcome the limitations and challenges associated with requiring participants to focus retroactively on their intentions and motives, the focus on latent content could be conducted after each message is posted or simultaneously, using think-aloud protocols. Alternatively, participants in the discussion could be asked to state their intentions or motives for their behavior in the subject line of their message. These approaches may help overcome the problems associated with interviewing participants once the discussion is over. In spite of the event of these approaches, they may not always be feasible. Likewise they may potentially stifle the discussion or influence it. To engage interviewees in metacognitive thinking, interview techniques may need to rely on protocols, strategies or scaffolds. Results of the study suggest that while latent content can provide insights beyond those gained through a focus on manifest content alone, it requires sophisticated and well-thought out procedures in order to be effectively investigated.

ACKNOWLEDGEMENTS

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Implementing a Midcourse Feedback Procedure in the Online Learning Environment

Kelly Bruning

Abstract

The onset of the information age has ushered in a new revolution of learning. This learning takes the form of asynchronous communication between learner and educator using a technical platform that allows global access. This teaching process brings with it new assessment tools in evaluating student learning and the educational objectives of an online course. Student assessment and feedback is critical to the online environment and developing the learning community. Research indicates that formative evaluation tools serve as a justifiable assessment tool that allows for honest student feedback and an opportunity for the instructor to redirect the class based upon that feedback while also nurturing the learning.

Keywords: Online assessment, online learning, online student feedback, community.

Growth of Online Distance Education

The growth of the Internet and its impact on society has often been compared to the impact of the industrial revolution. The Internet's effect on online education is now being considered by academia as a reputable mode of educational delivery with global reach. Online instruction is the fastest growing field in distance education, making use of the Internet and other communication technologies to reach wide-spread audiences of distance learners (Scagnoli, 2002). Universities and colleges worldwide are taking advantage of this trend. Scagnoli (2002), states, "Universities embrace this new trend and adopt this medium to offer their traditional distance courses or to promote new programs or courses" (p. 19).

Evaluation Concepts

Course and student progress evaluation generally take two forms: formative and summative evaluation. Formative evaluation is an ongoing process that can occur at any point throughout the course; it can surface gaps in course material or in the learners' ability to grasp the material. Formative evaluation gives instructors a way to shift the focus of the course if the course is not proceeding as the instructor expected. Evaluations conducted to assess feedback prior to the course end in order to further develop the class are know as formative evaluation because they influence how the learning community develops (Preece, 2000).

Evaluations also play a validation or summative role. Summative evaluation assess the completed course and is the model most often used for evaluation in academic institutions (Palloff & Pratt, 1999). Stephen Brookfield (1995) as cited by Palloff & Pratt, 1999, in commenting on the reliance of summative evaluation, states this form of evaluation is really a measure of student satisfaction with the course and the instructor not a measure of student learning.

Many academic institutions require the use of a course evaluation format that is standardized across the organization. These evaluation forms rarely address whether or not a class has supported students in achieving their learning objectives. Instead, they tend to evaluate whether the student liked the instructor or the course (Brookfield, 1995). According to Palloff & Pratt (1999), if instructors are truly establishing a collaborative transformative process, the formative as well as summative evaluation must be used. Formative evaluation helps determine to what extent instructors are successfully facilitating reflection on the course material under study, reflection on the means of learning, and reflection on self as a learner as the course progresses. Summative evaluation helps to assess how well the instructor and students achieved the goals and learning outcomes established in the course outline.

Using Midcourse Feedback to Improve Online Teaching and Learning

The concept and procedure for the midcourse feedback evaluation tool is outlined in the text entitled *The Online Teaching Guide A Handbook of Attitudes, Strategies, and Techniques for the Virtual Classroom* written by Ken White and Bob Weight who are members of the University of Phoenix faculty. White and Weight (2000), state,

> *"In order for online teaching to be effective it needs to include the feedback of student opinions….it is really the online students who are in a better position to comment on classroom teaching skills, course difficulty, and online instructor-student interaction" (p. 175). Pioneered for traditional onsite courses as a means of evaluating teaching effectiveness, online education can be greatly enhanced by the use of midcourse feedback (White & Weight, 2000).*

The purpose of the midcourse feedback procedure project was to gain an honest assessment by students of the course at midpoint in order for the instructor to redirect the class. Fostering an open and nurturing learning environment will aid in soliciting honest student feedback. Many times, participants are unwilling to be completely honest about their evaluation of a course or an instructor due to fear of repercussions (Brookfield, 1995). Consequently, the willingness of participants to be honest will be related to one that includes the instructor as an equal member (Palloff & Pratt, 1999).

The Midcourse Feedback Process for BUS105

The first step in the process is to introduce the idea of the Midcourse Feedback Procedure as early in the course as possible, preferably in the syllabus. The second process is to secure a volunteer from the course who would be willing to collect the individual e-mails and cut and paste them into a word document to protect student anonymity. In this case, a freshman level Business Mathematics Course was selected for the process by the instructor who created and piloted the course during the summer (taught one time prior to the fall class providing the assessment feedback).

Tue, Oct 22, 2002 -- Midcourse Feedback Procedure
I am taking an online course myself entitled "Online Teaching and Training." I would like to introduce the concept of a Midcourse Feedback Procedure. The procedure begins with a call for a student volunteer. The student volunteer is responsible for receiving e-mails directly to their e-mail address from fellow learners in the class. The volunteer then compiles the responses to the below question without attaching any names to the comments and forwards it to the instructor.

The two questions are:

---

(1) List three areas that are working well in this course

(2) List three ways to improve the class

The volunteer will then combine all of the messages-verbatim and unedited- (you could cut and paste) and send them to the instructor. The information will be used to make changes for the remaining of the course and for future courses.

I would like responses collected through this Sunday, October 27th, and have the volunteer combine them, and forward them to me by next Wednesday, October 30.

Any volunteers?

Figure 1. Blackboard Posting to the Class From Instructor (step 1)

Wed, Oct 23, 2002 -- Midcourse Feedback Procedure
Hello to all!

Please take a moment to read the Midcourse Feedback Procedure below and submit your response to James Shepard by Sunday. I appreciate your participation in this evaluation process.

I am taking an online course myself entitled "Online Teaching and Training." I would like to introduce the concept of a Midcourse Feedback Procedure. The procedure begins with a call for a student volunteer. The student volunteer is responsible for receiving e-mails directly to their e-mail address from fellow learners in the class. The volunteer then compiles the responses to the below question without attaching any names to the comments and forwards it to the instructor.

The two questions are:

(1) List three areas that are working well in this course

(2) List three ways to improve the class

The volunteer will then combine all of the messages-verbatim and unedited- (you could cut and paste) and send them to the instructor. The information will be used to make changes for the remaining of the course and for future courses.

I would like responses collected through this Sunday, have the volunteer combine them, and forward them to me by next Wednesday, October 30.

James Shepard was the first to volunteer for this project. His e-mail is jsheps44@hotmail.com Please e-mail your response on the two questions by this coming Sunday, October 27th. Thank you.

**Figure 2. Blackboard Posting to Class from Instructor
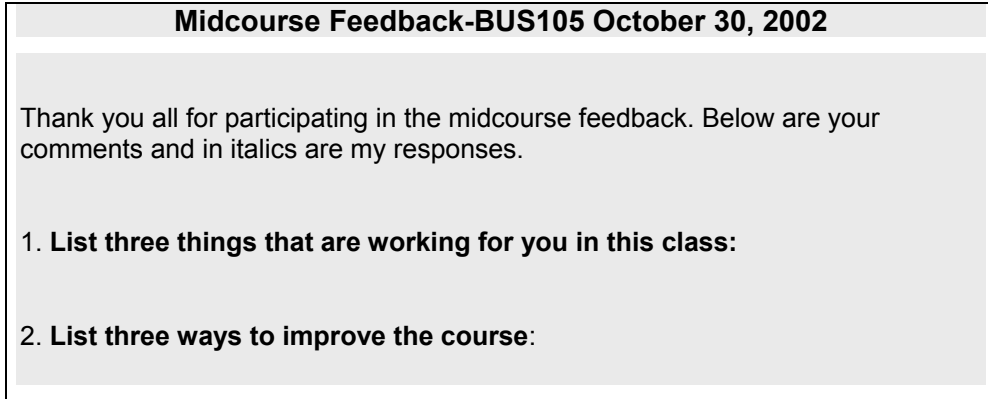after volunteer secured (step 2)**

Midcourse Feedback-BUS105 October 30, 2002

Thank you all for participating in the midcourse feedback. Below are your comments and in italics are my responses.

1. **List three things that are working for you in this class:**

2. **List three ways to improve the course**:

Figure 3. Blackboard posting of Responses (step 3) by Instructor

1. List three things that are working for you in this class:

Student Responses:

"I really enjoy Kelly's class. She helps out so much. She is always available. Now if we could talk about some other internet classes.

I wouldn't change anything."

"I like that we can work ahead if we want to.

I like the prompt responses from the teacher.

I like the CP interaction with my classmates."

"Ability to access site.
Great communications link
Instructors aid with problems prompt.

No thoughts on how to improve procedures. Structure of class is excellent."

"Three things that are working well are the discussion boards, the ease of the website, the layout and easy access to information (grades, assignments, so forth) I also like that our teacher communicates with us often."

"The student/teacher interaction in this course is unmatched. Great job!

The discussion forums for HW help and the whole Create-a-Problems concept is very good.

I think the deadline dates and times are right where they need to be."

Instructor Reply:

I am glad that most of you enjoy the format of the class. It has taken a long time to develop. I believe the CP problems add to student understanding and communication among learners. I make it a priority to be in contact with you on a regular basis, so I am glad to learn I am doing a good job! ☺

2. List three ways to improve the course:

Student Response:

"I think more time is needed in the quiz portion. I run right to the wire on most of the answers trying to do the calculations. Also as far as tests go I wish we could use our handouts or sample tests. It is hard to keep everything straight. Also the CP are good but some of the questions are confusing or misleading they are a good learning tool but I will use myself as an example I have a hard enough time without confusing others too."

Instructor Response

The quizzes are timed 30 minutes the same as the "live class." That group also takes the same quizzes and the time limit is adhered to. Those that aren't finished (which are only a few) turn it when the time limit is up. The quiz is timed at an interval to measure comprehension and understanding at an acceptable level (meaning that 98% -100%of the class is done by that time).

Student Response:

"I think that it is difficult (for some) to get to campus for the exams.

Instructor Response

It is the Instructor's prerogative to request exams to be taken on campus. In the introductory material sent to all learners and in orientation it was stated that this was a requirement. To protect the integrity of the exams, I take the option of on campus testing and make it a point to inform students as early as possible (and it's in the course description about 4 exam weeks as well). I feel I've allowed flexibility in the exam week leaving students plenty of options on dates and times. I do not plan on having exams online and feel that I've done a good job in incorporating test integrity with on-campus exams in a flexible time-frame for students.

Student Response:

I think that it would be easier if things were due on the same day instead of some things this day and some things another day.

Instructor Response:

The create-a-problem exercises do not allow everything to be due on the same day since your partner needs time to respond. Also, students need time to review the homework sheet with the correct answers before taking their quiz. I felt that the Wed./Sunday due dates were well spaced out and easy to remember while also incorporating time for students to learn from reworking homework problems and from the Create-a-Problems (that's why I don't have everything due on Wed). To have HW, CP, Quiz, and CP responses all due on Wed. I think would be too much too soon without allowing time for things to "sink in."

Student Response:

I cannot think of a third, all in all this class runs pretty smoothly."

Instructor Response:

Good ….. that makes me happy!

Student Response:

"I feel a time limit on quizzes is little too much. The purpose of the quiz is to help you do better it seems some instructors are so geared on punishment and not exactly helping you. Homework assignments that need to be handed in at about 10:00.

Instructor Response:

I'm not really sure on what this comment means. The quizzes are timed just as in a regular course. As well, deadlines are in place just as they are in a regular course. The homework assignments need to be passed in by 11:00 p.m. on Wed. This deadline shouldn't be a problem unless students work last minute. The 10:00 p.m. deadline was for questions to the homework on the discussion link, not the homework to the drop box (you still have that extra hour). This is because I will reply to HW questions to the discussion link up until 10:00 p.m. on Wednesday nights. This resulted when a HW question was posted at 10:55 p.m. on a Wed. with an expectation for an immediate response from the instructor. If students want a response, then courtesy needs to play a role as well. I'll check up until 10:00 p.m. and answer.

The purpose of the quiz is as a learning tool. That's why they are only weighted at 10% and that's also why you get an immediate response to the questions you had incorrect. I believe by allowing answers to appear helps the learner understand errors and students can also e-mail me any questions regarding the quiz as some of you have. The time limit is in place as in the regular classes.

Some students have an expectation that Internet courses don't have due dates or time limits and that they are self-paced. That myth is dispelled in my introductory letter sent to students before orientation and also on the Announcement page. This posting and direct mail letter to students informs students before orientation and class start that there are due dates and time limits and exam weeks so the student can make an informed decision on if the platform of the course meets their expectations.

I hope this has served as a useful learning tool for all of us. Again, thank you for your participation in the midcourse feedback process.

Sincerely,

Kelly Littlefield

> **Fri, Nov 01, 2002 -- Quiz-Building Speed**
> Hello!
>
> I forwarded the Mid-term Feedback results to my boss, Gordon Neimi, who teaches Accounting courses here at NMC and also has taught BUS105 in the past. Below is his recommendation and I thought you may be interested in it.
>
> One suggestion for the students that need more time on the quizzes is to do more problems from the book to improve understanding and speed. The students get faster with speed and the learning curve theory backs that up. Also, in a business setting time is money so in a business class it is important for students to not only demonstrate knowledge but speed and accuracy as well.
>
> Sincerely,
>
> Kelly Littlefield

Figure 4. Blackboard posting from Instructor

Learning Outcome of Midcourse Feedback Process

The learning outcome from this process is that the instructor was able to assess the development of the course. The instructor did not implement change, since the majority of the comments provided positive feedback. It reinforced to the instructor that the learning platform, navigation of the course content, and assignments were all contributing to the success of the course.

A personal reflection by the instructor was that the feedback procedure reinforced the concept of the Business Math Create-A-Problems which was a learning tool developed by the instructor to form a learning community. The students interact with one another using the discussion thread and create mathematical word problems based on course concepts that a fellow learner needs to solve. The partner solves the problems and sends them back to the author via the discussion thread. The author then must correct any mistakes in detail and/or provide positive feedback to the partner. Meanwhile, the author also receives problems from another learner which he/she is responsible to solve and the student that created those problems must provide feedback in a positive tone.

The Midcourse Feedback Procedure provided additional feedback to the Discipline Chair on the student assessment of this class. As indicated in Figure 4, the Midcourse Feedback Procedure was copied and sent to the Discipline Chair for his review and comments. The procedure also nurtured the development of the learning community for the course. By posting the student comments verbatim as well as the instructor's response to the course room, it allowed other learners to read the comments from their peers. The outcome has been more interaction by the learners in the discussion thread. As well, more positive e-mails were received by the instructor regarding student issues. According to White & Weight (2000) the midcourse feedback is especially useful in online classrooms because it is more personal than individual student ratings and allows student to read what other students are thinking (p. 181).

Benefits and Limitations of Midcourse Feedback

The process of the midcourse feedback builds the online learning community. Its timing allows instructors to make changes during the same class, and its feedback contains specific suggestions on how to make those changes. The procedure is a tool that emphasizes to students tat they have a

role in reshaping the method of instruction and subsequent learning outcomes (White & Weight, 2000). The process allows the instructor to gain insight from the perception of the student on how the class is going before it is too late to restructure the class. Continual evaluation is essential and faculty must be willing to adjust their course materials to accommodate what students are telling them while still achieving the learning outcomes (Bauman, 2002).

"Maintaining the midcourse feedback as a formative process-voluntary, anonymous and confidential helps to encourage open communication and a meaningful online student feedback" (White & Weight, 2000, p. 181). If the feedback tool is forced upon students or the students feel threatened with an instructor's recourse and/or anonymity is breeched, the feedback process will not produce honest, reliable student assessment of the class.

Conclusion

The Midcourse Feedback Procedure provided the opportunity to receive feedback from online students at a point mid-way through the course enabling the instructor to gauge the learning methods in the course and redirect if necessary. The formative evaluation tool was outlined in the course text entitled The Online Teaching Guide written by Ken White and Bob Weight, both faculty members from the University of Phoenix.

The Midcourse Feedback Procedure is a formative evaluation tool that allows the instructor to solicit student assessment of the online class in a non-threatening way. The process is voluntary by students, the students' comments remain anonymous and confidentiality by the volunteer that assimilates the comments is guaranteed. This creates a secure environment in which students feel safe in sharing their true assessment of the course.

The Midcourse Feedback Procedure starts when the instructor explains to students as early as possible the purpose of the feedback tool and stresses the importance that their feedback will help shape the course for the remainder of the semester. An e-mail message goes out to the students asking for a volunteer. The first person that responds is usually the volunteer. The instructor composes two questions that comprise the evaluation tool. They consists of (1) List three things that are working for your in the course, and (2) List three things to improve the course. The volunteer collects the e-mail and copies and paste them to word to protect student anonymity. The instructor receives the student responses unedited by the volunteer, in one document, with no names. The instructor can choose to assimilate and reflect upon the feedback and not post a response to the students. However, it is strongly recommended by White and Weight that the instructor constructively responds to each and every comment and posts it to the public platform entity of the learning community. This provided an opportunity for other learners to read the comments from their peers along with the instructor's response, which leads to developing the learning community.

The outcome of the Midcourse Feedback Process provided the instructor with feedback to make changes to the course if warranted. In this case, it reinforced receptivity by students with the Create-A-Problem interaction and the way that the course was designed into four modules allowing for easy navigation to find assignments, quizzes, homework, and helpful hints on specific chapters. It also allowed the instructor to share the feedback with the Discipline Chair who also suggested a way of improving student time on quizzes that was subsequently posted to the course room for students to read.

Another outcome of this Midcourse Feedback Process was that the instructor went on to use the concept in all classes (meaning face-to-face classes) and provided the same type of feedback to students in an oral discussion after the comments were reviewed. This too, has nurtured a more positive classroom environment since student feel that their input makes a difference in how the rest of the class is conducted.

The Midcourse Feedback Process is a formative evaluation tool that can change the direction of the course well in advance of the end of the semester. The instructor gains honest student assessment feedback in a non-threatening way and the students gain a sense of input on their learning outcomes while also developing either a learning community or a more positive classroom camaraderie. The Midcourse Feedback Process outlined by White and Weight in *The Online Teaching Guide* is an excellent formative student assessment tool when put into practice in both online classes and face- to-face traditional classes.

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Editor's Note: In this era of image rich web pages, e-learning is for the most part text based, even when graphics, motion, and sound would clarify concepts and enhance learning. This action research used multimedia to solve as learning problem. Two multimedia options were compared with text only presentation.

Using Multimedia with Blackboard for Graduate Courses in Teacher Education

Muhammad K. Betz

Teaching and learning online has become a mandate for educators involved in schooling or training in post high school instructional endeavors. Ask students why they prefer online courses and the most likely answer will be that it is far and away more convenient. However, researchers claim that students often rate online courses lower than face-to-face courses thereby providing a legitimate rationale for finding ways to improve online learning efforts (Payne, 2005). This author, who has hosted almost 150 online courses from different platforms, is another researcher who is trying to improve the quality of online courses, in a general sense, by including multimediated instruction. Further, while one of the most attempted methods for improving online courses is through the incorporation of multimedia, there are researchers using multimedia merely as a novelty. In particular, Harris (2002) cautions that the use of multimedia for any format of instruction is subject to the Hawthorne effect. The Hawthorne effect derives from studies conducted at Western Electric's Hawthorne site in the 1930's, and its premise is that participants respond positively to novelties introduced by research (Shadish, Cook, & Campbell, 2002). The purpose of the present research effort was not to overtly introduce a novelty, i.e., multimedia content, into an online course, but instead to solve a problem, or what might better be termed, to improve an existing practice.

The current research effort is a single case study in the form of action research, a research effort created to solve a classroom problem using a systematic approach (Sapp, 1994). This type of research can be used by teachers or instructors or trainers at any level of educational endeavor to solve the problems that they face in their efforts to teach effectively so that students can learn optimally. The first step of an action research study, then, is to simply identify a problem of a reasonable scope that can be worked with. In this instance the problem was that students in online graduate courses in a M.Ed. program for teachers were having problems understanding the complexity of assignments as they were worded in course syllabi as posted in online bulletin boards. An effort involving two forms of multimedia was created to try to solve this problem.

Review of Literature

A leading researcher in the area of multimedia effects on instruction and learning has been Mayer (Mayer, 1997; Mayer, Dow, & Mayer, 2003; Mayer, Sobko, & Mautone, 2003; Mayer & Moreno, 2003). He asserts as a seminal premise in one of his earlier efforts that his research has indicated that presenting verbal explanations alone in instructional situations is less conducive to learning for some students than presenting verbal explanations in conjunction with multimedia (Mayer, 1997). Mayer proposes that the generative theory of learning best accounts for the type of learning related to multimedia use. He states:

> *In a generative theory of multimedia learning, the learner is viewed as a knowledge constructor who actively selects and connects pieces of visual and verbal knowledge. The basic theme of a generative theory of multimedia learning is that the design of multimedia instruction affects the degree to which learners engage in the cognitive*

processes required for meaningful learning within the visual and verbal information processing systems. (p. 4)

He reviewed eighteen studies in which students did better on problem solving when presented with verbal and visual formats and an additional six studies that indicated that multimedia worked best for students with low prior knowledge and high spatial ability. He concluded by noting that current uses of multimedia too often focused on, "what computers can do rather than on a research-based theory of how students learn with technology (p. 17)."

Two authors (Shapira &Youtie, 2001) reported the results of an experiment with multimedia and distance learning that had several points of resemblance with the current action research effort. An online seminar on industrial modernization was offered in 1997 that used the Internet to convey multimedia content to remote learners in conjunction with those on site. The classes were held in a multimedia classroom with audio transmission capabilities to remote sites. Guest speakers prepared slides that were posted to a course web site prior to seminar sessions, so that remote students could view the slides while concomitantly listening to speakers' voices. The audio files were then added to the slides on the Web site after the class so that students could revisit the lecture as often as they wanted. The results of this study showed increased times for preparations of multimediated classes, a plethora of delimiting technological glitches, and high levels of recall for material both heard and read. The authors concluded that while pragmatic considerations dominated assumptions about the efficacy of the multimedia course components, multimedia benefited student learning.

Moreno and Mayer (1999) looked for cognitive principles that could guide efficacious uses of multimedia, based on the premise that multimedia has traditionally been used in relation to available technological capacities. The researchers conducted two experiments to examine the effects of two cognitive principles associated with multimedia, i.e., the contiguity principle and the modality principle. They state, "the contiguity principle…states that the effectiveness of multimedia instruction increases when words and pictures are presented contiguously in time or space" (p.358). The modality principle relates to the premise that auditory presentation results in higher recall than visual presentation. They cited experiments which evidenced superior learning when material was presented in the auditory mode.

In the first experiment, the goal was to distinguish between contiguity and modality effects in multimediated instruction. One hundred thirty-two university students were divided into three groups, which received various arrangements of text and graphics, to measure spatial contiguity effects. The second experiment, using a similar population of students, received text and graphics multimedia either concomitantly or non-concomitantly, to measure temporal contiguity effects. The results of these two experiments supported both the contiguity and modality principles as valid considerations for determining optimal uses of multimedia.

In an important research effort that involved the analysis of instructional scenarios that included multimedia, Mayer and Moreno (2003) discussed endemic theoretical ambiguities involved in the use of multimedia. They state:

We define multimedia learning as learning from words and pictures that are intended to foster learning. The words can be printed (e.g., on-screen text) or spoken (e.g., narration). The pictures can be static (e.g., illustrations, graphs, charts, photos, or maps) or dynamic (e.g., animation, video, or interactive illustrations). p. 43

They go on to identify the goal of multimediated instruction as meaningful learning, or learning that requires deep processing. In opposition to meaningful learning is what the authors call, cognitive load, which relates to the limits of learning from multimedia. The human mind is said to process information on two channels: "an auditory/verbal channel for processing auditory input

and verbal representations and a visual/pictorial channel for processing visual input and pictorial representations" (p.44). A conflict naturally occurs in using dual channels for acquiring learning material, in that the channels can be overloaded.

These authors' research is portrayed as an effort to achieve meaningful learning with reduced cognitive load by identifying optimal uses of multimedia that interfaces with learners two channels of sensory input in a least taxing way. Skillful manipulation of the multimedia in relation to the two channels of input to reduce cognitive load on the one hand, and to allow meaningful learning on the other, is achieved by nine techniques:

1. Off-loading: or balancing input between the two channels;

2. Segmenting: or placing time segments between content segments;

3. Pretraining: or preinstructing students on content;

4. Weeding: or removing extraneous content;

5. Signaling: or placing coding clues into content;

6. Aligning: or optimally placing text and graphics;

7. Eliminating redundancy: or avoiding identical spoken and written content;

8. Synchronizing: or presenting related graphics and narration simultaneously;

9. Individualizing: or prescreening individual learners for required cognitive skills. (Mayer & Moreno, 2003, p. 46)

The last article in the review (Mayer, Sobko, & Mautone, 2003) builds on previous studies by adding a degree of specificity to the considerations involved in creating optimal multimedia. The premise of this study is that traditionally, multimediated learning had been characterized as a form of information delivery; however, the premise of this study is that multimediated learning can be construed as social conversation based on the theory of social agency. As the authors state, "The main thesis in social agency theory is that social cues in a multimedia message can prime the social conversation schema in learners" (p. 419). The authors hypothesized that students contracted more meaningful learning from multimedia when it induced social agency in them.

In the first of two experiments conducted to test the social agency hypothesis in relation to multimediated instruction, half of sixty-eight participants received narration in a computer-based, multimediated lesson spoken by a male, native English speaker, while the other half received the same narration from a male speaker with a Russian accent. The results of this first experiment showed that the difference in narrators did not affect retention of material from the lesson but did significantly affect transfer of learning as evidenced by problem solving transfer, in favor of the non-accented voice. In the second experiment, one voice was a male, native-English speaker, while the other was a male, machine-synthesized voice, and here, voice difference affected significant differences in learning related to retention and transfer. The researchers concluded that the social agency induced by a more familiar voice narration in the multimediated instruction improved retention and transfer of learning. The practical implications of the study were to add a voice principle to considerations of optimal uses of multimedia, based on the theory of social agency, and as a complicating factor for consideration in addition to cognitive load theory.

The Current Study

The present research effort is one that is classified as action research, in that a project was created in response to persistent student complaints in graduate level, online classes. These classes were

part of the essential core of courses in a Master of Education program for subject area specialty areas at the secondary level and for two advanced certification areas: school administration and reading specialist. The courses were taught from the online platform of Blackboard and required students to complete weekly reading assignments along with five-question reading quizzes, to participate in online discussions on at least three of the five days of the work week, and to complete one or two weekly writing assignments sequentially arranged to build knowledge and skills aligned with broad learning outcomes. The two courses were Fundamentals of Curriculum Development and Advanced Teaching Strategies. The latter course in particular involved complex assignments related to learning how to create and then actually produce units of instruction that are based on curriculum standards and that require the use of complex performance tasks. The performance tasks units required creating both individual and group components, prerequisite instruction, and formative and summative assessments. Further, after students created "regular" performance task-based units of instruction, they were required to create accompanying units for enrichment and remediation purposes (Glatthorn, 2000).

The complexity of the written assignments required to build the knowledge and skill prerequisites needed to construct performance task-based units became a problem for students who had difficulty understanding assignments' complexities and subtleties, based on the text directions posted in Blackboard. As a result of expressed students' concerns, an action research project was instigated to alleviate the problem. The solution for the problem derived from multimedia research discussed above that targeted meaningful learning as the predicted outcome of multimedia instruction. In this instance, however, the intended use of multimedia was to convey more thorough directions to students related to complex writing assignments. The augmented capacity, at least theoretically, of multimedia to foster meaningful processing of information, was the justification for the project.

In consultation with the university's Center for Instructional Technology, a decision was made to create multimediated Microsoft PowerPoint™ presentations and presentations with video using Microsoft Producer™. Each week's writing assignments would be advanced to students using PowerPoint slides. Then, a makeshift video studio was created so that, with the aid of a Sony digital camcorder, video clips of the instructor explaining the details of assignments were combined with the slides, using Producer for half of the assignments. The result was that students were able to read the assignments on PowerPoint slides for each week of the course and during half of the weeks could also hear and see the instructor describe the assignments to them in enriching and supplemental detail.

The course consisted of eight weekly modules, and four of these were constructed to include video-based, supplemental descriptions of weekly writing assignments. At the end of the course, students were administered an online survey related to their perceptions of the value of the multimediated descriptions of assignments. The questions about the multimediated aspects of the course were embedded with other questions about the conduct and content of the course in a traditional end-of-course survey to avoid any Hawthorne effect interference with the result. One section of the course survey required students to answer six questions about their uses and perceptions of accompanying PowerPoint and Producer presentations

Results of Study and Conclusion

The purpose of an action research study is to seek ways to solve problems in the practice of education, and as stated above, the protocol of formal research studies is not required, in that the information is usually pertinent only to the given situation. The basis for this particular research was an identified problem relating to students' understanding of text only directions to complex

writing assignments in an 8-week, online graduate course on the Advanced Teaching Strategies. Two treatment options were devised to remedy the problem, the use of PowerPoint presentations to elucidate the meaning of assignments directions and the use of PowerPoint presentations integrated with video segments of the instructor explaining the nuances of meaning and details of the writing assignments.

To determine whether or not the treatments had the intended effect, six related questions were embedded in an end-of-course survey. The results of that survey are included in Table 1.

Table 1.
Student Survey

	No	Neutral	Yes
I viewed the PPTs without videos.	2		10
I recommend PPTs to improve learning from writing assignments.	0		12
I viewed the PPTs with videos.	1		11
I recommend PPTs with videos to improve learning from writing assignments.	2		10
I recommend using more PPTs without videos.	2		10
I recommend using more PPT with videos.	1		11

The responses from the student survey indicated that students clearly perceived the addition of PowerPoint presentations both without and with videos as enhancements to learning from written assignments. Further, for this particular population of students, there was a slight preference for PowerPoints without videos over PowerPoints with videos, which could be due to the increased technological requirements of including videos. As an action research study, the devised treatments were considered as successful interventions to improve the comprehension of and learning from writing assignments in this graduate level, online course. As a result of this effort, the inclusion of PowerPoints, both without and with videos, to improve student learning in this instructor's online courses will be designated as a best practice. Further research is needed to differentiate the effects of including or omitting videos in PowerPoints on student learning.

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Diffusion of Distance Education in North Cyprus

Aytekin İşman

The purpose of the present paper is to explore how distance education has diffused in north Cyprus. In this paper, Rogers' diffusion theory (1995) was used to analyze the acceptance and implementation of distance education in institutions of higher learning in north Cyprus. The four main elements of the diffusion paradigm -- the innovation, communication channels, time, and a social system -- were used to analyze the north Cyprus distance education project. The results of this research indicate that the Rogers' four elements were useful in analyzing the innovation of distance education in north Cyprus.

Technology and Distance Education

Technology represents an educational tool for both teachers and students. However, the role of technology in education is mostly controlled or directed by the teacher. Teachers can organize technology-related projects or assignments for the students. These technology-based assignments may represent independent or cooperative work. In the discipline of instructional design, technology plays various instructional roles. A tools approach assumes that student learners can flexibly apply general purpose software, such as word processing or spreadsheets, to various educational topics. This approach can be contrasted with the use of software developed specifically to teach a particular topic.

Educators worldwide are launching a revolution using technology in their classrooms and schools. One vital educational technology is distance education. Distance education is a multidimensional process involving education conducted over long distances and mediated by instructional technology. It includes programmed texts, TV programs, computer software, and entire courses of web-based instruction. Distance education is revolutionizing education. Distance education can enrich traditional face-to-face instruction and make it more individualized, valid, accessible, and economical. In north Cyprus, technological advances in the educational sector have been rapid, with the result that distributors of educational hardware and software are constantly coming up with new options for higher organizations, individuals, and families in the Turkish territory of north Cyprus. A relatively new practice for Turkish Cypriot educators is distance education.

Attributes of Distance Education

Higher education institutions in north Cyprus have adopted telecommunication technologies (such as the Internet) for instruction, and the educational system has benefited greatly from these technologies (Isman, 1997). Internet is a search engine or virtual library for scientist at universities to share ideas and data on scientific projects. Today, the Internet is available in schools and in many students' homes in North Cyprus. Through the Internet, students and professors converse through a variety of forums, including e-mail, online discussion forums, bulletin boards, and web pages. With developments in the Internet and the global network system, the universities immediately took the advantage of the World Wide Web to deliver instruction, regardless of the physical distance and time.

The effectiveness of online instruction is mainly measured by how interactive the process is, how well it satisfies the students' needs, and how successfully it eliminates communication barriers between the involved participants. There are a number reasons to encourage distance educators to use the Internet for delivering the instruction. First, distance educators can create virtual classrooms into research laboratories. Second, the Web encourages some of the latest trends in learning. Students of all ages learn better when they are actively engaged in a process. Third, Internet activities can heighten learner motivation. Fourth, the focus of distance educators for the twenty-first century will be collaboration, project-based team activities, and cooperative learning. Twenty-first century distance educators will create a student-centered and motivation based environments. Fifth, the world is getting smaller. The Internet has the ability to provide communication links for students to get up-to-date research and foster collaboration with peers in other countries. They will share their experience and cultures and bring the real world into the distance education classroom. Finally, the idea of "learning how to learn" works well with the Internet for students. In this system, teachers are coaches for distance education students.

One of the most important initiatives in Turkish Cypriot is distance education courses and a two-year program that uses the Internet to deliver instruction to students at a distance. Students, especially those in the two year program who live in different part of the world, take courses and earn undergraduate degrees by way of Internet. Distance education courses and programs have become increasingly popular with people who want to study at home in their free time after work without the long evening commute to a campus (Isman, 1997).

Distance Education in North Cyprus

The history of distance education in north Cyprus began in the 1990s. During those years, some students registered when the Open Education Faculty was founded as a part of Anadolu University in Turkey in 1982. During 1995, the higher education institute which is Eastern Mediterranean University (EMU) in north Cyprus decided to launch its own distance education system. EMU started offering online on campus distance education courses during the mid-1990s. There were approximately 100 students registered in those courses. The number of students taking distance education courses at EMU increased steadily from 1995 to approximately 500 students in 2000, and increased rapidly between 2000 to 2004 -- reaching 2,500 students in North Cyprus, Turkey, Europe, and other countries.

Methods and Data-Collection

For the present research, EMU was a research site. Eastern Mediterranean University (EMU) is the only higher education institute in North Cyprus that has implemented distance education. We randomly selected 100 EMU undergraduate students that were taking online distance education courses. This yielded 88 students who were in on-campus distance education courses and 12 students enrolled in the two years distance education program.

Diffusion of Turkish Cypriot Distance Education In Higher Education

Diffusion is a process in which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1995). It is a special type of communication, in that the messages are concerned with new ideas, technologies, or practices (Rogers, 1995). Communication is a process in which participants create and share information with one another in order to reach a mutual understanding (Rogers, 1995). In this section, Rogers' (1995) four elements in the diffusion of innovations are used to analyze Turkish Cypriot distance education in North Cyprus. These elements are identifiable in every diffusion research study, and every diffusion campaign or program (Rogers, 1995). These elements are:

1. The innovation
2. Communication channels
3. Time
4. A social system

An innovation is an idea, practice, or object that is perceived as new by individual or unit of adoption. It matters little, so far as human behavior is concerned, whether or not an idea is objectively new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation (Rogers, 1995). A communication channel is the means by which messages get from one individual to another (Rogers, 1995). The time dimension involved in diffusion is (1) in the innovation-decision process by which an individual passes from first knowledge of an innovation through its adoption or rejection, (2) in the innovativeness of an individual or other unit of adoption – that is, the relative earliness/lateness with which an innovation is adopted – compared with other members of a system, and (3) in an innovation's rate of adoption in a system, usually measured as the number of members of the system that adopt the innovation in a given time period (Rogers, 1995). A social system is defined as a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal. The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems (Rogers, 1995).

1. The innovation of distance education

Distance education is the means by which EMU is able to offer university-level education and teacher training for everyone. Funding new buildings is very expensive, as North Cyprus, is a developing country. On the other hand, there is a big student demand to attend this university. For this reason, EMU cannot accept and accommodate all students. In addition, opportunities for Turkish Cypriot people outside the country's borders to receive education in the English language are limited. For these reason, EMU established a distance education institute which gives the opportunity to a large number of students to receive a university diploma.

In North Cyprus, distance education is more convenient than attending traditional course because it allows people to work and go to school, either to support their families or maintain their position in a company. Of our sample of 100 students, some sixty five percent agreed with the following statement:

> *"We have to work and pay our school tuition because our family has a financial problem. Otherwise, we could not attend the undergraduate program, so both we work and study here at the EMU".*

The other thirty five students agreed with the following statement:

> *"We have to maintain our position in a company."*

Distance education is compatible with most Turkish norms and social values (Isman, 1997). People who work for private or government organizations enroll in the EMU distance education program to increase their salary and position. Twenty one respondents noted that that they got higher position and salary at their company. Their interview pointed out that they had a positive experience with distance education program. More over, they felt that there are no opposite ideas inherent in the social systems which work against distance education. For this reason, people have adopted this innovation because distance education is compatible with their prior experiences, norms and values (Isman, 1997).

Furthermore, some of EMU distance education students taking a distance education course were observed in terms of technical aspect, instruction, membership-interaction, organization, and

course management. The results of these observations state that although internet based distance education is technologically complex to implement, using it as a student is relatively simple. Students did not much training to use the Internet. During the lab observations, students could easily understand how it worked. Most students remarked that they had learned almost as much as traditional classroom instruction and enjoyed taking distance education courses except in respect to communication with their teacher and close friendships that can develop in classes. They mentioned that the difference was that distance education courses did not have interaction as much as traditional classroom. Therefore, the results of interviewing and observation brought out that about 85 percent of these students liked distance education course. If students like taking a distance education course, they will continue. If they do not like it, those can attend traditional courses (Isman, 1997). EMU has introduced distance education to its students with successful applications. Thus, this "try-ability" factor influenced EMU students to adopt the innovation because they saw its potential (Isman, 1997).

2. Using communication channels for diffusion of distance education

Communication channels, as Rogers (1995) suggests, are important factors in the diffusion of distance education as an educational model in North Cyprus. The communication channels include television, radio, articles in newspapers and magazines, papers delivered national and international conference and meetings, and word-of-mouth communication (Isman, 1997). EMU has broadcast programs about distance education on its television and radio stations. These programs share advantages and disadvantages of distance education with students and assist EMU students make decision about adopting distance education. Beyond television and radio programs, some articles have been published by writers and educators in news papers and magazines. These articles are very successful in diffusing the new educational innovation. In North Cyprus, this approach is persuasive since many people read newspapers, magazines and articles everyday.

The EMU occasionally organized a conference on distance education in May 2003. This conference participants return to their organization with the new information and communicate with their friends, neighbors, and colleagues. During these human network interactions, new information about the educational innovation was shared, leading to its enhanced diffusion in these social systems (Isman, 1997). In North Cyprus, students meet each other to talk about their experiences at coffeehouses and in their homes. During these personal meetings, students distribute their experiences about distance education. Hence, human network communication is an effective way of further diffusing this innovation (Isman, 1997).

3. Time for diffusion of distance education

After adopting distance education, EMU students make a decision on whether or not taking distance education course. Rogers (1995) explains that there are four factors in the decision making process. These are:

1. Knowledge
2. Persuasion
3. Decision
4. Implementation

In this case, EMU students first obtain information about distance education from communication channels. Then, after receiving the information, those students evaluate it to make a decision regarding taking distance education course. Third, in the future students will see implementation of the innovation. Finally, EMU students make decision whether taking distance education course or not. Those who are satisfied with distance education course always continue, and those who are not satisfied always discontinue distance education. During the interview sessions, a number of students stated:

"We need a time to understand how distance education can help our education. At the end of the time we always make our decision whether continue taking distance education course or not. We always made decision to take distance education course because we saw benefits of distance education in our education life. We were always satisfied with distance education course. Few of our friends were not satisfied with distance education. Then they decided not to take distance education course."

4. Social system for diffusion of distance education

As Rogers' theory mentions, the social system is a part of the diffusion of innovations (Isman, 1997). There is a huge market for distance education in North Cyprus and Turkey. The primary change agents, or promoters, for distance education have been The Ministry of Education and EMU. During the diffusion process, these change agents must be aware that they should respect social values and community norms because of the key roles they play in the diffusion process. During the interview sessions, a number of students indicated that distance education is suitable for their social values and community norms. During the interview sessions, a number of students stated:

"We were always satisfied with that distance education always respected our social values and our community norms. If we saw not respect our social values and community norm, we were not continue to take distance education course. We always pay attention our social values and community norms. These norms and values play a key role in our life"

In addition, the administrators of EMU distance education institute stated that the primary opinion leaders for distance education have been the professors.

Opinion leaders include professionals who work for universities, the government, EMU, and The Ministry of Education (Isman, 1997). As members of the educational system, they can influence other members and provide people with information concerning distance education. EMU professors can convince their students to adopt distance education. According to interview sessions, however, EMU students taking distance education course were convinced by their friends who took distance education course before. EMU students will likely adopt distance education because such "peer" experts have social power in the education system (Isman, 1997). In North Cyprus, government agencies can decide to implement distance education, but individuals must make personal decision whether or not to use it.

The Limitations of EMU Distance Education System

According to our respondents, and a number of observation sessions conducted during spring, 2004 at the EMU campus, there are two factors that can limit the quality of education in the EMU distance education.

The first limitation in EMU's distance education institute is situated in the teaching methods. Teaching methods plays a key role in delivery of instruction to students. A research study stated that there are individual learner differences in response to distance education and its various techniques, as there are to classroom instruction, to particular teaching style, even to particular teachers (Moore, 1989). Distance education teachers should implement different teaching models in terms of the characteristics of students. Those teachers should know that teaching in distance education is different from traditional classrooms. According to interview results with a number of students, professors have used traditional teaching methods in distance education courses. Almost all of students stated that professors teaching distance education course should know how to teach efficiently and effectively in distance education courses. Web design is also a problem. Students stated that distance education course pages should be designed professionally and use

different educational methods in the web page because instruction in a distance education course is delivered only through the Internet. The success of diffusion of knowledge in distance education in higher education depends largely on the effectiveness of the teacher, and that this in turn depends on the teacher's teaching style and knowledge about the topic. EMU distance education institute should train their professors in distance education pedagogical proficiency.

The other limitation of EMU distance education institute center around technological problems. As one EMU distance education student remarked:

> *"We have sometimes Internet problem. We think that EMU has internet connection problem. When we study our course, Internet is disconnected even on campus. Our university should solve this problem. Otherwise, students will not adopt the distance education courses."*

So, EMU distance education institute solved the technological problems to get more students in distance education institute.

Conclusion

Diffusion is a process in which an innovation is communicated through certain channels over time among the members of a social system. It is a special type of communication, in that the messages are concerned with new ideas (Rogers, 1995). Communication is a process in which participants create and share information with one another in order to reach a mutual understanding (Rogers, 1995). The four main elements are the innovation, communication channels, time, and the social system. The elements are identifiable in every diffusion research study and every diffusion campaign or program (Rogers, 1995).

In this paper, Rogers's diffusion theory was used to analyze the acceptance and implementation of the innovation of distance education in higher education in North Cyprus. Distance education was slow in gaining hold but effectively diffused in North Cyprus over the course of the last four or five years. It is hoped that in the future the EMU will solve Internet connection problems and train their teachers more effectively in distance education pedagogical practices.

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Factors Affecting on Student Unsuccessfulness in Engineering Programmes in Distance Education

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Abstract:

This study was conducted to ascertain the reasons for unsuccessfulness among students enrolling for engineering (technology) study programme in distance learning conducted by the Open University of Sri Lanka. The profile of students, students' awareness about distance learning methodology, reasons for selecting distance learning courses, students' appraisal of course delivery, and level of support given by the faculty were studied through a survey conducted among students who follow courses at levels 1 and 2.

According to the study, it was revealed that majority of students who passed the G C E (A/L) examination were found to be either willing to continue or undecided whether to abandon or continue studies. Non-familiarity with distance learning method, lack of time, and high course fees were major reasons for deciding to give up the programme. Language difficulty and difficulty in course material were rated below other factors influencing possible student drop outs. Most students (87%) indicated securing employment and gaining knowledge as their reason for selecting the study programme in distance learning. Only a 13% joined because of persuasion by others.

As far as course delivery is concerned, 86% of students needed more face-to-face teaching reflecting the fact that they have not made up minds to do self-study which is characteristic of distance learning. Further, 78% stated that even the limited face-to-face classes were not conducted to the satisfaction of students.

In conclusion, it was evident that students joined the programme with an understanding of the content of the programme but they seem to find difficulty in coping due to distance learning methods. As far as delivery is concerned there were no major complaints on course material, but a more significant factor was the way faculty, staff and visiting academics conducted limited face-to-face classes. Therefore, making students, as well as all tutors and lectures who undertake to guide the students, thoroughly aware of the distance learning methods at enrolment, is strongly recommended.

Introduction

Any educational or learning process or system in which the teacher is separated geographically and in time from his or her students, and in which the student is separated from other students is defined as distance learning. Distance learning has been thought of as pre-packaged text, audio, and/or video courses taken by an isolated learner with limited interaction with an instructor or other students. However this perspective is changing because of fast developments in information technologies that permit rich interactive distance learning.

On the other hand distance learning is a cost effective method in modern education that facilitates education for large numbers of students who were previously deprived of conventional education for various reasons. Those who go for life-long learning while being employed for their career prospects also find the distance learning much useful to obtain recognised qualifications in their fields of specializations.

In the implementation of a distance learning programme, there are unique problems that stand against achieving programme goals. These problems are related to course type, geographical location, target group, nature of delivery system, evaluation method, and finances. These problems have to be identified and rectified, depending on the specific needs, for optimum performance of any distance learning programme.

There is sometimes a high rate of student drop-outs in distance learning progammes. A number of factors contribute to course non-completion such as feelings of isolation, frustration with the technology, anxiety, confusion, gender, age, educational background, and mode of delivery (Altmann & Armbasich, 1982; Cooper, 1990; Fields and Lemay, 1989). Developing and implementing distance learning packages is more costly than face-to-face teaching. Hence, student numbers have to be large to keep the cost per student at a minimum. However, in countries like Sri Lanka where the potential student population opting for distance learning is low compared to the other countries, even a small student dropout has serious impact on continued operation of a programme of study in distance mode. Therefore, it is important to give serious attention to identifying problems in the distance learning system and providing timely solutions to keep the student interest and retain them until course completion.

Research have shown that most factors affecting successful learning with less stress on the student are unique to a given course and student. However, some common factors have been identified such as level of motivation, feedback and teacher contact, student support and services, alienation and isolation, and lack of experience and training (Galusha, 1998). Knapper, (1988) argues that distance learners are more likely to have insecurities about learning more than traditional students. These insecurities are founded in personal and university related issues such as financing of study, disruption of family life, perceived irrelevance of their studies and lack of support from employers (Sweet, 1986).

Distance learning in Sri Lanka has a history of about 20 years. Many essential features, such as easy accessibility to computer based learning, supplementary materials like audio and video, and teleconferencing, are yet to be introduced to many programmes. Programmes are heavily dependent only on print except for a few courses supported by video and audio.

This paper focuses on factors affecting student unsuccessfulness in distance learning programmes in the Faculty of Engineering Technology of the Open University of Sri Lanka (OUSL). The Open University of Sri Lanka is the only recognised distance education institute in Sri Lanka which awards Certificates, Diplomas, Degrees, and Postgraduate Degrees in natural sciences, engineering, management, education, and humanities. This research was based on a survey carried out among the students of engineering in order to gather information on the student profile and student perception on the course delivery during the academic year 2003/2004.

Case Description

The Faculty of Engineering Technology of the Open University offers two main study programmes viz: Technology (Engineering) programme and Industrial Studies programme. The Technology programme leads to an Advanced Certificate in Technology, Diploma in Technology, and Bachelor of Technology as exit points. This programme is similar to the degree programmes offered by conventional universities and has similar specialisations like civil, electrical, computer, electronic, mechanical, and agricultural and textile. The curricula consists

heavy mathematic content and engineering principles. The Industrial Studies programme is an innovative approach to train people so that they could after successful completion actively and efficiently engage in the specific industries with a better understanding of engineering principles, technology, management and other aspects. The specialisations offered under this programme are focused towards an industry for example textile manufacture, Apparel production, and Agriculture.

In this study the sample population was selected from among the students who follow the Technology (Engineering) programme. To enroll in this programme, there is no formal educational requirement. However, those who posses previous qualifications can claim exemptions for certain courses and join the programme at a higher level. The courses in the programme are categorised according to level, ranging from 1 to 6, reflecting the depth of subject matter content, and according to major subject area, for example engineering, mathematics, general, projects, training etc. The courses carry certain credit values that vary according to the work content of the courses, which students can claim on successful completion. In order for a student be awarded an Advanced Certificate, a Diploma or a Degree, a minimum number of total credits and a minimum number of credits specified for different categories of courses at specified levels must be earned by the student. Students specialising in a certain area of engineering need to follow and pass relevant core courses in meeting the credit requirement.

A student is permitted to take maximum of 2.5 credits (equivalent to 1125 study hours) in one academic year. Students are continuously assessed through take-home-assignments, class room tests, and laboratory work where necessary. Students have to reach a minimum standard in each course in the continuous assessment process to be eligibile to sit for the year-end examination in the course.

Since the beginning of the engineering programme of study it has undergone several revisions, all experiencing numerous problems reflecting a large dropout at early stages and thereby reducing the chance of a student being graduated. On the other hand, a few students who graduated took a remarkably long time so that pausing and frustration deprived them of their initial objectives of higher studies and early employment. It has been observed that those come with some middle level technical qualifications do better and complete the programme in a reasonable time frame. The period of study is shortened by virtue of exemptions granted and inherent motivation and orientation to higher studies. Some students who have passed mathematics, physics and chemistry in the General Certificate of Education (Advanced Level) university qualifying examination conducted by the education department have difficulty in successful completion of courses. In spite of this fact, it has been observed that the students with no mathematical background enroll in the programme without much thought of their liking and capabilities, and most of them spend a longer time in the programme.

Methodology

In this study a group of students who failed eligibility to sit the final examination in any one of the level 2 courses was selected. Information was collected through a questionnaire and interviews related to their demographic characteristics, educational background and perception of studies at the Open University. Data analysis related factors in selecting a distance education programme, performance, ratings on course delivery, and satisfaction, to student profiles.

Findings

Unlike conventional classroom learning, it is recognised that in a distance learning system, a large number of students drop out due to its inherent factors. Some reasons are obvious and common, others may be unique and relevant only to a particular group of students or programme. Major factors that influence student unsuccessfulness as determined by the results of this study are presented below.

1. Previous educational background

The student response on the continuation of studies at OUSL was analysed against the gender, performance in GCE (A/L) examination (National University entrance examination conducted by the government), and the present employment. The results are shown in figures 1 and 2.
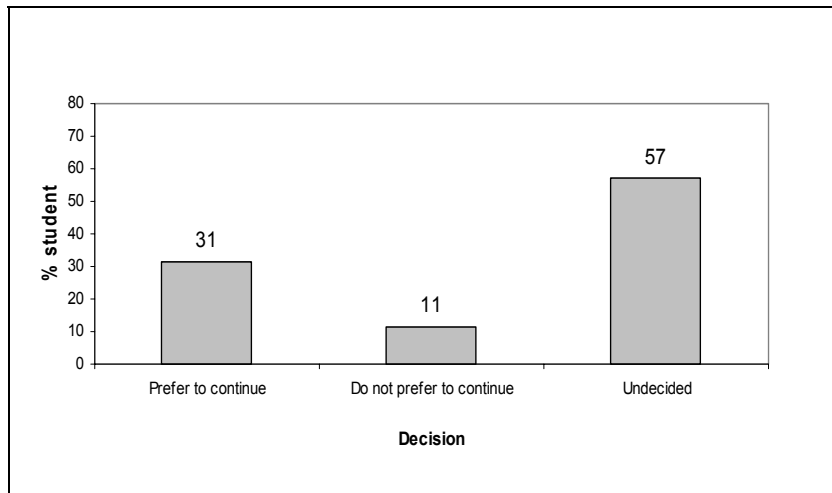
Figure 1: Students' decision on continuation of studies
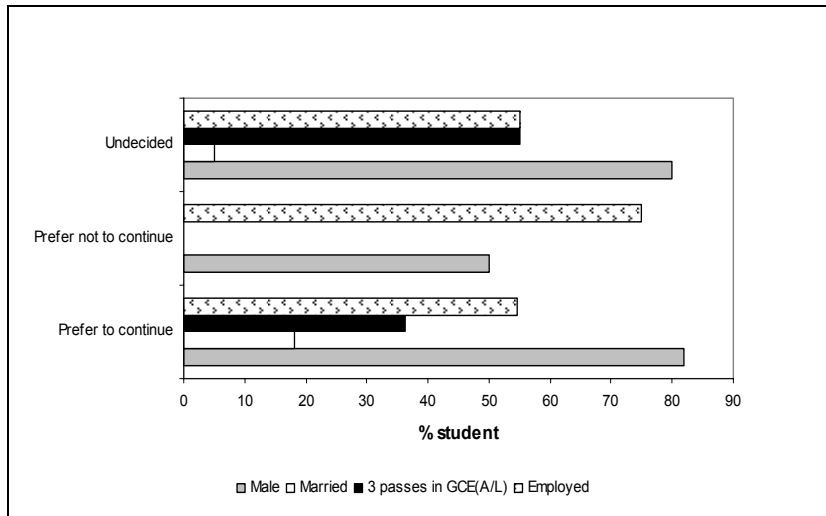
Figure 2: Decisions on continuation of studies according to gender, marriage, GCE (A/L) qualified, and employment

The students who were undecided on whether to continue or not is characterised by 55% with 3 passes in GCE (A/L), 55% employed, and 80% male. Most of the students with 3 passes in GCE (A/L) were either undecided (55%) or preferred (36%) to continue. No student with 3 passes wanted to stop studies (figures 1 and 2). So it is a reflection that GCE (A/L) qualified students have recognised that the OUSL study programmes are suited for them, but some wonder whether there are some other avenues for them to achieve their goals in education. This was confirmed by the findings through interviews with those students. It is the responsibility of the staff to support them to clear their doubts and encourage them to study with confidence to achieve their goals.

2. Lack of direction by the University

Lack of direction by the teachers has been proved to be one of the major factors contributing to students' quandary. Because there is no frequent contact with teachers, students may have trouble in self-evaluation (Keegan, 1986). In the present analysis also it was evident that a significant percentage (54%) of students indicated this as one of the reason for their abandoning of the studies. However, in this particular programme of study and student group factors like unfamiliarity in distance learning, lack of time, and high course fee are found to be major three factors, which contributed to the failure as shown in figure 3.
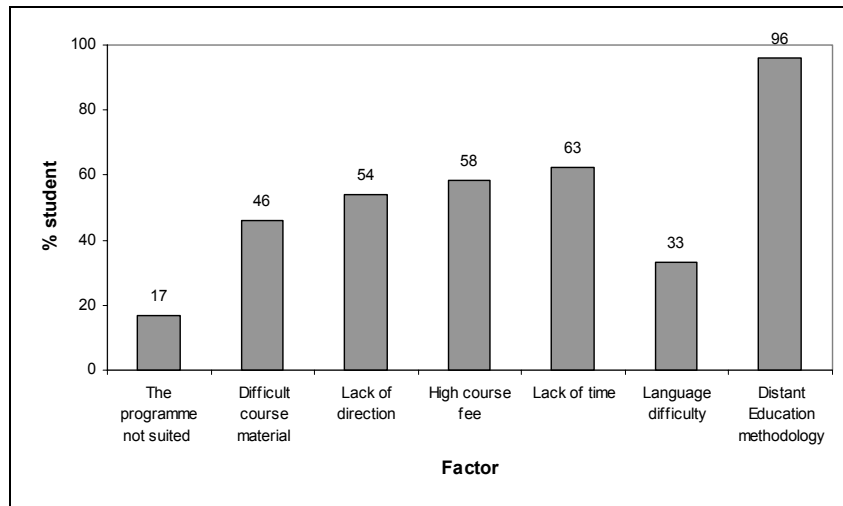

Figure 3: Factors affecting student drop outs

3. Inappropriate selection of a study programme

A distance learning programme should best fit the requirement of the student in every respect. The course structure, schedule of face-to-face sessions, the design of instructional materials; print, video, and audio, subject content and depth should be convenient as much as possible to the students. Otherwise the students instinctively feel that the programme is not for them and invariably forced to leave the studies. The students go by several reasoning as to the selection of a study programme. Some of them lead the student to a wrong selection, as those seem to solve their most felt needs, irrespective of their abilities.

Figures 4 shows that securing employment (56%) is the major factor in deciding to pursue higher studies. Figure 5 finds most of this group are below 35 years of age, unmarried, and males. The second contributing factor was to gain knowledge (31%), out of which about 75% are employed. The remaining 13% said the reason behind the decision to study was persuasion by others (parents and friends). This group was below 35, unemployed and unmarried.
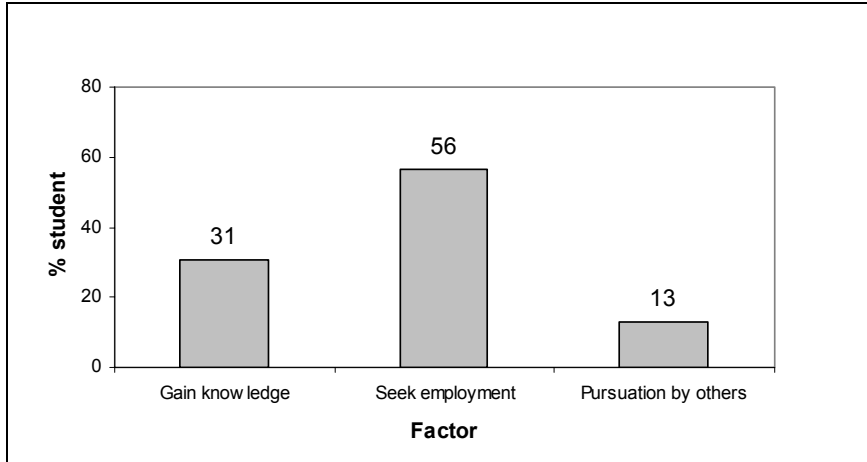
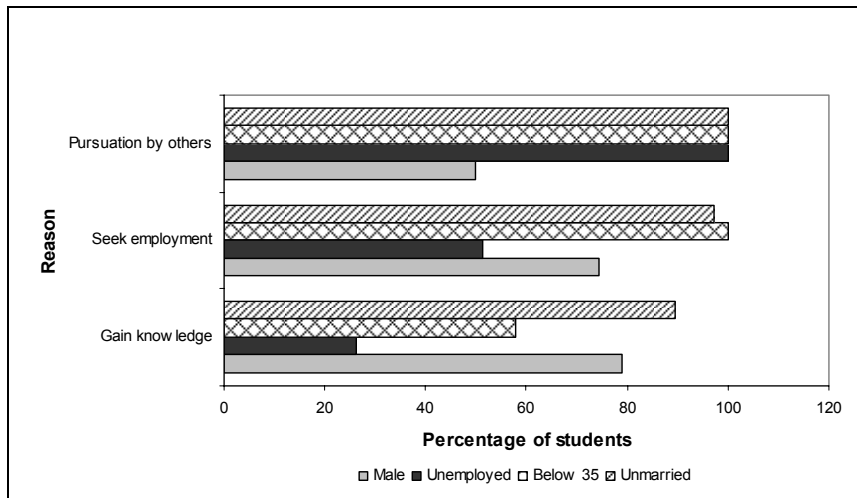**Figure 4: Factors influencing the decision of higher studies**

**Figure 5: Characteristics of students who responded differently
for reasons of higher studies**

4. Course delivery

Efficient course delivery plays a major role for the success of distance learning. When the teacher and the students are separated by physical distance, print, audio, video, and Internet, often in concert with face-to-face communication, is used to bridge the instructional gap. Print is the main and sometimes the only instructional material for the courses in this particular study programme.

According to student feed back on course delivery, most of the students (86%) indicated that face-to-face sessions are essential and should be increased. This outcome is not in agreement with the concept of distance education. Some compelling factors lead the students to select study programmes in distance education without any knowledge or readiness to adjust to the system, so that student commitment and self-motivation are undermined. Such students, who have long experience of conventional face-to-face teaching in their secondary education, expect the same from the distance learning programmes. Therefore, it is necessary to educate students on distance education concepts and methodologies before they enroll in the main programme of study. Also,

other facilities such as easy access to Internet; virtual classrooms, CD ROMs, audio and videos can be made available to support the students, to compensate for lack of face-to-face teaching. The argument that highly placed distance education like this needs a lot of resources in terms of technology, human and money cannot be justified with present student numbers so alternative solutions should be provided - for instance more face-to-face sessions, teacher guided discussions etc.

Further, most students (78%) were of the view that the way the face-to-face sessions are conducted is not satisfactory. Frequent complaints that student do not turn up for face-to-face sessions can be contributed to this, as evident from results and they keep away as these did not meet their expectations. Face-to-face contact sessions in distance teaching providing limited opportunity for the students to clarify doubts, and not conventional classroom teaching. Students with little awareness of distance teaching concepts are naturally not satisfied with the way the face-to-face sessions are conducted. On the other hand, students find it difficult to read and understand the subject content of mathematics and engineering disciplines on their own as these students have long experience of conventional face-to-face teaching.

Another significant finding is that 68% of the students said that the content is too much and most did not agree with that the difficulty in lessons and poor presentation.
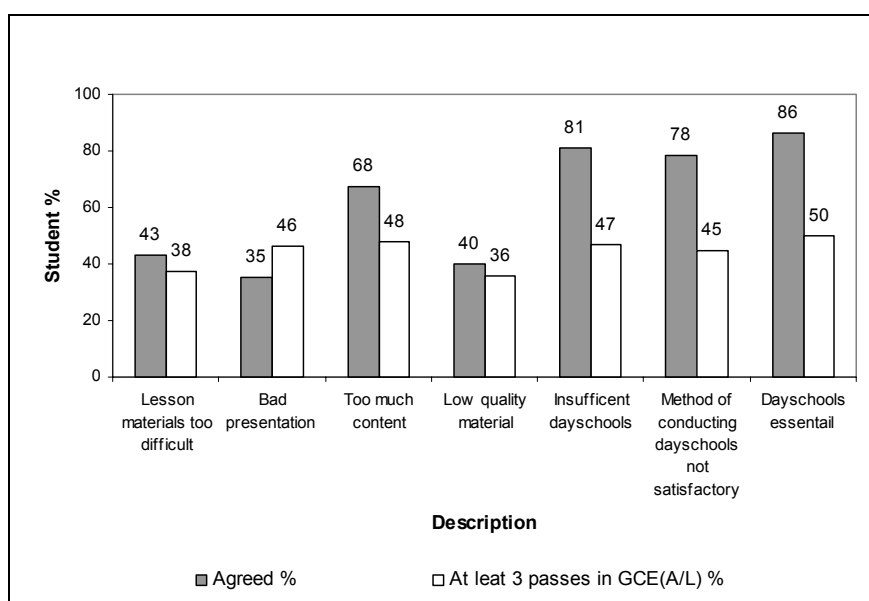

Figure 6: Student feed back on course delivery

5. Awareness of Distance Education concept and teaching

According to the findings, the student knew the important features of the Open University; such as it is a national university, no necessity of frequent visits to the campus and no formal lectures as in conventional universities. Sixty four percent (64%) of students were also aware of the study system and assessment system. So it is evident that the students were well aware of the concept of distance education and methodologies of teaching. However, in spite of this awareness the failure in the study programme could be contributed to wrong judgment of their capabilities together with lack of commitment, self-motivation and sustained ability to face challenges. According to the study 96% of the unsuccessful students indicated the feeling of isolation in distance education as one of the main reasons that compelled them to give up the courses. This significantly high

number of students who do not recognise the concept of distance teaching correctly and its established teaching strategies should be made aware of these facts through intensive counselling at the beginning as well as support throughout the initial year of study. This type of counselling is specially needed in Sri Lanka situation in the light of their highly coached secondary education.
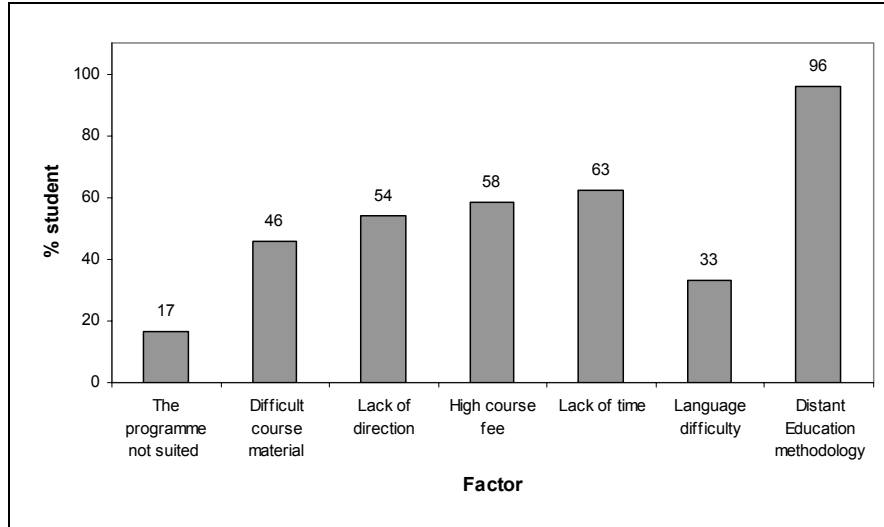

Figure 7: Factors affecting student drop outs

Conclusion

The major contributing factors for the failure of students in the Engineering programme offered through distance learning were the lack of guidance, unfamiliarity of the study system, and difficulty in changing over from conventional classroom teaching to self-learning. Further, students may be guided by irrelevant factors in selecting a most fitting study programme for their capabilities and backgrounds. Students from arts, commerce and biology disciplines in their years of secondary education seek to enroll in the engineering programme, especially computer and electronic disciplines, with the expectation that such qualifications will be well employed in the future. It is of course no barrier for such student to follow the engineering programme and become good engineers, but they should have continuous untiring commitment and self motivation to come to the same status as those who have mathematic background.

As far as faculty is concerned, course materials must be delivered on time and students' momentum for learning requires a higher level of support, especially during the transition to distance education. Lack of student support and poor presentation of course content contributed to student failure. Faculty need to focus attention on redesigning the total course delivery system paying the attention to the profile of students. In such an attempt the faculty should devise an efficient means to identify and support students who need special assistance.

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Harnessing the Power of the Information Age: E-learning - New Frontier of Organizational Training

Robert V. Fiermonte and Kelly Bruning

Abstract

The information age ushered in a revolution that will forever change the way people learn and communicate. It spawned new business models and created Intranets to communicate with and educate employees. Progressive organizations are harnessing the power of e-learning and implementing e-learning concepts and best practices outlined in this paper. Empowering employees to self-learn increases efficiency of the organization. Like the Internet, e-learning is no longer a trendy fad but a proven learning model with enhanced competitive advantage for organizations in training and educating their employees. E-learning has harnessed the power of the Information Age and created a new frontier for organizational training in the twenty-first century.

Introduction

The growth of the Internet and its impact on society is often compared to the Industrial Revolution. Just as the automation ushered in new business concepts such as the assembly line and mass production, the Internet created global access to learning via a computer, mouse, keyboard, and network. Technology enables employers to share information, internal corporate data, and training via the organization's Intranet.

> When e-learning is discussed, thoughts turn immediately to the Internet and its vast amounts of information and resources. Yet one of the greatest opportunities for expanding organizational learning is the emergence of Intranets. Unlike the Internet, the Intranet is a self-contained network of information only accessible to individuals within a specific organization. Within an Intranet, organizations can create their own learning modules, accessible only to their employees and staff. Intranet-based modules allow employees to obtain learning at their desk rather than in a classroom. Molnar (1997) explains, "Learning and work are becoming indistinguishable. A new role for education will be to broadly gather information from distributed sources and provide it, on-demand, to individuals and organizations as they require it" (p. 70).

The American Society for Training & Development defines e-learning as "anything delivered, enabled, or mediated by electronic technology for the explicit purpose of learning" (Hicks 2001, p. 75). E-learning is principally any education and training received by computer; whether by compact disk read-only memory (CD-ROM), or via the Internet or Intranet (Thomas 2001). Simply put, any learning, whether facilitated as part of or separate from traditional classroom training, via use of a computer can be considered e-learning. It is important to recognize that although e-learning utilizes passive technology, e-learning is not a passive form of training. It requires the learner to be physically involved in receiving and sending information (Rashty 2000).

E-learning is flexible and learning modules can be presented and updated quickly. It can be accessed (given permission) by anyone with access to a personal computer or a computer terminal linked to a network or mainframe. E-learning shares many of the functions of traditional learning yet is, in many ways, completely different. Table 1 compares traditional learning and e-learning.

Table1

	Traditional Learning	**e-Learning**
Classroom Discussion	The teacher usually talks more than the student	The student talks at least as much as or more than the teacher
Learning Process	The learning is conducted with the whole class participating: There is almost no group or individual study	Most of the learning process takes place in groups or by the individual student
Subject Matter	The teacher conducts the lesson according to the study program and the existing curriculum.	The student participates in determining the subject matter: learning is based on various sources of information, including Web data banks and net-experts located by the student.
Emphases in the Learning Process	The student learn "what" and now "how"; the students and the teachers are busy completing the required subject matter quota; the students are not involved in inquiry-based education and in solving problems, but rather in tasks set by the teacher.	The students learn "how" and less "what"; the learning includes research study which combines searching for and collecting information from the Web data banks and authorities in the communications network; the learning is better connected to the real world, the subject matter is richer and includes material in different formats.
Motivation	The students' motivation is low, and the subject matter is "distant" from them.	The students' motivation is high due to the involvement in matters that are closer to them and the use of technology.
Teacher's Role	The teacher is the authority.	The teacher directs the student to the information.
Location of Learning	The learning takes place within the classroom and the school.	The learning takes place with no fixed location.
Lesson Structure	The teacher dictates the structure of the lesson and the division of time.	The structure of the lesson is affected by the group dynamics.

From "Traditional learning vs. e-Learning"? David Rashty, 2001, Addwise, www.addwise.com

> *To understand how major the shift is from traditional classroom learning consider that spending on e-learning as a form of U.S. corporate training and education is expected to rise to more than $238 million by 2004, surpassing the $236 spent on corporate classroom training in 1999 (Thomas 2001). Global growth in e-learning is estimated to be nearly 150 percent annually and will be worth an estimated $24 billion dollars worldwide by 2004 (New Straits Times-Management 2002) (Sweeney 2002). The move toward e-learning is prompted in part by cost savings and efficiency expectations (Thomas 2001). In fact by 2003, 40% of all corporate training is expected to take place electronically, double the figure from 1999 (Sweeney 2002).*

Thomas (1999) and Zolar (2002) provide that while e-learning is fast becoming the major method of delivering organizational training, it will not totally replace traditional classroom training. In particular, the teaching of sales or customer service, particularly when role-playing exercises are used, is more effective when done face-to-face with other learners and the instructor providing immediate and direct feedback. Zolar (2002) suggest e-learning technology can augment classroom learning with pre-classroom and post-classroom experiences.

E-learning Best Practices

E-learning as an organizational tool has no set of standardized best practices. A survey of e-learning/training managers at ten major financial firms representing more than $300 billion in combined revenues identified seven areas needed for the implementation and success of e-learning (Hassett 2002):

1. **Management Support**. The commitment of senior management support, both monetarily and corporately is vital if e-learning is to be used effectively within organizations. Buy-in from senior management sends a positive signal to all subordinate personnel that this type of learning is efficient and effective. It is imperative that executive support be long-term, through both good economic periods and bad. In many organizations, when poor economic times occur one of the first areas to receive cuts in funding is training because it is considered a discretionary item (Bolch 2002). This, of course is short sighted. Cutting training funding only makes it difficult for employees to achieve benchmarked levels of learning and expertise. Hassett (2002) explained that when training directors were asked to rate management support on a scale of Likert scale of 1 – 7, many rated it an 8!

2. **Gather and Maintain all Information**. Employees using e-learning have nearly instantaneous access to reference documentation for any and all training received. As a result, employees who previously received skill training (e-learning or classroom) and do not use those skills on a routine-basis, can utilize the e-learning repository to brush-up on information when those skill sets are needed. Boxer (2002) explains that it does not matter if organizations use the Internet, Intranet or both as portals for learning. What is important is that an e-learning center be designed to serve as a focal point within the organization for accessing any and all tools needed to enhance knowledge, skills, and attitudes to increase understanding and value.

3. **Redesign Content for the Web**. E-learning requires a new paradigm for corporate training. Early in the history of e-learning, computer based training (CBT) was nothing more than classroom training translated word-for-word and exercise-for-exercise into an electronic format. Even though CBT training was self-paced, for the most part it had to be taken all at once to be effective. The new paradigm for e-learning is to redesign training so that it can be accessed in small independent portions that not only can be taken in shorter periods of time, but can, by themselves deliver stand-alone learning objectives. This does not mean that long-term training objectives no longer apply, but simply that each piece or module of the training puzzle be designed to stand-alone as well as in concert with other modules.

4. **Require E-learning**. A common misconception of corporate e-learning is that it is nice to have, but does not command the same level of priority as classroom training (even if the e-learning is replacing vital classroom training). This misconception can lead supervisors and managers to put a lower priority on the completion of e-learning than on comparable classroom training by failing to provide the necessary time to start and complete required learning. Organizations newly implementing e-learning may find it necessary to require course completion for previously mandatory classroom modules. In doing so, they clearly establish that e-learning holds the same level of importance within the organization as traditional classroom learning. E-learning as a method of delivering training is only effective when it becomes an integral part of the organizations infrastructure (Boxer 2002).

5. **Beware of Technology**. Hasset (2002) provides; "Focus on the training problem, not the technology solution" (p. 123). The biggest and best, fastest and most current technology

may well lend itself to the building of excellent e-learning module; however, if the training is aimed at employees who do not have access to the needed technology to run or operate the module, it becomes nearly worthless. Any e-learning module should be designed to run on all the organization's personal computers, each of which has been individually customized by the user. If a learning module will need a special program to work properly on individual computer configurations (which could number into the thousands in some organizations) it should be expected there will be a number of program failures. Difficulty in accessing and running even a single e-learning program can contribute to and foster negative impressions of e-learning as a whole. When e-learning within the organization has a bad reputation it may not be used.

6. **Beware of Vendors**. Every training manager surveyed had problems with second- and third-party providers of e-learning modules. Of biggest concern was the lack of creativity, customization, and upgrading/updating of delivered learning modules. Jeri Burt, senior vice president and director of e-product development for Citigroup in describing outsourced e-learning content:

    "You often need to supplement their designs over and above what the subject matter experts provide, either because they do not really understand the material or because they do not want to spend the extra time above the quoted price or budget. Though graphics are commonly proposed, they tend to be extraneous, just to be there, rather than integrated with the subject" (Hassett 2002, p. 124).

7. **Be Careful Predicting ROI**. The surveyed training managers agreed that trying to determine a fixed ROI on e-learning was extremely difficult. Instead of trying to determine ROI the organization should focus on whether the course was effective, not only in terms of results, but in terms of completion rates and popularity.

Conclusion

Although technology has been used to deliver learning since the early 1960's, the proliferation of the personal computer in the 1970's, the common use of organizational networks or Intranets in the 1980's, and the accessibility of the general public to the Internet in the 1990's have all contributed toward the move away from traditional learning.

The use of technology to deliver non-traditional learning has transformed the way we communicate and learn. Continued change and refinement of non-traditional forms of learning will be necessary to eliminate or reduce negative issues and ensure the success of non-traditional learning methods. Perreault, et al (2002) suggested problem-solving steps for organizations to help reduce those issues that hinder the full use and acceptance of the new learning methodologies. Of the eight-steps suggested, only four are listed below and they have been rearranged and modified by the authors to more accurately reflect organizational priorities:

1. Ensure trainers/instructors/teachers are fully capable of using the learning technology so it can be utilized to its fullest potential.

2. Train the trainer/teacher on how to deliver learning over an emotionless medium.

3. Make certain learners have the necessary skills to use the technology. Provide training/instruction when needed to overcome gaps in technical skills via self-paced tutorials or via face-to-face instruction.

4. Provide technical support to both trainers/instructors and students to ensure seamless delivery of learning and prevent technical glitches.

The information age has ushered in a revolution that will forever change the way people learn and communicate. It has spawned new business models and created Intranets for communication and training.

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