Knowledge Area Module 2:

Principles of Human Development

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Abstract

Breadth

As education administrators grapple with the rising tide of distance learning, the focus should not be on replicating the face-to-face experience online, but rather meeting the learning needs of students. This breadth essay analyzed the work of Peters, Moore, Knowles, and Hattie. Their ideas on the needs of adult, online learners recognized the basic foundation construct of dialogue in learning. Though the media is changing, the basic construct of dialogue supports the required element of learning. Based on the work of Senge, Bohm, and Freire, feedback constitutes an element of dialogue. Hence the connection between dialogue and feedback, both found to provide learners the greatest opportunity to deepen learning and improve achievement.

Abstract

Depth

The emphasis of the literature review on learning-promoting-feedback provides a deconstruction of instructional interactions in an effort to improve its use as an educational tool. Current literature reiterates the notion that dialogue encourages deep learning. An open, collaborative space of diverse opinions and mutual inquiry fosters self-regulated learning. Such an environment supports dialogic communication through feedback, thereby encouraging deep learning. With a strong emphasis on the foundational principles of learning and instruction, educational technologies are identified as the appropriate media of feedback to support learning.

Abstract

Application

A faculty presentation based on the culmination of foundational theory and current literature applied the best practices of feedback in an effort to encourage student achievement. Whether learning face to face or not, the ideal environment for learners involves the initial interaction with learning material guided by an expert faculty member who then provides appropriately timed, low complex, task-specific feedback that emboldens self-regulation and self-reliant behavior with appropriate positive and negative comments in a non-threatening manner, giving private praise where due through two-way communication, and using technology to enhance the entire process. As more adult learners rely on distance learning options to continue their education, the importance of ensuring appropriate teaching and learning for these online learners has never been more important. Attention to the best practices identified in the faculty presentation is the first of many steps that will support learner achievement in the classroom.

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Breadth

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The Rise of Online Learning

Thanks to technology, adult learners now have access to education independent of the time and place of the traditional classroom. In 2007-2008, "30 percent of students 30 years old and over took distance education courses" and "about…20 percent of all undergraduates, took at least one distance education course" and "about…22 percent, of all postbaccalaureate students took distance education courses" (Aud et al, 2011, p. 120). Distance education course enrollment has increased 4 percent for undergraduate students from 2003-2004 to 2007-2008, and continues to do so (Aud et al, 2011). The expansion of online learning necessitates a thorough review to ensure that the environment meets the needs of its adult learners.

Based on the work of Knowles (1998), adult learners will not succeed in an environment where they take notes while listening to a lecturer. Senge (2006) agreed,

> While a classroom is often the first image that comes to people when they hear the word "learning," the typical classroom does not evoke much of the spirit of practice of learning. Classroom learners are usually passive. The classroom concerns mostly listening and thinking, not doing. For many people, classroom imagery evokes strong feelings of the need to avoid errors and the importance of getting "right answers." Real learning processes, in contrast, are defined by trying something new and making many mistakes. (p. 300)

Freire (Shor & Freire, 1987) found similar lackluster instructional style. He asserted that in a usual college setting, a professor lectures only occasionally leaving the floor open to discussion. This questioning and answering period commonly serves to clarify lecture points, not engage

students in a thorough critical analysis about the topic. More often, any discussion is delegated to a graduate teaching assistant in a session separate from class. Freire (Freire & Freire, 1994) described this traditional methodology as educators depositing knowledge into the empty minds of the students, as if depositing coins into a bank. Senge (2006) cautioned that this typical classroom scenario lacks engagement in real learning. Freire (2005) saw knowledge as gained through experience and interactions encountered on a daily basis.

> Knowledge is not extended from those who consider that they know to those who consider that they do not know. Knowledge is built up in the relations between human beings and the world, relations of transformations, and perfects itself in the critical problematization of these relations. (p. 99)

It seems a difficult task for a foundational institution, such as higher education, to change what Freire (Shor & Freire, 1987) viewed as authoritarian-style classrooms with more egalitarian, progressive models. Those models need outside the box thinking, as Einstein believed imagination trumped knowledge as people seek to "turn the impossible into the possible" (Freire & Freire, 2007, p. xxiii). On a path to reinvent the classroom, Freire (Freire & Freire, 2007) strongly held to one fundamental principle: "Changing is difficult, but possible and urgent" (p. xxiii). According to Freire (Freire & Freire, 2007), the state of the adult classroom needed immense change to meet the needs of its learners. Freire (Freire & Freire, 2007) believed that education demanded and deserved hope and the creativity of imagination. Even though a task may seem overwhelming, if it is worthwhile, it must be done.

Dialogue use has successfully resolved conflict (Bohm & Edwards, 1991), stimulated personal growth and enlightenment (Senge, Scharmer, Jaworski, and Flowers, 2004), educated the illiterate (Shor & Freire, 1987), and improved communication (Bohm & Nichol, 2004).

Freire (Shor & Freire, 1987) used dialogue to break down power differences and traditional educational authoritarianism to liberate and to educate adults in literacy. As a senior lecturer at the Massachusetts Institute of Technology and founding chair of the Society for Organizational Learning (SoL), Senge continues to encourage the use of dialogue for organizations as a way for them to grow and succeed in our ever-changing, global market. These theorists challenged conventional ideas of learning, knowledge, and thought. Freire (2005) disputed the traditional transfer of knowledge; whereby, the learner absorbs the words and thoughts of others as an empty vessel. Freire argued that knowledge required the teacher and student to be curious, searching, and conscious together. Educational theorists Knowles (1998), Kolb (Kolb & Lewis, 1986), and Rogers (1969) supported Freire's experiential perspective.

Peters (2010) theorized that as the most industrialized form of education, distance education encompassed "all functions necessary for realizing teaching and learning: planning, developing, distributing, supporting and evaluating" (p. 31). Extending distance education via online learning to the masses took learning into newly charted territory, where Moore (1997) identified the gap in physical space between the teacher and learner as transactional distance, a distinctive space burdened with the potential for miscommunication. Moore (1997) found that dialogue, an element of feedback, minimized the effects of transactional distance. Interestingly, Knowles (1990) identified a critical element of Andragogy, an adult learning model, as "the ability to perceive one's self objectively and accept feedback about one's performance non-defensively" (p. 174). Hattie (1992) recognized feedback as the greatest indicator of student achievement and foresaw the use of technology to enhance feedback.

> I would predict, and welcome…the realization of the power of feedback about student's understanding as the key to education and the consequential use of procedures that

> maximize feedback such as students teaching each other, the creative use of technology to aid feedback, and virtual reality. (Hattie, 1992, p. 4)

Online technologies have evolved to meet Hattie's 1992 prediction for technology-aided feedback, but it remains to be seen if those technologies align with the needs of adult learners. Thus begins an insightful and critical analysis of the role of feedback for the adult online learner in the interplay of distance education, transactional distance, developmental need of the adult learner, and feedback.

Using the work of Peters, Moore, Knowles, and Hattie, this paper will investigate adult learning in online environments. Specifically, this Breadth component will build a foundational understanding of the feedback needs of adult learners in an online learning environment.

Distance Education Defined

Adult learners who cannot attend traditional classes due to location, family and work commitments, physical handicap, and other reasons have educational opportunities available through distance education. Peters (2010) theorized that distance education was the most industrialized form of education, thus differentiating it from traditional face-to-face education. Peters (2010) identified the rapid evolvement of personal computing, multimedia, digital, and internet technologies as the platform for "unexpected logistic and pedagogical advantages" in online learning, including 24x7 accessibility and transmission of information "for autonomous learning, more interactivity, more learner-orientation, more individualization, better quality of programs, and greater learning effectiveness" (p. 9). Thus, learning technologies not only support comparable face-to-face learning opportunities in various online learning environments, but they may also have the potential to surpass traditional learning models, particularly for the self-motivated, autonomous-preferred adult learner (Knowles, Holton, & Swanson, 2006; Moore,

1973). Online education offers more than a transmission of information in a new medium, though with its comparative advantages, even Peters (2010) noted a need for a thorough examination of methodology, design, and content of distance education (p. 10).

Industrialized Education

Early in Peters' (2010) career with distance education, he conducted a comparative analysis of the "prerequisites and procedures for teaching and learning at a distance" (p. 14) where he acknowledged the industrialization connection that led him to believe that "distance education is the most industrialized form of education" (p. 20). Along with his colleagues, Peters (2010) identified more than twenty elements that distance education has in common with industrialization; including: "rationalization, division of labor, assembly line, preparatory work, specialization, mechanization, automation and digitization, new forms of energy, planning, organization, controlling, formalization, standardization, change of functions, spatiotemporal separation, objectivation, capital intensive techniques, concentration, centralization, mass production, and mass distribution" (p. 14). Of these elements, several also apply to traditional, face-to-face education, including planning, organization, controlling, formalization, standardization, and several others. This overlap could indicate the general industrialization of education, a thought supported by the work of Senge (2000).

Senge (2000) identified potential Industrial Age assumptions about learning that could lead to an environment not conducive to learning:

1. The deficit model assumes that students are lacking in something that only the school can provide. Senge found that this led to students feeling disrespected and needing to be fixed. Senge suggested that schools should assist natural learning.

2. The assumption that learning is limited to cognition, which dismisses the concept that learning involves all of the five senses. If knowledge is measured by the ability to do something, then Senge noted that most of what is learned in school could be considered trivial.
3. The notion that children are either smart or dumb is an underlying necessity of tracking and evaluating students as they are forced to conform.
4. The application of the Industrial Age management system to the education system leads to the fragmentation of management where schools are run by individuals responsible for their particular job separate from the collective.

a. Teacher-centered philosophy ensures children learn, "I make sure that the kid demonstrates to me whether or not the learning I am seeking has occurred" (p. 56). Rather than master skills, students learn to please teachers.
b. Anachronistic approach in an era where lifelong learning is paramount.
c. Fragments knowledge, "The fact that life isn't quite like that, that life presents itself to us whole, that challenging problems are challenging because they have many interdependent facets, remains invisible to the fragmented academic theory of knowledge" (p. 57).

5. Naïve realism, teachers teach "as if they are communicating facts" (p. 57). This highlights the importance of understanding the difference between facts and perceptions. This reinforces the deficit theory, where teachers are experts and the student is therefore inferior.
6. Assumption that the school is a machine producing graduates. That somehow the school is an assembly line where the product is finished at age 18. "Everyone is

> supposed to move from stage to stage together" (p. 57). This assumption pushes children through without awareness of any individuality, reinforcing the dumb-smart assumption, and those left behind are labeled learning disabled.

Thus for Senge (2000), the industrialization of education was not a positive characteristic and he called for organizational change to move the education model to a living system model.

Seven Dimensions of Distance Education's Industrialization

Though they share similar objectives, Peters' (2010) interpretation of industrialization differed from Senge. Peters (2010) identified seven dimensions that illustrate the relation of 21 industrialization elements to distance education; the historical, cultural, anthropological, sociological, philosophical, pedagogical, and economical.

> The historical dimension arouses our attention. Having analyzed distance education from the point of view of the history of teaching and learning, we cannot but consider distance education as a structural forerunner of the comprehensive use of technical media for learning in the 20th and 21st centuries. The cultural dimension refers to the fact that industrialization created new basic attitudes towards work and a climate of public opinion that induced and encouraged individuals to begin learning at a distance. The anthropological dimension makes us aware of the phenomenon that industrialization changed the nature of man, separating him from agrarian man. The new types of the industrial man and the information man have emerged. Only this rigid change of mentalities and social circumstances enabled individuals to be ready for venturing into entirely new forms of teaching and learning. The sociological dimension clarifies that there were fundamental changes of attitudes and behaviors caused by the transformation from agrarian to industrialized societies. The philosophical dimension deals with the

> meaning of the radical change of knowledge that is taught and acquired in distance education in virtual spaces and in post-modernity. The pedagogical dimension makes us aware of the emergence of a radical new model of learning and teaching, which differs from traditional education in significant structural and procedural ways and often becomes manifest in mega- and hyper-universities. It is modern in the sense that it is fully mediated from the very beginning; it is progressive, because it uses the technical media available in each period to a large extent, and it is fully industrialized. The economical dimension deals with the benefit of scale and the unique possibilities of mass education. (pp. 20-21)

For Peters, the industrialization of education set the framework for educational technology in distance learning.

Historical dimension of distance education.

The historical dimension provides a means for understanding the industrialization model for education. It highlights resistance, adoption, and provides perspective. Peters' (2010) historical account of the transition from the reliance on oral to written communication for the transfer of knowledge highlights the "antiquity" of the argument by many who discount distance education for its inherent lack of oral communication (p. 21). As Peters (2010) noted, the industrialization of the teaching and learning media, otherwise known as writing, "objectified" teaching and revolutionized the consumption and transfer of knowledge (p. 21). This objectification led to the mass communication of knowledge, starting with books and now with online technologies, found in ebooks and open education resources, such as wikieducator.org. Online resources of information have been infiltrated with disinformation, where many consumers have difficulty distinguishing fact from fiction. Numerous webpages exist solely to

help users navigate the information on the world wide web, such as the Critical Evaluation of Resources page on the University of California at Berkeley's library site that warns, "the unfiltered, free-form nature of the Web provides unique challenges in determining a website's appropriateness as an information source" (The Regents of the University of California, 2009, para. 13). Though the expansion of objectified knowledge has increased access to the masses, it has also led to a need for savvy consumption of information.

Another significant notion of the historical dimension recognizes a power shift. The elite keepers of knowledge no longer orally transmitted to a select few, but rather text replaced the need for the oral report and made it available to the masses. Though public dissemination of the text did not happen instantaneously as it does today, the fear of those keepers was evident in their resistance; Peters (2010) noted that even Plato resisted this industrialization of distance education, where the written word was considered distant from the oral one. Peters (2010) viewed distance education as "the last step in a long process of emancipating learners from teachers and institutions" noting that "education was elitist, sacral, hierarchic, group related, personal, and fixed with regard to situations" (p. 22). Peters (2010) identified six restrictive elements that demonstrate the progressiveness of distance education as it has surpassed traditional face-to-face instruction.

> The structural change over a period of several thousand years can be described by the following extreme parameters: elitist instruction became egalitarian, sacral contents and rituals became profane, the dominance of the teacher was substituted by self-regulation of the students, small intimate learning groups became larger and less intimate groups or even anonymous masses of students in megauniversities, personal interaction between

> teacher and taught became mechanized and automated by using a wealth of technical media, special teachers, places and times were removed. (Peters, 2010, p. 22)

While Peters (2010) acknowledged the incredible opportunity this emancipation offered, he also recognized the "demanding" responsibility that now falls on the autonomous learner (p. 22). The independent activities of distance learners has made a direct impact on "social and cultural spaces" (Peters, 2010, p. 22). Interestingly, Peters' (2010) model of industrialization of education in distance education seems to align with Senge's (2000) concerns about the industrial model of education. Though it seems that one man's liberator is another man's chains, the end result was liberation of education to the masses. Peters (2010) made a strong case to support that industrialization was the necessary catalyst to bring about that liberation; while Senge (2000) made the case that a new system would better meet the educational needs of the future. Perhaps they are both correct.

Cultural dimension of distance education.

Peters (2010) noticed that only an industrialization society could support distance learning. In pre-industrialized society, people were often directed, without choice, by circumstance into predetermined roles. Peters (2010) noted that industrialization created an atmosphere where people had improved opportunities to choose, to better themselves, to be the master of their own destiny. Yet Sinclair (1906) evidenced a dark side of industrialization in The Jungle, where industrialization also created an atmosphere of corruption, greed, authoritarianism, indenturtude, and exploitation. This complex response to industrialization continues to influence numerous area of life, specifically education, where Peters (2010) focused on the positive. Through digitalization of communication, work efficiency, and social networking; acceptability, familiarity, and access to technology supported cultural adoption of the innovation of distance

education (Peters, 2010). The digitalization of industrialized societies suggests a significant anthropologic change with instantaneous access to information and communication in the people living in these environments using and relying on technological instruments.

Anthropology dimension of distance education.

> The very consistent and differentiated application in industrialized education could be understood as 'human self-heightening', which has enabled man to provide instruction and academic teaching to persons who live in isolation, are handicapped, or belong to extremely large groups of students in mega and hyper open universities. This achievement is truly epoch-making. (Peters, 2010, p. 25)

Throughout time, mankind has reached evolutionary milestones with tool usage. Diamond (2005) described the advancement of societies based on their interaction with guns, germs, and steel. While some groups of people had access to tools that led to cultivating land, others encountered disease that retarded their ability to progress, and still others created tools of destruction that allowed them to take what they needed, when they wanted, from those who did not have such instruments. In this context, Peters (2010) observation that distance education has the ability to bring education to people in isolated areas highlights the evolutionary importance of distance education.

The deep gap between the haves and have nots has been a concept of consideration for this discussion, known as the digital divide. The digital divide concept is steeped in controversy, where US government reports are used to cut internet access program funding but "almost half of Americans do not have Internet access at home and only 25 percent of America's poorest households are online compared with approximately 80 percent of homes earning over $75,000" (Dickard & Schneider, 2011, para. 6, and Jansen, 2010). The global digital divide reveals an

even greater inequity. “There is 63 times more access per capita to personal computers, 42 times more internet users per capita and bandwidth is 25000 times better at the top than the bottom on average” (Inderscience Publishers, 2011, para. 7). Given the disadvantage of poverty-ridden neighborhoods, cities, states, nations, and continents, the question becomes whether the benefits of distance education will diffuse into the areas needing it most. Typically, those areas encounter erratic bouts of industrialization brought by the more industrialized societies. Until the digital divide narrows, true expansion of education throughout the world will not meet Peter’s (2010) expectations. Those with resources will prosper above and beyond those without, continuing the preindustrial tradition of power.

Sociological dimension of distance education.

Relying heavily on the work of Habermas, Peters (2010) assessed the sociological dimension for evidence that distance education was the most industrialized education.

> In fact, because of its mediation through media distance education is affectively neutral, it must try to deal with issues that are not important to individuals or small groups at a given moment, but to great, and indeed enormous, numbers of students and that can be repeated over several years. The social position is not ascribed individually, but acquired by achievement only, and printed or otherwise fixed learning material cannot be improvised and tentative, but must be specified to the last detail in order to support the learner. Again, it may be said that face-to-face teaching is pre-industrial and distance education industrial. (Peters, 2010, p. 26)

With its “mechanical solidarity”, “bureaucracy”, “universalism”, “achievement”, “specificity”, and “functional system integration”, distance education clearly aligns with modern society and distance education (Peters, 2010, p. 26). Peters ambition for distance education seems to

minimize and belittle traditional methods of education. Given Peters (2010) summation and application of Habermas to emphasize his premise that distance education is the most industrialized education, it seems as though Peters sought and found evidence to support his premise rather than thoroughly investigate the sociological dimension of industrialization.

Educational dimension of distance education.

With a hint of circularity, Peters (2010) asserted that industrialization created an atmosphere that required distance education to support it and also "enabled educationists to create new advanced forms of education in order to meet new and significant learning needs caused by industrialization" (p. 27). These are the consequence of and the response to industrialization of education. Some of these included facilitation autonomous learning, reaching adult students, achieving new educational goals, increasing access, consolidation continuing education, establishing new types of universities, alleviating poverty, and learning online. In this new atmosphere, autonomous learning placed the responsibility of learning on the learner, which involved motivation, organization, and self-learning. Educators, governments, and business saw this industrialization of education as an opportunity to reach adults, needing access to education but unable to meet the physical demands of a traditional, face-to-face classroom. Peters (2010) noticed that in an effort to maintain and progress in their current employment, adult learners need access to education in "their working place or at home" (p. 27). Advancement in technology not only means that today's employees need to continue their education to maintain their productivity and industry-related skills, but also provides them the access they need to keep up. Distance education provides an opportunity to reach adult students and achieve new educational goals, such as governmental programs aimed to reengage or retrain a stagnant or outdated workforce. Due to the physical constraints of existing campuses, distance learning becomes a

means to an end, where online learning does not burden the infrastructure. Universities and governments have led the way to increase access to education through distance education. Industrialized education provides a mechanism to consolidate continuing education with distance education, thereby increasing the accessibility and the importance of lifelong learning (Peters, 2010).

> The most radical innovation caused by the use of advanced industrialized approaches…is the creation of new types of university: single mode universities, dual mode universities, virtual universities, corporate virtual universities, online universities, partnerships of universities with industrial corporations, online universities established by consortia. (Peters, 2010, p. 28)

The industrialization of education as seen in distance education seems to have no limit to its creativity in meeting the needs of learners. The rapid adoption of distance education has increased scrutiny through increased accreditation measures tied tightly to learning effectiveness, which has affected both traditional and distance education institutions. While improved education access to adult learners seems philanthropic, without close supervision of practices and revealed intent, all venues of education could be easy prey for misappropriation of resources. This concern came to fruition in 2011 when the Obama administration rolled out the Gainful Employment Rule,

> requiring career college programs to better prepare students for "gainful employment" or risk losing access to Federal student aid. While many career college programs are helping to prepare America's workforce for the jobs of the future, far too many students at these schools are taking on unsustainable debt in exchange for degrees and certificates that fail to help them get the jobs they need or were promised. These regulations are designed to

> ramp up over the next four years, giving colleges time to reform while protecting students and their families from exploitative programs. (Hamilton, 2011, para. 1)

With unscrupulous business practices of some learning institutions aside, Peters (2010) noted the potential of industrialized, distance education in alleviating poverty. Article 26 of the Universal Declaration of Human Rights requires that everyone "has the right to education.… Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit" (The Universal Declaration of Human Rights, 2011). As noted earlier, distance education provides a means to bridge that gap once the digital divide closes. With increased access to those across the socioeconomic border, distance education has escalated its ability to meet educational needs, especially through online learning. Peters (2010) recognized the strengthening of learning as distance education technologies coincide with Web 2.0 technologies commonly used by diverse individuals to manage their social and work lives.

Economic dimension of distance education.

Peters (2010) identified the business model and globalization as key elements to the industrialization of education. Distance education achieves the essential elements well with its scalability, both in production and distribution, and profitability (Peters, 2010). Peters (2010) warned of the negative consequence of the mass production of distance education as it degrades knowledge to a commodity and affects the structural pedagogy, turning learners into clients with the potential perspective that they are paying for a service. This notion that students may feel entitled to a degree they paid for rather than earned, could have catastrophic consequences to distance education. Knowles (2006) model of learning does not seem to support Peter's concern. Knowles model relied on the assumption that adult learners are internally motivated, self-

directed, and ready to learn when they enter the classroom, not entitled and expecting the degree without working for it.

Peters (2010) also found that the commercialization of distance education has led to for-profit entities taking advantage of industrialized education by selling diplomas, and students viewed as customers have developed a "sense of entitlement" expecting marketable degrees with little to no effort in intellectual or personal development (p. 30). According to Peters (2010), diploma mills increased their predatory practices after the end of World War II. Accrediting bodies provide the appropriate backing of reputation to sort the unsavory from the legitimate, though in the U.S. several of these proprietary entities earned accreditation. The real threat of diploma mills is identified by the Council for Higher Education Accreditation (CHEA) (2011) "In the presence of degree mills and accreditation mills, students may spend a good deal of money and receive neither an education nor a useable credential" (para. 2). Under the watchful eye and criticism of the U.S. Department of Education, accrediting bodies are reviewing schools that have received student complaints. A 2010 investigation by the U.S. Government Accountability Office investigation, "Undercover tests at 15 for-profit colleges found that 4 colleges encouraged fraudulent practices and that all 15 made deceptive or otherwise questionable statements to GAO's undercover applicants" (para. 2). The economic success of online education over the past two decades may have bolstered confidence in distance education, but learners should verify the accreditation status of any school, brick and mortar or distant, before accepting enrollment.

Application dimension of distance education.

As evidence that distance education is the most industrialized form of education, Peters (2010) highlighted the necessity of differentiating distance education from traditional face-to-

face education. Peters (2010) noted, “the theory opens a macro-pedagogical perspective that covers the totality of the participants’ activities,” thus differentiating distance education from the limited face-to-face communication that involves the teacher and student (p. 31). Peters (2010) envisioned distance education as a form of mass media, available to thousands of students beyond the classroom. As noted in the introduction, Peters’ (2010) theory claims that distance education encompasses “all functions necessary for realizing teaching and learning: planning, developing, distributing, supporting and evaluating” (p. 31). Peters (2010) recognized the role of industrialized education in changing “teaching and learning behavior” as a consequence of distance, including “division of labor, specialization, team work, mediation through multifaceted media” (p. 31).

Peters (2010) noted that the theory ensures alignment between an accepted educational system and behavior that “prevents dysfunctional pedagogical activities” (p. 31). Though the idea of constructed educational modules for mass consumption may seem an ideal precept, there is a real potential of mass communicating misguided or outright wrong information when relying on one-way communication. A benefit of two-way communication is the ability to interact, collaborate, and improve communication. If a message is delivered incorrectly, rather than a dissemination of a critical piece of information, a lie has been mass delivered. Though a lie could exist in a two-way communication environment, there is a greater potential that someone question the lie in a transparent and open setting, whereas a student encountering the lie on their own in a quiet environment without other voices, could accept the lie as truth and move on. This highlights the need for two-way communication in all educational settings, including a space for collaboration.

Peters (2010) identified the improvement of cooperation and collaboration in the online environment as "possible and greatly facilitated" (p. 75).

> With the help of the [virtual] communication…a series of important forms of joint planning, developing and evaluating is possible from any location simultaneously and consecutively, from working in partnerships through project work to collaboration of self-organized teaching and research groups. (p. 122)

The technology not only provides more opportunities for collaboration and academic discourse, Peters (2010) noted that collaboration plays a greater role in the virtual learning environment. This development supports the need for collaboration as identified by Isaacs (1993). With the increasing complexity of global and institutional problems, individualized leadership is no longer adequate in providing solutions, as "the interdependencies too intricate, and the consequences of isolation and fragmentation too devastating" (Isaacs, 1993, p. 24). The need for collaboration grows as the complexities of the world's issues grow.

Peters (2010) theory acknowledged a clear distinction between online and face-to-face educational systems, thereby deterring those who would "replicate and transplant successful pedagogical functions of face-to-face education into systems of distance education" (Peters, 2010, p. 31). Recognizing the uniqueness of distance education provides administrators with a model incorporating the educational technology and the instructional design necessary for success (Peters, 2010). Peters' (2010) theory acknowledged that distance education serves a humanitarian purpose by providing education access to learners unable to attend a traditional classroom, while also providing access to learners who prefer the distance model due to its convenience. Industrialized education encourages "self-regulated autonomous" learning (Peters, 2010, p. 33), a core principle necessary for adult learners (Knowles, 1990).

> Students have to develop their abilities of self-instruction and of becoming autonomous learners. They have to develop activities unknown before, for example: quick data retrieval, data management, choosing among vast numbers of central sources, choosing from multiple forms of representation, browsing, navigating or following a guided tour in hypertexts or collaborating with other students in a knowledge building community, learning by using models and simulations, meeting other students on-line, in order to engage in 'virtual classes' and 'virtual seminars' or to 'chat' with them in a virtual cafe. (Peters, 2010, pp. 99-100)

Mastering these new activities develops key skills that translate to necessary abilities needed in the information age. "The theory suggests that industrialized and digitally enhanced education transmit competencies to the very persons who are needed in this complex, multi-faceted and highly industrialized information and knowledge society," thus tying the learning environment to the skillset of the information age (Peters, 2010, p. 33). The technology necessary demands that distance education remain on the cutting edge of technological advancement. The scalability component allows distance education to educate more for less and extends a model of mass globalization. "Taken everything together, it might be predicted that industrialized education may help to pave the way to an information-driven educational system that might be more adequate to our rapidly changing information and knowledge society" (Peters, 2010, p. 32).

Peters (2010) identified some changes virtual learning spaces have had on traditional pedagogical principles:

- Multimedia and multimodal nature - receiving information via multiple senses
- Activation - student has greater access to learning via hypertexts and discovery
- Interactivity - improved quantity and quality

- Adaptability - easily updated to meet student needs
- Connectivity - links available to resources bridge space and time
- Individualization - greater opportunity for student-centered
- Communication and collaboration - easier to establish and realize
- Autonomous student - opportunity for realization (p. 136)

While these traits support learning, Peters (2010) acknowledged the "loss of pedagogical substance" (p. 137). The loss of a physical learning space lead Peters (2010) to conclude that there are no feelings associated with virtual spaces, therefore there is a loss of familiarity or comfort associated with a traditional classroom. Peters (2010) relied on references from the thirties, seventies, and eighties as support for this position. The physicality of a learning space may not be as relevant for digital natives as it was for their predecessors. Scottish Funding Councils for Further and Higher Education, AMA Alexi Marmot Associates, and HAA Design (2006) found that in completion of a new campus to enhance innovative teaching and learning there was a significant move toward independent learning, noted in improved access. "This psychological shift away from learning only in classrooms to an environment where learning is possible anywhere, at any time, is enhanced by the design of the campus" (Scottish Funding Councils for Further and Higher Education, AMA Alexi Marmot Associates, & HAA Design, 2006, p. 40). In a review of more than 5,000 postings in online discussion boards, Sixl-Daniell and Williams (2005) found that students used emoticons to display non-verbal cues. The lack of student disputes through the 11-month study led the researchers to conclude that students were able to successfully communication in an online environment, enhanced with emoticons as an option of non-verbal communication. Peter (2010) noted that the information era would change the paradigm, "changes in values and completely new experiences will bring about new insights,

attitudes and habits. Essential activities will in any case take place increasingly in virtual space, including learning in higher and continuing education" (p. 138). What Peters (2010) perceived as a pedagogical loss may not negatively influence learning as he noted in his comparison of the virtual to the traditional, physical learning space. Peters (2010) acknowledged the "gains of pedagogical substance" as digital natives grow up interacting with learning, playing, and working in virtual spaces. This alternate world provides a space for exploration in ways the traditional classroom limits. Most importantly, the learner prepares for "life in the global technical civilization of the knowledge society," which Peters (2010) recognized as "a genuine and extremely valuable pedagogical gain to be placed against the loss of pedagogical substance" (p. 138).

Though claiming distance education industrialized with digital learning environments providing new opportunities for heteronomous and autonomous learning, Peters (2010) offered a severe critique in a comparison to traditional, face-to-face teaching and learning. Among these issues, Peters (2010) identified the following points:

- Structural incompatibility of industrialized teaching and learning with a locally organized educational system.
- Alienation…when students are confronted with technical artifacts instead of live human beings. Personal relations become indirect and depersonalized, and lose much of their reality.
- Dominant political groups might easily seize power by increasing their influence not only in the administration, industry, military, and the transport and communications systems, but also through a centralized industrialized system of education. (p. 34)

Federal mandates seem to already be moving assessment to a more centralized model, so the issue of structural incompatibility has been challenged by other issues outside distance learning. The issue of alienation recurs throughout Peters (2010) writings and is addressed below. Peters (2010) concern about a centralized system succumbing to a power grab seems consistent with the history of his homeland, Germany. The open online movement may offer a balance to the centralized, controlling arm he fears. The main recurring point of alienation provides the heart of the issue at point in the most notable limitation of online learning expounded by Peters (2010), dialogue.

> Dialogic teaching and learning in face-to-face group situations are occurrences with a unique, and therefore incomparable, nature. Its particular effects cannot be produced electronically. (p. 177)

Peters (2010) also shared his own experience in virtual seminars where he noted, "Respective impressions of students, empirical surveys and fundamental considerations provide evidence of considerable shortcomings of virtual dialogs" (p. 170). Interestingly, dialogue has been noted as the resolution to the potential disconnect created by the lack of shared physical space and time for the adult learner. As seen throughout this essay, deep learning relies heavily on feedback, regardless of the physicality of communication. Peters (2010) contention that dialogue requires a face-to-face presence is absent in the work of Moore, who found dialogue an integral component of distance learning.

Though Peters (2010) theorized that distance education is the most industrialized education, as noted throughout there are pitfalls, discrepancies, and circular reasoning that hinder his theory. Additionally, Senge's (2001) criticism of the industrial elements of education and

their negative effect on learning question the value of industrialized education. Most notably, Peters (2010) provided numerous accounts of how industrialization supported shifts that led to the emancipation of information. As Peters (2010) noted, technological advances have led to information being accessible for mass consumption, where no longer is learning limited to space and time shared by the teacher and student.

Transactional Distance of Distance Education

Moore (1997) identified a need for pedagogical change associated with distance education. Rather than a simple "geographic separation", Moore (1997) noted that distance education redefines "the universe of teacher-learner relationships that exist when learners and instructors are separated by space and/or time…namely, the structure of instructional programmes, the interaction between learners and teachers, and the nature and degree of self-directedness of the learner" (p. 22). This separation changed behavior and communication patterns. Based on the work of Dewey (Dewey & Bentley, 1949 as cited in Moore, 1997) on the concept of transaction, Moore (1997) defined transactional distance as the "psychological and communications space" that could lead to potential misunderstandings (p.22). Transactional distance affects all learning formats, not just the distance education realm. The "psychological and communication space" of any given instructor will never quite match that of the learner, yet distance potentially confounds the issue and highlights a need for further investigation in the distance education realm (Moore, 1997, p. 22).

Peters (2010) cited Daniel (1998) noting the success of Open University United Kingdom (OUUK), where "the students expressed their satisfaction with regard to the teaching, assessment and feedback, academic support, organization and management, learning resources, and personal development (The OU, 2006/2007, p. 10)" (p. 81). Importantly, satisfaction

included feedback among six identified educational factors. Another instance cited by Peters (2010), noted the underutilization of interactive feedback in computer environments.

An overlapping of expository teaching and receptive learning takes place if "programmed instruction" (computer-based learning) is offered in the digital learning environment. Students are led in very small steps from frame to frame, have to answer a test question on each frame and are provided with feedback on the success of their learning. Because these learning programs were offered initially in printed form, and then through the computer, it appeared obvious to many to regard the digital learning environment as the ideal place for their presentations. In fact, there is something to be said for this, because programs can be presented in a demanding and impressive manner (multimedia space), a tutorial-type dialog is possible with the software (communications space) and branching off is easier to manage. However, this form of teaching and learning is in practice often educationally underdeveloped. In the past it was criticized for this very reason (cf. Bates, 1995, p. 201). Often it is only useful for drill and practice. The versatile technological unit of the digital learning environment simply exercises the functions of presenting and page turning (instruction space). (p. 126)

Focused on distance education, in the following graphic Moore (1973) ranked types of distance interactions from least distant, independent study on campus, to the most distant, textbook (p. 674).

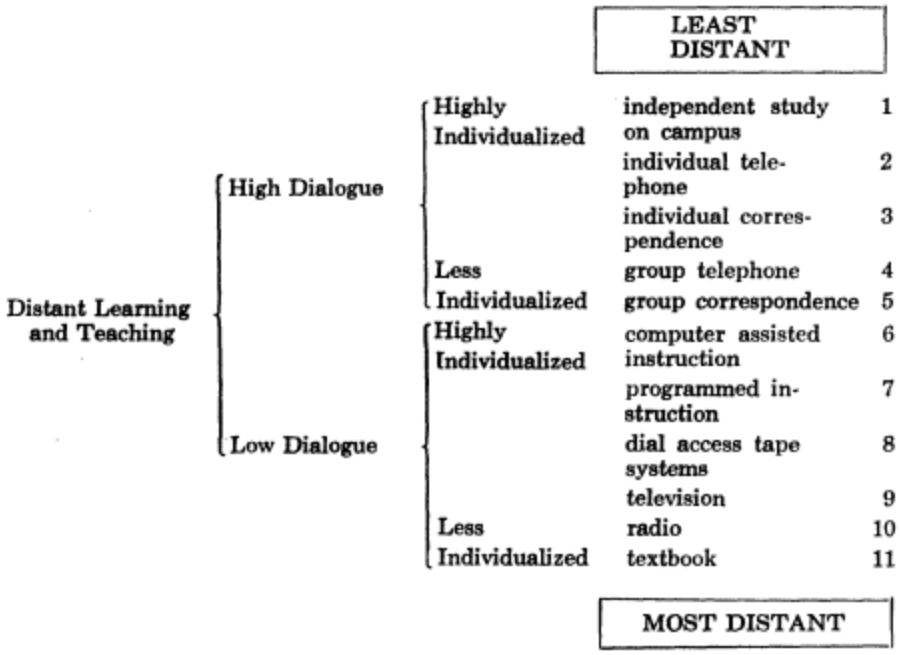


Figure 1. Distant learning interactions ranked least to most distant by Moore (1973, p. 263).

Moore (1973) identified transactional distance as a function of dialogue and individualization, both present and absent in distance and face-to-face education. Depending on the curriculum and instructional style, any given instructional encounter could contain varying levels of transactional distance. Given the consistent potential for transactional distance in all communication, this discussion will focus specifically on the transactional distance that can occur with the spatial separation of distance education. Following are areas that Moore (1997) recognized as opportunities to decrease transactional distance, starting with instructional dialogue,

Instructional Dialogue

Moore (1997) defined dialogue as positive interactions that occur between a teacher's instruction and a student's response. He noted that negative interactions occur, but that he used dialogue to denote only positive interactions "with value placed on the synergistic nature of the relationship of the parties involved" (Moore, 1997, p. 23). An extensive review of dialogue, focused on the theories of Freire, Senge, and Bohm, revealed a more complex level of interaction

not exclusively positive. Dialogue has successfully worked as a means to resolve conflict (Bohm & Edwards, 1991), seek personal growth and enlightenment (Senge et al, 2004), educate the illiterate (Shor & Freire, 1987), and improve the level of communication (Bohm & Nichol, 2004). These foundational theorists identified a need for dialogue in the deep learning process, where the learner and instructor alike suspend assumption in an attempt to create shared meaning. Though Moore's (1997) definition adequately supports his discussion of the role of dialogue in transactional distance, limiting dialogue to only positive interactions dismisses the profound learning that occurs out of investigating conflict with openness only available to those willing to submit vulnerably to awareness in learning. Senge (Senge et al., 2004) explained,

> When we're learning something new, we can feel awkward, incompetent, and even foolish. It's easy to convince ourselves that it's really not so important after all to incorporate the new – and so we give up. This is our own psychological "immune system" at work. (p. 35)

Bohm (Bohm & Nichol, 2004) found that dialogue sessions consisting of 20 to 40 people created a microculture where collective meaning begins, and that thought becomes more powerful than resistant individual thought. Senge's (2006) research supported Bohm's microculture idea in team learning. Senge investigated how teams learn, "as opposed to individuals in teams learning," distinguished from individuals succumbing to conformity resulting from group pressure (p. 221). Senge realized the "potential of collaborative learning – that collectively, we can be more insightful, more intelligent than we can possibly be individually" (p. 242). Dialogue sessions allow a team to come together to "practice" dialogue and develop the skills it demands.

Moore (1997) emphasized that the focus of the dialogue in "educational relationships is towards the improved understanding of the student" (p. 23), whereas Bohm (Bohm & Nichol,

2004) would disagree. At its core, dialogue brings people together to discuss a common concern or issue, improving the collective understanding. Bohm (Bohm & Nichol, 2004) intended for dialogical conversations to bring participants to a shared, common meaning through a creative perception allowed by the suspension of thought. According to Freire (Shor & Freire, 1987), dialogue allows "the object to be known" to be put out between the educator and student as an object of "mutual inquiry" (p. 99) where

> dialogue is the sealing together of the teacher and the students in the joint act of knowing and re-knowing the object of study. Then, instead of transferring the knowledge statically, as a fixed possession of the teacher, dialogue demands a dynamic approximation of the object. (p. 100)

As the students learn, the teacher relearns, expanding critical comprehension of the object. Freire foresaw the possibility of amazing breakthroughs as teachers ignite excitement as they relearn the object with the students, rather than reciting water-downed lectures replayed term after term without gain. Freire used his interest in subjects as a starting point from which he sought to encourage "curiosity" and "enthusiasm" in his students, so they could "illuminate the object together" (p. 101).

For the purpose of this discussion, I will expand Moore's (1997) definition of dialogue to include all interaction among learners, including those with peers and the instructor, as the learners move toward creating shared meaning (Bohm & Nichol, 2004).With a heightened awareness and suspension of assumptions, dialogue underlies a critical element of learning and numerous course elements affect the opportunity for dialogue, such as the course designer's educational philosophy, teacher and learner personalities, subject-matter, and environmental factors, and the "medium of communication" (Moore, 1997, p. 23).

Communication Media

Typically, dialogue refers to the communication between two or more people, though the internal dialogue of oneself plays an equally important role in learning. One-way communication, such as video, audio, text, and lecture do not support teacher-learner dialogue, though the learner does carry on an important internal dialogue. Whether watching a video, listening to a podcast, or reading content; the learner's internal conversation may include asking questions, making connections to previous learning and experience, and challenging existing ideas and assumptions. This internal dialogue serves as part of the internal learning process, where ideas are internalized or rejected.

Moore (1997) noted the importance of a medium that supports two-way communication, where the learner can benefit from feedback that determines if their interpretation of the information is as intended by the course designer. Without that important back and forth dialogue, the learner may presuppose incorrect ideas from the presented material. Moore (1997) noted the importance of two-way communication for an education program, specifically highlighting the different types of dialogue nurtured based on the speed of the communication medium. While a correspondence course provides slow interaction opportunities, Moore (1997) noted that it may lead to a "more thoughtful and reflective [learning experience] than a similar course taught in either a classroom or a computer-mediated conference" (p. 23). As noted by Moore (1997), regardless of the communication media, dialogue occurs in the following two ways:

- one-way communication
    - instructor presentation of video, text, audio, or lecture
    - learner internal-dialogue response to presented material

- two-way communication
    - instructor presentation of video, text, audio, or lecture
    - instructor-learner dialogue via mail, email, instant message, learning platform, video conference
    - peer support and peer generation of knowledge

Moore (1997) primarily focused on communication and understanding between the intent of the course designer, student and instructor, though with teleconferencing he acknowledged peer-to-peer communication, "Above all, there is great potential for peer support and for peer generation of knowledge" (p. 10). As noted earlier, Bohm, Senge, and Freire also recognized the importance of collaboration in learning.

Dialogue Factors Decrease Transactional Distance

Among the variations of two-way communication, computer-based media support an increased opportunity for dialogue. Moore (1997) found programs using such media "permit a more intensive, more personal, more individual, more dynamic dialogue…than recorded media" thereby decreasing transactional distance (p. 23).

Additional environmental factors affecting dialogue that Moore (1997) identified include:

1. the number of students in the course,
2. the "frequency of opportunity for communication",
3. the physical environment of the learner and the teacher,
4. the emotional environment of the leaner and the teacher,
5. the personality of the learner and the teacher, and
6. the course content (p.23).

Given the importance of dialogue in decreasing transactional distance, each of these environmental factors will be further analyzed, including several not addressed by Moore, such as the burden of assumptions, lack of non-verbal cues in body language, the technical skill set of learners and instructors, and the health of the participants.

Number of students in a classroom.

Moore (1997) found that the number of students under instruction influenced dialogue. Though the relationship may seem to be an obvious linear correlation, with an individual learner's dialogue getting lost in a discussion with innumerable threads, the relationship is actually a bit more complicated. Students not only interact with their teacher, but also with one another. Therefore, classroom enrollment should avoid too many or too few students to ensure a good balance of dialogue. It seems that Moore (1997) was implying the existence of an ideal instructor-student ratio that supports dialogue, though what that would be was not explicitly defined. This would be a good area for future research.

Frequency of dialogue opportunities.

Moore (1997) identified frequency of dialogue opportunities as an environmental factor affecting dialogue. Although Moore did not consider the modern online classroom, various technologies such as threaded discussions, voice threaded discussion, podcasts, recorded web instruction including presentations, whiteboards, appshares, and video, blogs, wikis, and a myriad combination of the above tools used in creative and distinct ways provide learners dialogue opportunities. The instructor's engagement, level of technical skill and comfort, content expertise, and understanding of best online practices for adult students all may affect the frequency of dialogue opportunities. As with each of these elements, alone or combined, they stimulate or reduce dialogue. If opportunities for interaction overload the learning environment

without proper enhancement of learning and intuitive navigation, the adult learner may feel overstimulated and distracted from the content. On the other hand, if a threaded discussion presented a prompt that required little to no thought or demonstration of understanding, rather than stimulate robust discussion the prompt would only create a superficial dialogue where students would simply respond without extending the discourse, effectively ending the dialogue. The technology and format should enhance the opportunity to explore well-constructed curriculum and content, thus there are consideration beyond the frequency of dialogue opportunities.

The physical environment of the student and teacher.

The physical environment of the student and teacher affect the level of dialogue in distance education, just as it does in the face-to-face classroom (Moore, 1997). Distractions, noise, and other physical interference hinder dialogue, while a distinct physical space conducive to thoughtful reflection facilitate dialogue. The online educator and student may encounter these elements as technology issues, such as intermittent internet connectivity, firewalls, and technology inexperience. Depending on implementation in a course, users of the communication tools may flourish or flounder. These elements have a great influence on dialogue, as do the emotional environment evident in the disregard by colleagues and family members.

The emotional environment of the student and teacher.

Distance educators and learners may find their colleagues, peers, and industry leaders dismissing the importance of their online efforts. Educators may feel the ignorant stigma from peers and leaders within their field who feel that distance education is less prestigious than traditional brick and mortar institutions. Adult learners face emotional turmoil in returning to school, whether in an online or face-to-face classroom. Envious peers may lash out by ridiculing

the learners' decision to get an education. Depending on the support that educators and learners have in their daily lives, they will have varying emotional environments that affect the tone of their dialogue (Moore, 1997).

Personality traits.

Particular personality traits may enhance or detract from the level of dialogue, specifically influenced by the media of communication (Moore, 1997). Russell (2002) and Dewar and Whittington (2000) found that traditional Myers Briggs typology applied to online environments. An introvert may flourish in an online environment, "finding the asynchronous online space more conducive to presenting their voice" (Russell, 2002, p. 13).

Though Moore identified personality traits as a potential for increased or decreased dialogue participation, the incompleteness of the research prohibits a conclusive analysis here.

Subject matter.

The final element noted by Moore (1997) to influence dialogue is the subject matter. If the topic is especially uncomfortable because it presents opposing views to longstanding beliefs; is considered troublesome by the student's society, i.e. mathematics or statistics; or is simply disliked; the learner and instructor may unknowingly enter into the course with preconceived notions, an unwillingness to suspend assumptions necessary for open dialogue, and degrade the process.

Social Presence.

Garrison, Anderson, and Archer (2000) defined social presence, "as the ability of participants…to project their personal characteristics…presenting themselves…as 'real people'" (p. 89). To delve into productive dialogue participants should present themselves sincerely, otherwise the communication will be disingenuous and collaborative learning opportunities

would be thwarted. Online learning presents an opportunity for anonymity, but each learner needs to break through that anonymity to reveal their real self if they hope to engage in collaborative learning.

Burden of Assumptions.

Bohm (Bohm & Nichol, 2004) found that people defend their opinions by "thinking the defense" and put aside thoughts that question what they defend (p. 12). This unfortunate course of action leads to self-deception as, "thought defends its basic assumptions against evidence that they may be wrong" (p. 12). When confronted with new information that counteracts previous knowledge, people resist change rather than challenge existing ideas and engage a fresh thinking process. Online learners need to use dialogue to suspend their assumptions and open themselves to learning.

Lack of Non-Verbal Cues in Body Language.

Sixl-Daniell and Williams (2005) and Gajadhar and Green (2003) found that online communicators adapt and interject their own nonverbal cues into their online communication. The Gajadhar and Green (2003) study found that "attempts were made to communicate feelings using written texts and symbols", and" the majority of these expressions had positive rather than negative connotations, indicating the building of a social support community online" (p. 15). Sixl-Daniel and Williams (2005) found the following cues, "the time to respond to an email or to a discussion posting [3,10]; the length of the response (short/long; too short/too long); the frequency of communication; [11]; the style of the response (e.g. the use of capitals to denote shouting, and use of punctuation like "!" and "!!!" or "?" and "???" to convey difference in the degree of feeling [12]" as well as "social-emotion-oriented" otherwise known as emoticons (p.

2). Adaptation of learners to incorporate nonverbal cues into written communication provides an opportunity for improved dialogue.

The Technical Skill Set of Learners and Instructors.

Few elements are as critical as access for the online learning environment's success. Access to the learning environment could be thwarted by the technical skill set of the learning participants. Low technical skills could lead to frustration in accessing and using online communication tools.

The Role of Structure and Learner Autonomy in Transactional Distance

Each of the above elements in isolation and combination create openings and obstacles to dialogue that affect transactional distance. Moore (1997) identified "a relationship between dialogue, structure and learner autonomy, for the greater the structure and the lower the dialogue in a programme the more autonomy the learner has to exercise" (p. 24).

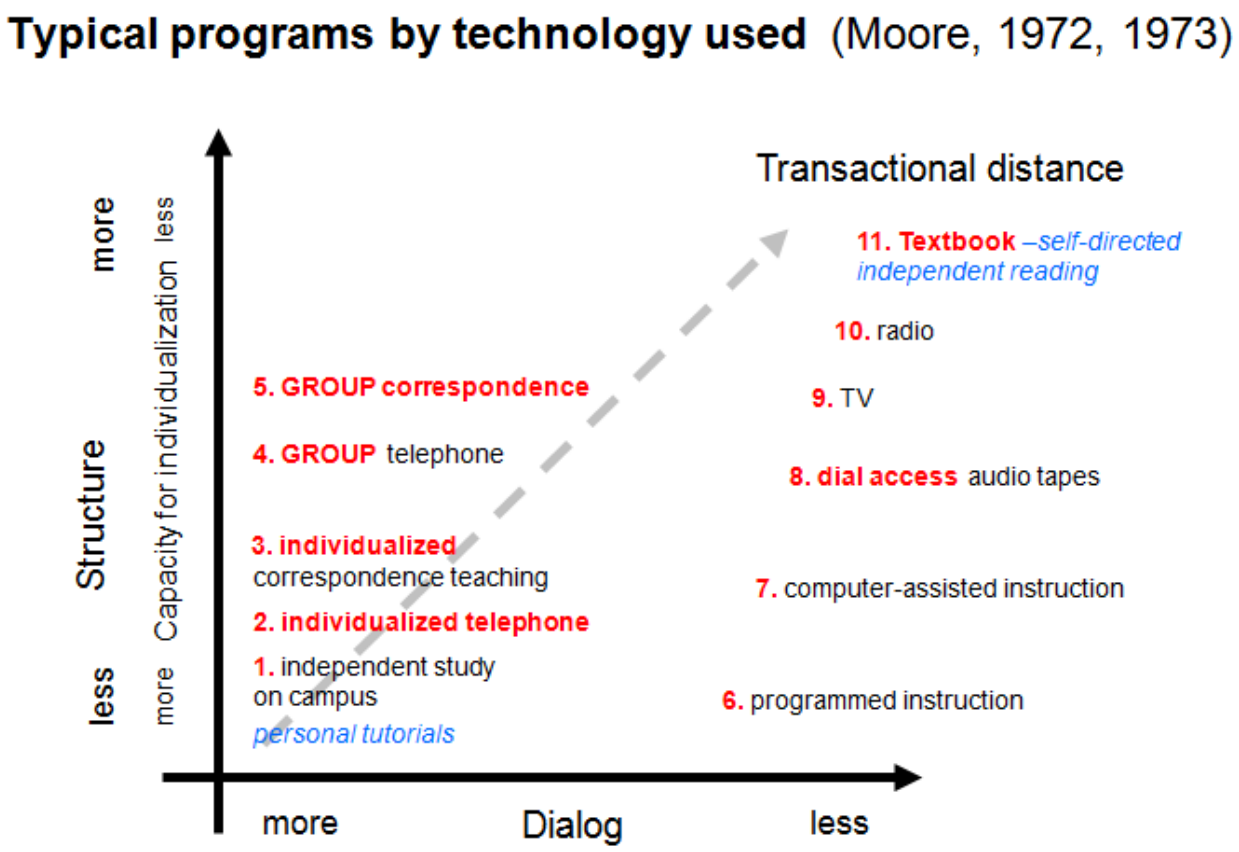


Figure 2. Effect of structure and dialogue on transactional distance overlaid with distant learning techniques. (Moore, 2006, slide 10)

Adding structure to his earlier diagram, Moore (2006) illustrated how various learning interactions rank in transactional distance as a function of structure, individualization and dialogue. Increased structure decreases the opportunity for individualization and dialogue, thereby increasing transactional distance.

Successful distance teaching depends on the institution and the individual instructor providing the appropriate opportunities for dialogue between teacher and learner, as well as on appropriately structured learning materials. Frequently this will mean taking measures to reduce transactional distance by increasing the dialogue through use of teleconference, and developing well-structured printed support materials. In practice this becomes an extremely complex matter, because what is appropriate varies according to

> content, level of instruction, and learner characteristics, especially the optimum autonomy the learner can exercise. Much time and creative effort, as well as understanding of the characteristics of the learner population, have to be devoted to identifying the extent of structure needed in any programme, and in designing appropriately structured presentations and interactions. Much skill is needed to facilitate the degree of dialogue that is sufficient and appropriate for particular learners. (Moore, 1997, p. 24)

While the opportunities of technology provide fertile ground for exploration, the housed content and its facilitation provide the necessary foundation for teaching and learning. Sound instructional principles support learning, regardless of the learning environment. The ability of dialogue to bridge the gap of transactional distance aligns with its ability to deepen learning as it fulfills the important role of feedback to the learner.

Characteristics of the Adult Learner

Knowles (1990) focused on the idea that learning, not teaching, should be at the heart of our educational improvement, hence his characterization of the U.S. educational system as "progressively regressive" because of its focus on achievement (p. 41). Rather than a new learning model, Knowles (1990) credited ancient history's most notable teachers of adults, "Lao Tse and Confucius in China, the Hebrew prophets, Jesus, Socrates, Plato, Aristotle, Euclid, Cicero, Quintilian," (p. 42) for the underlying assumptions of his adult learning model. Knowles (1990) acknowledged these historical educators for their understanding the significance of dialogue, and learning through inquiry and doing. This behavior of relying on the historical observations and work of others creates an underlying disingenuous thread throughout Knowles work.

Knowles (1990) relied on the work of developmental theorists as he formed his understanding of the connection between human development and learning, noting

> that as an individual matures, his need and capacity to be self-directing, to utilize his experience in learning, to identify his own readiness to learn, and to organize his learning around life problems, increases steadily from infancy to pre-adolescence, and then increasingly rapidly during adolescence. (p. 43)

Not only did the developmental theories underlie Knowles (1990) andragogical assumption that adult learners are self-directed, they also highlighted the importance of incorporating human development theory into an exploration of learning. Knowles (1990) took this premise further into developing specific assumptions of adult learners, regarding "self-concept", "the role of experience", "readiness to learn", and "orientation to learning" (pp. 45-47). Additional observation and reflection led Knowles (Knowles, Holton, & Swanson, 2006) to add assumptions to his learning model, including "need to know", and "internal motivation to learn" (p. 141). See the diagram below for a visualization of this model:

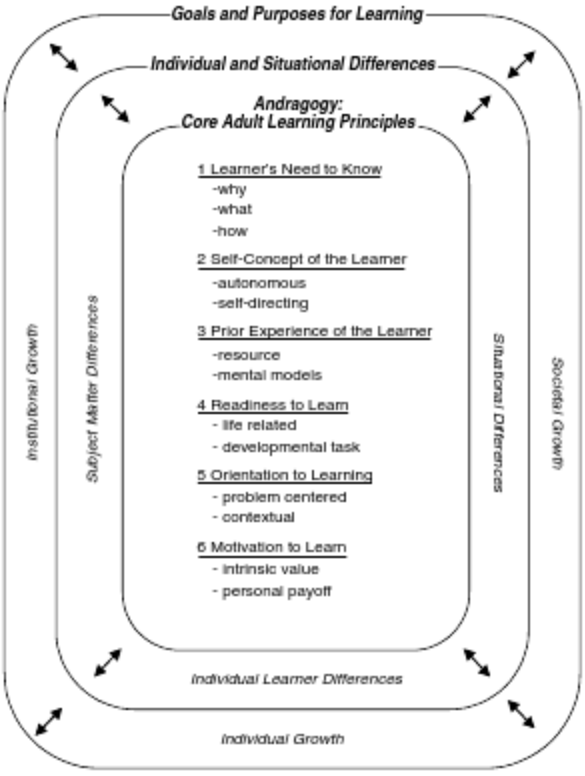


Figure 3. Andragogy in practice (as cited in Knowles, Holton, & Swanson, 2006, p. 9).

The assumptions formed the core principles of Andragogy, an adult learning model. Though the posthumously edited version of Knowles (Knowles, Holton, & Swanson, 2006) quintessential work, The Adult Learner, specifically refers to Knowles work as a "transactional model" and denies it as a theory for adult learning, Knowles (1990) carefully defined the term theory and used it to describe his perspective on learning which he titled "andragogy" (p. 43). He based the extent of his ideas, specifically his assumptions of learning, on the work of respected researchers in the field as detailed throughout the six editions of The Adult Learner. Though the distinction of andragogy from pedagogy underlies the naming convention for the differentiation in learning models, Knowles (1990) "believe[d] that the assumptions of andragogy apply to children and youth as they mature, and that they, too, will come to be taught more and more andragogically" (p. 43). Though Knowles presentation suggests that he proposed andragogy as a learning theory, its lack of field research and subsequent testing of its predictability leave it unworthy of the title.

Rather, Knowles work suggests that andragogy is better applied as a learning model, a general framework for understanding adult learners, their assumptions, challenges, and motivations. For the purpose of this paper, the writings of Knowles offer a transactional model for learning that provides a basic understanding of the characteristics of adult learners.

Self-Concept

Knowles (1990) noticed that adults have a distinct need to be recognized as independent, self-directed learners. No longer reliant on teachers for mandating what, where and how students should study learning material, adult learners expect recognition of their adult status. This change in self-concept comes about due to the process of human development, whereby the individual has moved from the dependency of childhood to an independent, self-reliant status. In the interest of education, there is a need to provide an environment that supports self-direction, yet offers the necessary structure to support learning. Knowles (1990) noted that individuals in situations that conflict with their need for self-directed activity might react with "resentment and resistance" (p. 45). Allied with an adult identity, adult students may rebel when his/her ability to be self-directed is deterred. Administrative obligations of universities dictate policy and procedures, just as they do in most businesses. These constraints may contradict with the adult learner's need for self-direction.

Prior Experience

Experience typically comes with age, and adults' life experiences provide a foundation to expand their base of learning. Knowles (1990) noted that this reservoir of life experience increases the need for "experiential techniques which tap the experience of the learners and involve them in analyzing their experience" (p. 46). Rather than traditional transmittal techniques that involve deposits of knowledge, adult learners succeed better in situations where they have an

opportunity to connect new information with prior experience through "discussion, laboratory, simulation, field experience, team project, and other action-learning techniques" (Knowles, 1990, p. 46). Making these connections provides deep learning.

Knowles (1990) further recognized that individuals define themselves by their experiences. Though a bold statement from Knowles, Bohm (Bohm & Nichol, 2004) noted that experiences create opinions, and once created, people react to defend their opinions. According to Bohm (Bohm & Edwards, 1991), one sees and responds from memory without awareness of what is happening. This automated response mechanism of thought imperceptibly influences perception, which then affects behavior. Understanding the important self-defining role of experience for adult learners shaped the andragogy "respect[s]…people by making use of their experience as a resource for learning" (Knowles, 1990, p. 46). Applying the results of cognitive research, Knowles (1990) found that the culmination of years of experience created a necessity of individualization for the adult learner. Thus the andragogical learning model suggests that adult learners need to have life experiences acknowledged, valued, and integrated into the learning process.

Bransford et al (2000) noted that

> all learning involves transfer from previous experiences. Even initial learning involves transfer that is based on previous experiences and prior knowledge…. Effective teachers attempt to support positive transfer by actively identifying the strengths that students bring to a learning situation and building on them, thereby building bridges between students' knowledge and the learning objectives set out by the teacher. (p. 237)

A potential negative side effect of the connection between learning and previous experience occurs when "the knowledge that people bring to a new situation impedes subsequent learning

because it guides thinking in wrong directions" (Bransford et al, 2000, p. 237). Bransford et al (2000) identified one key function of teachers as "correcting misconceptions" during the learning process.

Providing additional information or feedback to correct misconceptions may encounter resistance in adults, especially in cases when people identify with their opinions and feel attacked when they encounter information that challenges their opinions. Bohm (Bohm & Nichol, 2004) interpreted the defense of opinions as evidence of fearing being wrong, fearing that one cannot trust oneself or one's thoughts. This leaves adult learners vulnerable to embarrassment and feeling stupid. To counter this vulnerability, people identify their opinions as truths, though they may only be assumptions based on their background. Bohm (Bohm & Nichol, 2004), identified dialogue as a tool for dealing with misconceptions or assumptions. According to Bohm (Bohm & Nichol, 2004), the collective participation in dialogue created an opportunity for the participants to do the following:

1. Actively engage in thinking with the group, not defend opinions
2. Build trust with the group and the process
3. Suspend and analyze opinions
4. Listen to everybody's opinions, and help suspend them
5. Understand how it feels to be "sharing common content" (p. 30).

Rather than a defensive stance that creates a distance between the learner and the content being learned, dialogue provides a safe space to suspend misconceptions without fear of losing oneself. A dialogue-like emphasis to feedback throughout the learning process could offer adult learners an opportunity to connect previous experience to learning while staying open to the new ideas and experiences.

Need to Know

In addition to recognizing the adult learner's prior experience, Knowles (1990) noted the importance of addressing the learner's need to know. Based on the findings of Tough (1979), Knowles (Knowles, Holton, & Swanson, 2006) added the need to know to his list of assumptions about adult learners. Based on the andragogical model, 'Why' becomes an important focus for the adult learner. "Tough (1979) found that when adults undertake to learn something on their own, they will invest considerable energy in probing into the benefits they will gain from learning it and the negative consequences of not learning it" (Knowles, Holton, & Swanson, 2006, p. 63). Understanding the energy that adults invest when they need to know something led Knowles (Knowles, Holton, & Swanson, 2006) and others in the field of education to connect adult learning with the need to know. Whether the reason for continuing education comes from external motivators such as maintaining employment or job growth, or internal ones such as personal growth, adult learners need the instructor to connect "the value of the learning in improving the effectiveness of the learners' performance or the quality of their lives" (Knowles, Holton, & Swanson, 2006, p. 63). Knowles (Knowles, Holton, & Swanson, 2006) referenced the work of Freire in using the need to know concept to motivate the oppressed peasants in developing nations to take a stand against their oppressor. In the classroom, Freire (Shor & Freire, 1987) found it best to begin with concrete situations familiar to them. Starting with the concrete addressed the need to know while preparing the learners to learn.

Readiness to Learn

Knowles (1990) emphasized readiness to learn as a key component for learning ability and motivation. Occupied by life's responsibilities, adult learners entering into a learning situation need to see the importance of the information, and more importantly, the connection of

how that information will improve their life situation. Though enrolling in a graduate program may be a necessary step to achieve employment opportunities and recognition within one's industry, an adult learner needs to see relevance throughout the program and courses, down to the coursework. The degree relevance may lose its affect on the learner's readiness to learn if the learner views coursework failing in practical application. Knowles (1990) recommended stimulating learning by introducing adult learners to relevant life experiences that would emphasize this necessary need-to-learn and experience connection. If learners have an opportunity to observe or witness accounts of goals met by graduates of the program, then their readiness to learn, openness to new ideas, engagement, and motivation will be primed for an optimal learning experience.

Orientation to Learning

Another of Knowles (1990) assumptions about adult learners prescribed a problem-based orientation to learning. Just as adult learners need recognition of their self-directed adult status, have their life experience acknowledged and connected to their learning, have a readiness to learn, and a need to know, they also need to see the applicability of their learning on concrete problems. Knowles (Knowles, Holton, & Swanson, 2006) found that adult learners learn new knowledge, understandings, skills, values, and attitudes most effectively when they are presented in the context of application to real-life situations" (p. 67). Rather than learn incremental, subject-based pieces of information that build a knowledge base that formulates in future years, adult learners need to feel the instant gratification of their labors in problem-based scenarios. Feedback reinforces learning when learners can immediately apply their new knowledge to existing situations, problems or work environment. If successful, then they will more likely repeat it or re-use the new knowledge or skill. Direct, positive application of learning in the

workplace could boost the adult learner's confidence, self-esteem and motivation for continued learning.

Internal Motivation

Knowles (Knowles, Holton, & Swanson, 2006) identified the adult learner's unique and complex relationship with factors of motivation as an additional trait needing attention. Though external motivators, such as increased pay and promotions, motivate adults to learn something new, internal motivators, as noted with need to know, hold greater incentive for the adult learner. Internal motivators include "the desire for increased job satisfaction, self-esteem, quality of life, and the like" (Knowles, Holton, & Swanson, 2006, p. 68). Knowles (Knowles, Holton, & Swanson, 2006) referenced the findings of Tough (1979), "all normal adults are motivated to keep growing and developing, but this motivation is frequently blocked" (p. 68). Though Knowles (Knowles, Holton, & Swanson, 2006) did not expand upon Tough's observation, the importance of Tough (1979) suggest that adults inherently contain the motivation to learn. These barriers to motivation may include:

- negative self-concept that underestimates the ability to learn,
- insecure self-concept that resists being challenged with new information,
- inability to physically attend class at a given time due to time and location of class,
- outside responsibilities,
- time constraints and other limited resources (Knowles, Holton, & Swanson, 2006).

As noted by Peters (2010) and Moore (1997), online learning presents an opportunity to remove the barriers of time and location.

Knowles' (Knowles, Holton, & Swanson, 2006) adult learning model requires feedback, some informative response that confirms, denies, and guides the learner through the learning process. Using Knowles (Knowles, Holton, & Swanson, 2006) model of andragogy as a foundation to understand the characteristics of adult learners, the focus of this paper shifts to the theory of feedback.

Feedback

Bransford, et al. (2000) identified "deliberate practice" as a key to learning transfer, noting that this concept emphasized "the importance of helping students monitor their learning so that they seek feedback and actively evaluate their strategies and current levels of understanding" (p. 236). The complexity of how the learner incorporates feedback into the learning cycle reaches beyond a timely correct or incorrect answer. Depending on the learner, the task complexity, the instructor, and the setting, feedback has the ability to motivate, challenge, and illuminate as well as discourage, deter, and confuse. Hattie (Hattie & Timperley, 2007) provided the comprehensive analysis necessary to build a foundational understanding of the critical role of feedback in the learning cycle. Using the results of at least 12 meta-analyses that included "196 studies and 6,972 effect sizes", Hattie (Hattie & Timperley, 2007) found that the effect of feedback was "twice the average effect" of other factors of influence on student educational achievement (p. 83). Given the power of feedback, this paper seeks to provide a clear definition and additional details about the kind, timing, and other factors of effective feedback.

Feedback Defined

Hattie (2003) defined feedback as "actions or information provided by an agent (eg., teacher, peer, book, parent, experience) that provides information regarding aspects of one's

performance or understanding" (p. 2). Hattie (Hattie & Timperley, 2007) expanded his definition,

> A teacher or parent can provide corrective information, a peer can provide an alternative strategy, a book can provide information to clarify ideas, a parent can provide encouragement, and a learner can look up the answer to evaluate the correctness of a response. Feedback thus is a 'consequence' of performance. (p. 81)

Hattie (Hattie & Timperley, 2007) emphasized that feedback is secondary to the student's initial learning interaction. This emphasis clarifies the need for instruction, for some interaction with information prior to performance feedback. Once the student's understanding has been assessed, Hattie (2003) identified three questions that the feedback should intend to help the learner answer, "Where am I going?, How am I going? and Where to next?" (p. 2). The feedback informs the learner about the discrepancy, if any, "between what is understood (How am I going?) and what is aimed to be understood (Where am I going?)" while providing the student additional information that "can lead to restructuring understandings (Where to next?)" (Hattie, 2003, pp. 2-3). "To make the feedback effective, teachers need to make appropriate judgments about when, how, and at what level to provide appropriate feedback and to which of the three questions is should be addressed" (Hattie & Timperley, 2007, p. 100). Though this seems heavily reliant on the teacher, Hattie (Hattie & Timperley, 2007) also noted that feedback can be given by numerous agents in addition to being "sought by students, peers, and so on, and detected by a learner without it being intentionally sought" (p. 82).

Hattie (Hattie & Timperley, 2007) identified four levels of feedback, including task specific (FT), task process (FP), self-regulation (FR), and personal or self-related (FS). As noted above, feedback should relate to faulty interpretations, therefore "FT is more powerful when it is

about faulty interpretations, not a lack of information" (Hattie & Timperley, 2007, p. 91). FT may simply denote correct or incorrectness, but can also "include directions to acquire more, different, or correct information" (Hattie & Timperley, 2007, p. 90). FP, feedback on the process used to create, complete, or learn, typically involves instructional strategies (Hattie & Timperley, 2007). FR involves "interplay between commitment, control, and confidence…. It addresses the way students monitor, direct, and regulate actions toward the learning goal…[implying] autonomy, self-control, self-direction, and self-discipline" (Hattie & Timperley, 2007, p. 93). The final level of feedback identified by Hattie (Hattie & Timperley, 2007), FS is feedback directed to the student's personal sense of self. Overall, Hattie (Hattie & Timperley, 2007) found that

> FS is the least effective, FR and FP are powerful in terms of deep processing and mastery of tasks, and FT is powerful when the task information subsequently is useful for improving strategy processing or enhancing self-regulation (which it too rarely does). (pp. 90-91)

Feedback levels and their influence on effective feedback provide a foundational understanding of feedback. FR may be one of the more complex and important levels of feedback, as the self-regulation process influences whether a student applies energy or gives up on the learning process.

Understanding the appropriate feedback level for an effective feedback interaction in a learning environment will set the framework for an effective feedback model. These key levels of feedback will be further investigated in the next section of this paper, where effective elements of feedback are identified.

Effective Elements of Feedback

Throughout Hattie's numerous publications and speeches, he identified several key effective elements of feedback noting the importance of context, specifically that feedback should address errors in understanding after the initial presentation of information (Hattie & Timperley, 2007). This point differentiates feedback as a response to the learner's performance from the initial presentation of information in the lesson. The following effective elements of feedback fall within the confine of a response to a learner's faulty interpretation rather than a lack of initial understanding.

Task specific.

Hattie (Hattie & Timperley, 2007) noted the need for learning context, specifically task specificity, "to take on this instructional purpose, feedback needs to provide information specifically relating to the task or process of learning that fills [that] gap" (p. 82). "To be effective, feedback needs to be clear, purposeful, meaningful, and compatible with students' prior knowledge and to provide logical connections" (Hattie & Timperley, 2007, p. 104). Task specificity depends on clear goals of the learner, hence this feedback guarantees that the learner receives relevant information.

Self-regulation.

Hattie (2003) found that expert teachers had a greater influence on student achievement than experienced teachers had, and identified that difference, "Expert teachers engage students in learning and develop in their students self-regulation, involvement in mastery learning, enhanced self-efficacy, and self-esteem as learners" (p. 10).

Low task complexity.

Hattie (Hattie & Timperley, 2007) found that "feedback was also influenced by the difficulty of goals and tasks…[having] the most impact when goals are specific and challenging but task complexity is low" (p. 86).

Timing.

Feedback timing for effectiveness depends on whether the feedback is at the FT or FP level. Hattie (Hattie & Timperley, 2007) concluded that the additional processing necessary for difficult tasks benefited from a delayed response, whereas simpler tasks not needing the additional time benefited from an immediate response. Hence, FT should have immediate feedback and FP delayed.

Positive and negative feedback.

"Over all comparisons, it appears that the power of feedback is influenced by the direction of the feedback relative to performance on a task. Specifically, feedback is more effective when it provides information on correct rather than incorrect responses" (Hattie & Timperley, 2007, p. 85). Enhancing this finding with feedback levels, demonstrates the complexity of feedback. Hattie (Hattie & Timperley, 2007) found that negative feedback had the greatest influence when directed to the self (FS), especially when combined with task specific feedback (FT). FT has the potential to benefit from both positive and negative feedback. The effectiveness at FR depends on "commitment, mastery or performance orientation, and self-efficacy" (Hattie & Timperley, 2007, p. 98). If commitment is high, positive feedback increases motivation to learn more than negative feedback. Conversely, if commitment is low, "we are more likely to learn as a function of negative feedback" (Hattie & Timperley, 2007, p. 99). Hattie (Hattie & Timperley, 2007) suggested that the motivation increase from the negative feedback

might be temporary and eventually lead to avoidance in the future, whereas positive feedback could lead to greater persistence and an increased long-term interest.

Non-threatening.

Students tend to behave in ways that decrease risk in the classroom. They avoid answering a question unless they know they have the correct answer, which decreases learning opportunities. Unfortunately, Hattie (Hattie & Timperley, 2007) identified FS as the most common feedback. FS relates to feedback aimed personally at the student. Hattie (Hattie & Timperley, 2007) noted that FS without FT "directs attention away from the task to the self" (p. 96). This focus of the student as a personal level raises concern for the need of a neutral, non-threatening learning environment. Hattie (Hattie & Timperley, 2007) found that the majority of students prefer quiet and private praise.

Praise.

Though often devoid of instructional value, Hattie (Hattie & Timperley, 2007) noted that praise is the most common form of feedback. Hattie (Hattie & Timperley, 2007) found that students liked praise, specifically for effort and achievement rather than for ability and behavior, though some students identified it as a punishment if the praise occurred in from of a peer group that devalued education. Interestingly, Hattie (Hattie & Timperley, 2007) indicated that "older students perceived praise after success or neutral feedback after failure as an indication that the teacher perceived their ability to be low" (p. 97).

Two-way communication.

Hattie (Hattie & Timperley, 2007) noted the importance of both students and teachers giving and receiving feedback. "Teachers need to seek and learn from feedback (such as from students' responses to tests) as much as do students" (Hattie & Timperley, 2007, p.104). Two-

way communication provides an opportunity for an exchange of ideas. In this context, two-way communication emphasizes the need for the teacher to receive feedback from the student regarding their interaction. As with the student, feedback provides information to the teacher about how well they are meeting their intended goals.

Technology enhanced.

Hattie (2003) focused on the role of teachers and the need for excellent teachers "who are thinking, reflective, enthusiastic, passionate, and knowledgeable about the content" and "encourage their students to share in seeking answers to our three feedback questions" (p. 4), but there seems to be a great opportunity to use technology to provide the feedback students need to help guide them as they navigate through the feedback questions. Hattie (Hattie & Timperley, 2007) referenced his 1999 "detailed synthesis of 74 meta-analyses…[that] demonstrated that the most effective forms of feedback provide cues or reinforcement to learners; are in the form of video-, audio-, or computer-assisted instructional feedback; and/or relate to goals" (p. 84).

Self-reliance.

Hattie (Hattie & Timperley, 2007) noticed "students, too often, view feedback as the responsibility of someone else, usually teachers, whose jobs it is to provide feedback information by deciding for the students how well they are going, what the goals are, and what to do next" (p. 101). Students need to incorporate proactive behavior in assessing the three feedback questions on their own.

Assessment.

In his meta-analysis, Hattie (2003) referenced studies by Crooks (1988) and Black and William (1998) that have found "little evidence that classroom assessment has assisted in the learning process" though Black and William "highlighted the potential of assessment to provide

feedback" (p. 3). The focus here is on feedback, not assessment, but it seems that there needs to be a shift in the learning community to this often forgotten, critical key to learning. Typical assessment fails to address the four levels of feedback. Assessment needs a change that

> provide[s] information and interpretations about the discrepancy between current status and the learning goals at any of the three levels: about tasks, about the processes or strategies to understand the tasks, and about the regulation, engagement, and confidence to become more committed to learn. (Hattie & Timperley, 2007, p. 101)

Rather than focus on the results of assessment as a motivator to improve without addressing the three feedback questions, feedback needs to be seen as an instructional instrument. Hattie (Hattie & Timperley, 2007) noted how assessments could qualify as effective instruments of feedback.

> For students, it means gaining information about how and what they understand and misunderstand, finding directions and strategies that they must take to improve, and seeking assistance to understand the goals of the learning. For teachers, it means devising activities and questions that provide feedback to them about the effectiveness of their teaching, particularly so they know what to do next. (Hattie & Timperley, 2007, p. 102)

With a change in assessment, effective feedback could become a routine experience for learners. Rather than results-driven assessment, there seems to be a need to fine tune assessments to address the three feedback questions. With this change, feedback can be seen as an instructional instrument rather than an after-the-fact correction. This necessitates elevating the role of feedback in instruction.

Conclusion

In this paper I assessed the interplay of distance education, transactional distance, and the developmental needs of the adult learner, specifically pertaining to feedback. Peters offered a theory of education as industrialized that often contradicts or relies on personal experience in understanding distance education. He rightly warned that instructors should not merely replicate traditional, face-to-face content and put it in an online learning environment, as it requires appropriate media to bring content to life. Access is crucial, and Peters acknowledged that distance learning creates numerous instructional opportunities lacking in the traditional model, specifically the use of technology preparing students for the technologies they will need to be successful in the workplace, including virtual collaboration.

Online learning environments provide improved access to interaction via communication and collaboration. The communication available within the virtual environment offers a wide range of dialogue structures, which counter the potential for miscommunication in distance learning. Moore's theory of transactional distance involved structure and dialogue, where less structure and more dialogue supported individualization and decreased transactional distance. Numerous factors influenced dialogue, including course enrollment, opportunities for communication, the physical and emotional environment of the learner and the teacher, the personality of the learner and the teacher, and course content Moore (1990). The importance of dialogue in learning should not be underestimated, specifically as a form of feedback necessary for learning.

Knowles used Androgogy as a model to understand the characteristics of adult learners. These included self-concept, experience, a need to know, readiness, orientation to learning, and motivation. Each of these elements describes the self-directed, autonomous learner, while recognizing the need for feedback to guide the learner through the learning process. Hattie's

meta-analysis highlighted the need for feedback in student achievement. His four types of feedback, task specific, task process, self-regulation, and self-related, provide the necessary distinction to analyze the feedback in the meta-analysis. Hattie found that effective feedback should be task specific, include tips for self-regulation, relate to low task complexity, involve appropriate timing, respond to the complexity of positive and negative feedback, be non-threatening, include praise, be reciprocated through two-way communication, encourage self-reliance, assess the feedback question progress, and be technology enhanced.

This insightful, critical analysis of the work of Peters, Moore, Knowles, and Hattie has provided numerous elements for further investigation in the current literature. I expect the literature will support the need for dialogue, specifically in the form of feedback, to deepen student learning. Though the media is changing, the basic construct of dialogue supports the required element of learning.

Higher education has a deep, rich history rooted in the creation of knowledge and the pursuit of excellence. This institution guards itself from frivolity with review boards of accreditation. Society benefits from the knowledgeable graduates as well as from produced research that has led to incredible developments in all departments. Given its importance, it seems reasonable that scholars and administrators alike would balk at the invent of new learning spaces that challenge the traditional paradigm of learning and teaching. Rather than create a defense to the development of distance learning and its technologies, these institutions should investigate the opportunities to expand their reach through access. The rapid expansion of online programs suggests that access is desperately needed. Rooted in sound theory, the construct of dialogue resonates as the ideal form of communication for deep learning. Whether that dialogue occurs in person or virtually, participants benefit from the interaction.

Depth

SBSF 8227: Current Research in Ways of Knowing & Individual Differences in Human Development

Annotated Bibliography

Amhag, L., & Jakobsson, A. (2009). Collaborative learning as a collective competence when students use the potential of meaning in asynchronous dialogues. Computers & Education, 52(3), 656-667. Retrieved from ERIC database.

Contributing to the Instructional Needs of the Online, Adult Learner and Educational Technology themes, Amhag and Jakobsson (2009) “used a socio-cultural understanding (Vygotsky, 1988) of learning and development to examine what significance students’ dialogues have for their development of a collective, collaborative competence" (p. 659). They asked "In what ways do students’ use the asynchronous dialogues in a web-based learning environment as a tool to develop a collective competence of collaboration?" (p. 659). To gain a better understanding, Amhag and Jakobsson (2009) monitored 40 student teachers in an online learning environment for 40 weeks. Grouped with four to five others, “students worked both individually and collaboratively with tutor-lead, problem-based assignments and responded to contributions of classmates” (p. 659). Using the theories of “Bakhtin (1986, 2004) and Rommetveit (2003)” on “dialogic interactions and meaning potentials”, the dialogues were analyzed, interpreted and “categorized through a two-phase analysis (Patton, 2002), discovering and identifying thematic patterns and themes (Lemke, 1990)” (Amhag & Jakobsson, 2009, p. 659).

Since meaning potentials are generated by students in a collaborative negotiation, all group members become shareholders and co-authors in a joint construction of meaning.

> In this way, the analysis has focused on the groups' joint ability to make meaning potentials in different assignments visible and explicit, and the ability to define the meaning potentials in order to use them as a possibility for learning. This method of conducting the analysis is based on the assumption that when the dialogues in a group succeed in making the range of meaning potentials visible, they also create prerequisites for the group members to develop a new understanding of a task. (Amhag & Jakobsson, 2009, p. 659)

Amhag and Jakobsson (2009) successfully applied their interpretation of Bakhtin and Rommetveit dialogic theories to the dialogue of the participants of the online learning community project. They found that "all groups actually developed some kind of collective competence to collaborate, and they used this ability as a tool for learning" (p. 666). Though a small cohort sample, it is significant to note that all participants had the capacity to collectively collaborate toward learning at some level. Additional findings included,

> 1) The competence to use collaboration as a learning tool needs support from the organization and teacher.
>
> 2) Students should develop the ability to independently identify the meaning potentials (Rommetveit (2003) framework) for enhanced learning.
>
> 3) The speaker becomes dependent on the listener as a co-author and, at the same time, becomes a listener to his or her own utterances in a sense-making verbalization process. (p. 666)

Essentially, Amhag and Jakobsson (2009) found that dialogue led to collaboration and collaboration led to learning. Their third finding highlights a level of awareness emphasized in the work of Senge (1993, 2000, 2004, 2006). Though small, the Amhag and Jakobsson (2009)

study added empirical data to the growing body of evidence identifying the importance of dialogue, collaboration for learning, and the need for students to learn how to use elearning collaboration tools.

Bridge, P., & Appleyard, R. (2008). A comparison of electronic and paper-based assignment submission and feedback. British Journal of Educational Technology, 39, 4, 644-650.

Contributing to the Educational Technology theme, Bridge and Appleyard (2008) evaluated "the feasibility of OASM [Online Assignment Submission and Management] for use with a large cohort of students, many of whom are remote to the university. The benefits and problems associated with it were to be determined to guide future planning of assessment procedures" (p. 645). Bridge and Appleyard (2008) questioned 47 first year undergraduate students required to use the electronic assignment submission tool within their Virtual Learning Environment (VLE) about their experience with the online tool in comparison to the typical distance assignment submissions that typically involved sending assignments through the postal service.

Consistency of feedback for the project relied on "a separate sheet of a marking grid and detailed comments that was uploaded into the VLE for students to access" (Bridge & Appleyard, 2008, p. 645). While "93% of students noted that their feedback was received faster electronically than using the traditional system of posted feedback sheets," Bridge and Appleyard (2008) found "the most dramatic improvement from the students' perspective was the fact that 88% of students felt they had saved time submitting online" (p. 646). Although Bridge and Appleyard (2008) noted that the VLE may have offered an expedient assignment response, they acknowledged that faculty responsiveness remained a critical factor in determining the timeliness of feedback.

In addition to faster assignment submission and faster feedback receipt, "many students liked the fact that they could access and print out their feedback many times for inclusion in different portfolios …. [and] appreciated the 'safety' of having an electronic receipt" (p. 645). In contrast to those grateful for the assurance of the online submission, Bridge and Appleyard (2008) found "the largest cause of concern for the students was the receipt system, [where] [f]orty-three per cent were unsure that their assignments had been safely received" (p. 646). Reliability of technology seems to be a recurring theme among educational technology research.

The Bridge and Appleyard (2008) study identified a positive correlation between online electronic assignment submission and student perception of assignment submission and timely feedback though concerns about the reliability of the technology and further application should be investigated. This highlights the need for training when introducing a new technology to avoid concerns over the reliability of the technology.

Butler, D. L., & Winne, P. H. (1995). Feedback and self-regulated learning: A theoretical synthesis. Review of Educational Research, 65, 3, 245-81.

Contributing to the Instructional Needs of the Online, Adult Learner and Guidelines for Feedback themes, Butler and Winne (1995) found "theoreticians seem unanimous—the most effective learners are self-regulating" (p. 245). Identifying self-regulation as key to effective learning can be used to improve the investigation of feedback and its efficient use for learning. Butler and Winne (1995) noted that self-regulated learners had self-awareness of "their own knowledge, beliefs, motivation, and cognitive processing" (p. 245). Additionally, Butler and Winne (1995) found that feedback served as an "inherent catalyst" to self-regulation, and that effective learners seek out external feedback (p. 246).

Butler and Winne (1995) sought out to investigate self-regulated learning (SRL) as a recursive process that involves,

> internal monitoring of a current state in a task, the trigger for engaging SRL, generates feedback that, in turn is input contributing to the learner's regulation of subsequent cognitive engagement. Thus, modeling feedback in the context of dynamically self-regulating processing calls for an account that considers simultaneously how cognitive processing unfolds as a function of regulative feedback and how feedback is generated or accessed within cognitive processing. (p. 246)

In the following figure Butler and Winne (1995) illustrated this recursive flow of information in the model of SRL (p. 248).

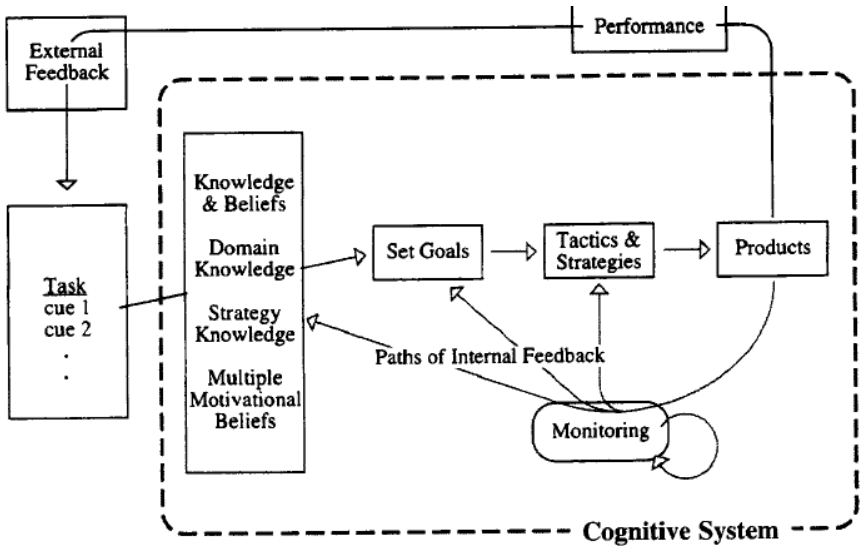


Figure 4. A model of self-regulated learning (Butler & Winne, 1995, p. 248).

The knowledge and beliefs step is used to interpret tasks and identify necessary requirements, monitoring generates internal feedback, and products are both cognitive/affective and behavioral. This model highlights the importance of self-awareness, as the learner would need to be actively engaged throughout the process for SRL to lead to learning.

Butler and Winne (1995) argued that

> SRL is inherent in knowledge construction….Monitoring is the hub of self-regulated task engagement and the internal feedback it generates is critical in shaping the evolving pattern of a learner's engagement with a task. Our model of SRL, depicted in Figure 1, explicitly identifies this role for monitoring and feedback. Also it acknowledges that feedback information blends with other information to affect a learner's knowledge and beliefs about the domain and tasks, learning processes and products, and performance….[D]ifficulties can arise when students examine information about a task's structure, adopt or set their own goals, select and implement the cognitive tactics and strategies that constitute learning, and monitor their performance. Feedback is information with which a learner can confirm, add to, overwrite, tune, or restructure information in memory…Differentiating these functions of feedback using a broadly framed model of self-regulation, such as the one we propose, both illuminates how traditional research on feedback has focused too narrowly on feedback's effects on achievement and allows a synthesis of diverse studies on feedback and instruction. (p. 275)

The Butler and Winne (1995) extensive literature review supporting their model of SRL provides a basic construct of SRL and good platform for additional studies in the area, specifically the following three concepts:

1) Self-regulated learners possess self-awareness.
2) Feedback serves as a "catalyst" to self-regulation (p. 246).
3) "Effective learners seek out external feedback" (p. 246).

Before these concepts can be applied, further studies are needed to identify how learning environments, facilitators, and participants can use them to improve learning experiences. Some questions to be answered include,

1) Can self-awareness be taught? If so, how?
2) What types of feedback best encourage self-regulation?
3) Is there something inherent in an effective learner that motivates them to seek out external feedback or can learners who would typically not seek out external feedback benefit from that feedback?

Butler and Winne (1995) provided a decent framework of literature for further studies into self-regulated learning, leaving readers with more questions than answers.

Cavanaugh, T., & Cavanaugh, C. (2008). Interactive maps for community in online learning. Computers in the Schools, 25(3/4), 235-242. doi:10.1080/07380560802367811.

Contributing to the Instructional Needs of the Online, Adult Learner and Educational Technology themes, Cavanaugh and Cavanaugh (2008) addressed a potential discomfort and isolation associated with online education based on Moore's Theory of Transactional Distance. According to the Cavanaugh and Cavanaugh (2008) review of Saba and Shearer (1994), transactional distance can be decreased through "increased dialogue and feedback as well as through the appropriate degree of control for the learners" (p. 236).

The courses studied here used the visual and spatial medium of the interactive geographic map as an introduced form of dialogue with which students communicated information that the authors hypothesized would reduce their sense of transactional distance during the course and increase their motivation to complete the course, particularly for students

> whose visual/spatial styles were not well-supported by text-based community dialogue tools. (Cavanaugh, T., & Cavanaugh, C., 2008, p. 237)

The shared maps served as a tool to enhance social presence. Cavanaugh and Cavanaugh (2008) studied two online course sections of 15 to 20 graduate educational technology or educational leadership students use of "an interactive Geographic Information System (GIS)-based map…to build student media skills and reduce transactional distance" (p. 2387).

Cavanaugh and Cavanaugh (2008) surveyed the participants using "a 10-item Likert instrument that listed 10 components of the course….to rate the extent to which each component reduced their sense of transactional distance" (p. 240). The results of the survey found "the majority of students indicated that the map reduced their sense of transactional distance at least slightly, while 37% of the students indicated that the map reduced their sense of transactional distance to a moderate or great extent" (p. 240). Technical implications were noted as the course management system could pose a limitation to external map systems.

Cavanaugh and Cavanaugh (2008) concluded that "interactive course maps are recommended in online courses for reducing transactional distance and supporting team building among the students" in addition to offering suggestions for improving use of the map in future courses, including "the addition of image files that will appear on resulting maps and the capability for color-coding map points to indicate their purpose on the map" (p. 241). Though the researchers found empirical evidence to support interactive course maps in online courses, Cavanaugh and Cavanaugh (2008) failed to provide significant literature to support the need for social presence. They stated "The primary purpose of the shared maps was to reduce transactional distance among the students by enhancing their social presence within the course (Rovai, 2002) based on the understanding that sharing of personal information is likely to result

in a stronger sense of class community (Cutler, 1995)" (p. 3). Though a connection can be made between a need for community through social presence to decrease transactional distance, the simple statement tying the "shared maps" to reducing transactional distance fails to provide the necessary theoretical framework for the empirical study. Additional review of literature regarding the role of social presence in learning environments and the role of feedback for social presence is needed to strengthen the results of the study.

Though the Cavanaugh and Cavanaugh (2008) study had errors, it raised an interesting concept of using a visual map to bring about a sense of community to students in an online classroom. In addition to geographical maps, it would be interesting to investigate the effect of other visual representation of similar class traits such as program of study, employment field and status, marital and child or grandchild status, gender, and interests.

Deng, L., & Yuen, A. (2009). Blogs in higher education: implementation and issues. TechTrends: Linking Research and Practice to Improve Learning, 53(3), 95-98. Retrieved from ERIC database.

Contributing to the Instructional Needs of the Online, Adult Learner and Educational Technology themes, Deng and Yuen (2009) investigated the pedagogical benefits of blogs as reflective and interactive devices, their need for structure, dialogue, learner autonomy, and whether they actually support teaching and learning. In comparing blogs with other web-based technologies, Deng and Yuen (2009) came to the following conclusion,

> As a versatile and flexible medium, blogs pose special challenges in that a balance must be found between providing adequate structure and encouraging students' autonomy, and between monologue and dialogue within a learning community. Educators interested in incorporating blogs into teaching and learning should first address the pedagogical

> rationale for their use, that is, the crucial question of "why blog?". Sound answers to this question can then ensure the meaningful and purposeful implementation of educational blogging. (p. 97)

Deng and Yuen (2009) reviewed the connection between "structure, dialogue, and learner autonomy" of a blog to meet the "learning objectives, pedagogical needs and student characteristics" (p. 97). They related their findings that the three elements were closely related to those of Moore (1997) who noted that "an increased level of structure or decreased level of dialogue might lead to greater learner autonomy" (p.97). Deng and Yuen (2009) found additional qualitative evidence for Moore (1997), noting that when the structure of blog activities decreased students had more opportunity to exercise their autonomy" (p.97). They concluded that while many educators are using blogs, additional research is needed to identify optimal parameters for educational use of blogs.

In relation to feedback and online learning, Den and Yuen (2009) found support of the interrelatedness of structure, dialogue, and learner autonomy in accordance with Moore (1997) theory of transactional distance. Based on their findings, Moore (1997) theory provides a good framework for additional research of educational blogs.

Enyedy, N., & Hoadley, C. (2006). From dialogue to monologue and back: Middle spaces in computer-mediated learning. International Journal of Computer-Supported Collaborative Learning, 1(4), 413-439. Retrieved from ERIC database.

Contributing to the Instructional Needs of the Online, Adult Learner and Educational Technology themes, Enyedy and Hoadley (2006) investigated Computer-Supported Collaborative Learning (CSCL) tools that support the space between internal and external dialogue in an effort to,

> Propose a learning principle for how to promote effective learning trajectories. This principle recognizes the dialectical relationship and complementary functions of engaging in a back-and-forth dialogue with one's peers and reflectively reorganizing that dialogue into a monologic text for public presentation. We advocate abandoning the forced dichotomy between two genres of collaboration tools and call for more CSCL tools that begin to fill out the "middle spaces" between information and communication interfaces. We recommend doing so by designing progressive tools and activities that offer more structured dialogues, more open monologues, and semiotic pivots to help students quickly move back and forth between different modes of collaboration. (p. 414)

Enyedy and Hoadley (2006) used software to encourage dialogues with 90 students in a self-paced three week experience. After their collection of data regarding "an activity that allowed students to use a conceptual organization tool to construct a monologue-oriented artifact directly from posts in a dialogical threaded discussion system," the researchers conducted a comparative analysis of their data with two case studies that involved participants using monologue and dialogue in different ways in with the same activity (p. 418). Enyedy and Hoadley (2006) found the CSCL tools useful in bridging the chasm created by the information and communication interface divide.

> The key feature of these tools that seemed to facilitate successful transitions between monologue and dialogue is allowing external knowledge representations to move easily from interfaces that encourage dialogue to those that support monologue production and back again. In this manner, electronic media provide an important opportunity for learners to not only externalize their ideas through dialogue, but also to reflect on, reorganize—and some might say deconstruct—their own discursive production. (p. 432)

Enyedy and Hoadley (2006) "proposed three strategies to help create middle spaces and support progressive discourse and learning: more open monologues, more structured dialogues, and semiotic pivots that permit transitions from one to the other" (p. 433). The well-designed and implemented experiment was based on a strong theoretical review with additional comparative analysis that added to the quality of the Enyedy and Hoadley (2006) study. The results of this study add to the body of evidence about the structure of online communication for an improved learning experience.

Erkens, G., & Janssen, J. (2008). Automatic coding of dialogue acts in collaboration protocols. International Journal of Computer-Supported Collaborative Learning, 3(4), 447-470. Retrieved from ERIC database.

Contributing to the Instructional Needs of the Online, Adult Learner and Educational Technology themes, Erkens and Janssen (2008) investigated manual versus automated data coding methods for analyzing dialogue.

> In the Dialogue Act Coding (DAC) system five main communicative functions of dialogue acts are distinguished: (1) Argumentative (indicating a line of argumentation or reasoning), (2) Responsive (e.g., confirmations, denials, and answers), (3) Elicitative (questions or proposals requiring a response), (4) Informative (transfer of information), and (5) Imperative (commands). (p. 451)

Erkens and Janssen (2008) used the Multiple Episode Protocol Analysis (MEPA) computer program "for the analysis and manual coding of discussions" and "for automatic support of coding" (p. 453).

Erkens and Janssen (2008) had the following four research questions,

1) Investigation of reliability: Is the automatic coding of dialogue acts reliable when compared to manual coding of dialogue acts?
2) Investigation of validity by examining group differences: Is the automatic coding procedure able to identify differences between two different groups of language users (male and female students)?
3) Investigation of validity by examining the effects of an experimental intervention: Is the automatic coding procedure able to identify effects of an experimental intervention?
4) Investigation of validity by performing correlation analyses: Is the automatic coding procedure able to detect expected correlations with a different, manual coding system? (p. 455)

To address these questions, Erkens and Janssen (2008) conducted a study of 186 eleventh graders in two studies. They found "that the automatic coding procedure of dialogue acts is able to distinguish between male and female students based on their verbal communicative behavior" (p. 463). Specifically, "women were found to use more responsive dialogue acts (affiliative), whereas men used more informative and imperative dialogue acts (assertive)" (p. 466).

In addition to the ability to identify communication to a particular gender, the reliability of the automated coding software was validated at 79% compared to the manual coding. Erkens and Janssen (2008) found that "[m]ost errors were made in dynamic changing language (MSN lingo, nonsense utterances, joking) and in content- and context-defined differences using the same discourse markers" (p. 466). The researchers considered the errors insignificant and concluded that the automated method was "a suitable technique for researchers interested in the process of online collaboration" (p. 468).

In addition to the findings validating the automated coding software, Erkens and Janssen (2008) data analysis comparisons between dialogue and collaborative activities found an implication that “dialogue acts and collaborative activities do not refer to exactly the same constructs and describe different aspects (related to form and to content) of communicative behavior in collaboration protocols” (p. 466).

Erkens and Janssen (2008) determined a need for further research involving “the outcomes of the coding procedure (i.e., the types of dialogue acts used in an online environment), can also be used as a kind of feedback to group members, giving them information about how they conduct their online discussions (Janssen et al. 2007b). Such an application of automatic coding goes beyond merely investigating how online collaboration unfolds by trying to influence collaborators to change their online behavior" (p. 468). The implication that automated coding could affect online behavior, specifically as a form of feedback provides ample reason for further studies. Erkens and Janssen (2008) carefully constructed, empirical study laid the framework for methodology for further investigation of student dialogue in online collaboration.

Espasa, A., & Meneses, J. (2010). Analysing feedback processes in an online teaching and learning environment: An exploratory study. Higher Education, 59, 3, 277-292.

Contributing to the Instructional Needs of the Online, Adult Learner, Educational Technology and Guidelines for Feedback themes, Espasa and Meneses (2010) investigated feedback in formative learning assessments, specifically with adult learners in asynchronous learning environments. Their study focus intended,

> (1) to analyse the presence of different feedback in the several moments of the teaching and learning process;

(2) to characterise these feedback according to content (i.e. semantic dimension) and (3) to explore possible relationships between feedback and learning outcomes (student final grades and satisfaction). (p. 281)

Espasa and Mensese (2010) conducted an exploratory study "among a non-random sample of 186 students from the Universitat Oberta de Catalunya (UOC, Open University of Catalonia) graduate programmes" (p. 281). "An electronic ad-hoc questionnaire…administered in the last week of the course" provided the data indicating that feedback improved student satisfaction and grades (p. 282). Regarding feedback in response to an electronically submitted question,

- "71.2% agreed or totally agreed that the feedback received guided the correction of errors",
- "53.8% had received information on the correct answer",
- "70% reported that they were given information on how to improve their work ",
- "65.7% received further information to complement learning" (pp. 284).

In response to a submitted assignment, Espasa and Mensese (2010) found the following feedback results:

- 83.1% provided the correct answer,
- 69.4% provided information on errors,
- 51.8% provided information on improving work,
- 47.9% provided information on how to take learning deeper (p. 285).

In response to the final assessment, feedback data seemed least useful to learning,

- 51.6% provided the correct answer,
- 42.1% provided information on errors

- 27.4% of the students “disagreed that it had given them information on how to improve the work done during the course” and
- 27.7% “disagreed that the feedback helped them locate more resources in order to deepen learning” (pp. 285).

Espasa and Mensese (2010) related the study data to supporting student learning with “verification (gives the resolution of the doubt and the correct answer) and elaboration (gives information about how to improve their work in order to achieve learning objectives)” (p. 284).

Overall, Espasa and Menses (2010) data noted that “of those who had received feedback, the percentage of the students who gained good, very good and excellent grades (78.9%) was significantly higher”, as well as their finding that “a significant relationship exists between feedback received after assignments and student results” (p. 286). Though feedback throughout the course appears to have a positive effect on student learning and grades, feedback after the final assessment does not. Espasa and Mensese (2010) found that feedback given at the end of the course does not “seem to be aimed at general improvement or involving students in consolidation and further in-depth study that goes beyond the course’s objectives” (pp. 285).

Espasa and Menses (2010) found significant statistical differences in performance and satisfaction between students, noting that “feedback is basically characterised by information on how to improve work and how to take learning further” (p. 289). To ensure proper feedback during times when most useful to students, throughout the course and after assignments, the researchers identified a need for improved teacher training. Espasa and Menses (2010) recommend that teacher training include the types of feedback and their impact on student learning. For the purpose of this review, this study provided good data on the type of feedback

and its influence on student learning, timing of feedback, and the relationship between feedback and student grades and satisfaction.

Furnborough, C., & Truman, M. (2009). Adult beginner distance language learner perceptions and use of assignment feedback. Distance Education, 30, 3, 399-418.

Contributing to the Instructional Needs of the Online, Adult Learner, Educational Technology and Guidelines for Feedback themes, Furnborough and Truman (2009) explored "students' perceptions of feedback and the possible impact of such differences on how they determine their progress, their confidence, and their ability to maintain their motivation" (p. 402). Specifically, the researchers asked,

1. How do students perceive assignment feedback?
2. Do their perceptions of the role of feedback affect the way in which they judge their progress and level of achievement?
3. Is there a relationship between different perceptions of the role of feedback and confidence or motivation maintenance? (p. 403)

Furnborough and Truman (2009) based their findings on "semi-structured interviews, with open-ended questions designed to explore different aspects of studying a new language through DL [distance learning]" (p. 404). The study found that the students were enthusiastic for feedback. The students interviewed fell into three groups, those in group A saw feedback as a tool for learning, those in group B saw it only as corrective, and those in group C paid no attention to the feedback.

For many Group A students, feedback provided considerable added value by empowering them; more specifically, the ways in which the tutor explained difficult points could

> encourage them to participate actively in the correction and learning processes, and thereby gradually shift the locus of control towards themselves. (p. 405)

Group B students revealed that they saw feedback as positive, but had problems applying it to improved locus of control. Those in Group C were classified as doubters and anxious, either disbelieving of feedback or too anxious to notice feedback. Furnborough and Truman (2009) found that "42% of respondents did regard feedback as a learning tool", noting that the majority of respondents did not (p. 407). They labeled the three user groups in relation to their use of feedback.

- Group A: strategic users of feedback;
- Group B: non-strategic users of feedback;
- Group C: non-users of feedback. (p. 407)

Interestingly, the connection between locus of control and student confidence seemed to influence how students used feedback.

Furnborough and Truman (2009) concluded that their findings suggested "that students with high initial confidence levels tend to become successful long-term learners" (p. 412).

> We can conclude that confident MFL [modern foreign language] beginners (predominantly group A) will probably be proactive in using feedback as a learning tool by analysing it and attempting to integrate it into the learning process. Positive feedback encourages these strategies, as well as boosting learners' confidence and creating a virtuous circle that spurs them on to greater achievements. At the other end of the scale are those in group C, whom we have designated as non-users of feedback, beset by doubts and anxieties which inhibit their learning. Their problems – real or imagined – might be soluble, but they fail to develop any coherent or systematic strategies to

> overcome them. This, in turn, undermines their confidence, creating a vicious circle in which their anxieties and doubts grow, further inhibiting their capacity to learn. (p. 412)

The findings of Furnborough and Truman (2009) provide additional insight into the various nuances that influence how a student uses and perceives feedback.

Gorsky, P., Caspi, A., & Smidt, S. (2007). Use of instructional dialogue by university students in a difficult distance education physics course. Journal of Distance Education, 21(3), 1-22. Retrieved from ERIC database.

Contributing to the Educational Technology theme, Gorsky, Caspi, and Smidt (2007) investigated the dialogic behavior of students studying an advanced physics course at the Open University in the United Kingdom. They had three research questions:

1. What dialogue types, mediated through which resources, were utilized by students (1) to overcome conceptual difficulties that emerged while reading the course materials and (2) while solving difficult TMAs [Tutor Marked Assignments]?
2. Do students' dialogic behaviors correlate with their attributes: age, gender, motivation to achieve a high grade, learning preference (alone or with others) and/or a prior acquaintance with at least one other student in the course?
3. What dialogue types, mediated through which resources, made the most perceived significant contributions to overcoming the difficulties encountered? (p. 7)

They had four hypotheses:

1. The dialogic behaviors exhibited by students when confronting conceptual difficulty while reading and while solving difficult Tutor Marked Assignments (TMAs) will be as follows:

   a. Initially, students will try to overcome difficulty on their own through intrapersonal dialogue,
   b. When confronted with an insurmountable difficulty, students will turn to others for help,
   c. Student behavior in both cases will be consistent.
2. Students' attributes age, gender, motivation to achieve a high grade, learning preference and having a prior acquaintance with a fellow student will have no impact on students' general dialogic behavior. (We are testing a null hypothesis for reasons cited below).
3. The variable "having a prior acquaintance with a fellow student" will have an impact on students' specific dialogic behavior; that is, students having a prior acquaintance with a fellow student will turn initially to that person for help in overcoming conceptual difficulty.
4. Students will perceive the contribution made by tutors as the most significant.

124 of the 355 students in the Quantum Mechanics course completed a questionnaire that was mailed to them. Three respondents identified the course as easy, so their results were not included since the study focused on perceived difficult courses.

Gorsky, Caspi, and Smidt (2007) found “Open University, UK, students turned to tutors for help when faced with an unresolvable difficulty” and concluded “further research is required to more fully understand the relation between course difficulty and dialogic behavior” (p. 17). The researchers identified several scenarios in their study:

1. In difficult courses, students turn to instructors for help when confronted with difficulty.
2. In moderately difficult courses, students turn primarily to peers for help when confronted with difficulty.

3. In easy courses, students generally study alone and levels of interpersonal dialogue are low. (p. 18)

Further research is needed to see if cultural differences influence the dialogic behavior. Gorsky, Caspi, and Smidt (2007) concluded that courses identified as easy required less instructor-student dialogue thereby justifying larger class size, though courses identified as difficult would require a small class size to accommodate increased instructor-student dialogue. Though their initial findings indicate support for a change in student-teacher ratios, additional research is necessary to delve further to understand actual practical implications. For the purposes of this review, the need for increased student-instructor dialogue based on course difficulty should be noted and incorporated into further investigations.

Hatziapostolou, T., & Paraskakis, I. (2010). Enhancing the impact of formative feedback on student learning through an online feedback system. Electronic Journal of E-Learning, 8, 2, 111-122.

Contributing to the Instructional Needs of the Online, Adult Learner, Educational Technology and Guidelines for Feedback themes, Hatziapostolou and Paraskakis (2010) investigated the effectiveness of an online communication method for delivery of formative feedback. In their review of existing literature, Hatziapostolou and Paraskakis (2010) found that formative feedback needed to "possess a number of qualities: it needs to be timely, constructive, motivational, personal, manageable and directly related to assessment criteria and learning outcomes (as cited in Race, 2006; Irons, 2008; Juwah et al, 2004; Race, 2001)" (p. 111). To improve student use of feedback, the researchers implemented OFES (Online Feedback System), designed to facilitate and integrate Keller's motivational strategy model into the online environment.

According to the ARCS model, motivation in the learning process is promoted and sustained through four elements: Attention, Relevance, Confidence and Satisfaction (ARCS). OFES facilitates the quality attributes of feedback by incorporating these four elements in the overall design of the system in the following ways:

- students' attention is gained and maintained are through affective stimuli and the use of a small amount of humor
- relevance is established by using concepts that are related to students' experiences and by structuring feedback in a way that directly relates to the assessment criteria
- confidence is instilled by establishing an overall positive setting in order to establish the students' belief in their ability to achieve and by making students aware of performance requirements and evaluative criteria.
- last but not least, student satisfaction is nurtured by providing a sense of achievement through extrinsic rewards for the learning experience and by assuring the equity of these rewards so that they match student achievements. (Hatziapostolou & Paraskakis, 2010, p. 116)

Participation in the OFES implementation resulted in all of the students accessing their personal online feedback. Other results included,

- Statistics kept by OFES also revealed that a significant number of students (35% in 2005 and 32% in 2006) revisited OFES before the final exams. This might be perceived as an indication that students considered the feedback a valuable source of information regarding their exam preparation.
- OFES appears to be warmly welcomed by the students. The appreciation of the system and the way that it operates is demonstrated by a number of anonymous posts that

students made in the unit's discussion forum. Some of these comments include: "very motivational feedback", "I will try to get a superman next time", "programming is not as easy as body-building, but I will certainly try harder".

- OFES also appears be an efficient and prompt communication mechanism and helped students understand their feedback and the mark allocated to them. This indication comes from the lecturer's end-of-semester students evaluations. During the two years that OFES was used, a greater number of students believed that they received their marks and feedback in a timely manner and understood the mark allocated to their work. This is signified from a sharp increase in the fields "timing of marks and feedback" and "clarity of marking" in the lecturer's evaluations. (Hatziapostolou & Paraskakis, 2010, p. 120)

Implications of the findings indicate the usefulness of the OFES program, specifically related to student access of the online feedback and usefulness of feedback for student exam preparation.

Hatziapostolou and Paraskakis (2010) experimental study was limited to a small sample of students, yet the underlying theoretical framework and study methodology align with online feedback technologies and their effect on student learning. These findings underscore the importance of the communication method of feedback and its effect on motivation and acceptance of feedback.

Jung, I. (2001). Building a theoretical framework of web-based instruction in the context of distance education. British Journal of Educational Technology, 32(5), 525. Retrieved from Academic Search Complete database.

Contributing to the Educational Technology theme, Jung (2001) reviewed the "teaching and learning processes of WBI [web-based instruction]" literature in an attempt to develop a transactional Distance Theory-based theoretical framework for WBI (p. 526). Jung (2001) found

few comparative analyses as evidence to justify the claim that WBI provided improved "forms of learning dialogue and learning communities" though he noted that,

> Several evaluation studies showed that WBI could create an adaptable learning environment by meeting different student characteristics, such as prior knowledge level and preferred study modes. In addition to these interactive and adaptable features of WBI, resourcefulness and multimedia representation form of the resources were claimed as advantages of WBI to implement project-based or constructivist learning. (p. 529)

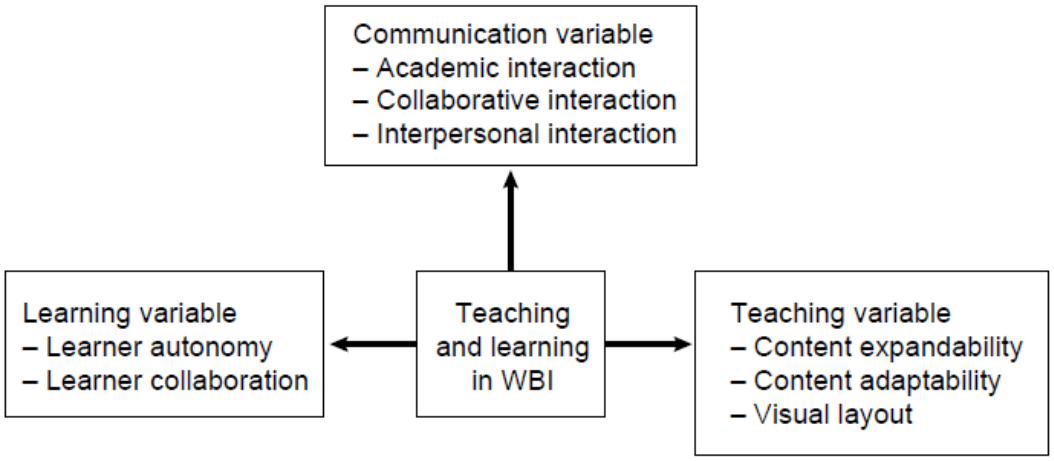


Figure 5. A theoretical framework for pedagogical features of web-based instruction (British Educational Communications and Technology Agency, 2001 as cited in Jung (2001, p. 529).

Jung (2001) concluded that "WBI contributes to increasing student' involvement in teaching and learning processes by allowing for various types of interaction" (p. 531). As noted by the diagram above, the three emergent types of interaction included:

> (1) academic interaction between learners and instructors, including external experts;
>
> (2) collaborative interaction among learners; and
>
> (3) interpersonal interaction between learners and instructors, or among learners. (p. 531)

Jung (2001) concluded that WBI learners need to be collaborative as well as autonomous, both interactions available in web-based learning environments. The theoretical framework, illustrated above by Jung (2001), provides a literature review based framework for additional investigations into web-based learning.

Khourey-Bowers, C. (2005). Emergent reflective dialogue among preservice teachers mediated through a virtual learning environment. Journal of Computing in Teacher Education, 21(4), 85-90. Retrieved from ERIC database.

Contributing to the Instructional Needs of the Online, Adult Learner and Educational Technology themes, Khourey-Bowers (2005) investigated the "influence of electronically-mediated dialogue in promoting reflection" and professionalism "among middle childhood preservice teachers" in a descriptive study (p. 86). Within a virtual learning environment (VLE), preservice teacher communication was facilitated by a virtual learning community where they had an opportunity to "expand their professional knowledge and experiences" while sharing their "ideas, observations, inferences, and emotions" in an asynchronous discussion (p. 90). Khourey-Bowers (2005) found that the VLE provided the preservice teachers an opportunity for deeper reflection as the environment "encourages students to mull over personal and vicarious experiences, and reflect upon those experiences in light of theoretical considerations, values, and assumptions" (p. 90).

Khourey-Bowers (2005) concluded that the unique characteristics of asynchronous discussion led the preservice teachers to a state of "reflecting-in-practice" that accounted for "conceptually sophisticated and complex understandings of classroom management beyond the level traditionally expected of preservice teachers" (p.90). Hence, the VLE provided the collaborative space for sharing ideas which led to an opportunity for professional growth, all

recorded in an environment that perpetuates the necessary contemplation for reflective-practice. The permanency of the reflection in a VLE, where communication is shared, provides an opportunity for continual reflection, beyond the time constraints of the discussion. Khourey-Bowers (2005) recognized that this "reflecting-in-practice" provided participants an opportunity to grow while maintaining a record of that professional growth.

Khourey-Bowers (2005) findings emphasize the benefit of VLE for learning through asynchronous discussion utilizing both collaboration and autonomous reflection. This descriptive study provides an underlying framework of dialogue-based interaction in an online environment that enhanced learning. Additionally, the record permanence for reflection indicates a potential need for a repository of interaction that exists or continues in an environment with open access beyond the timeframe of the classroom.

Lemak, D., Reed, R., Montgomery, J., & Shin, S.J. (2005). Technology, transactional distance, and instructor effectiveness: An empirical investigation. Academy of Management Learning & Education, 4(2), 150-159. Retrieved from Business Source Complete database.

Contributing to the Instructional Needs of the Online, Adult Learner and Educational Technology themes, Lemak, Reed, Montgomery, and Shin (2005) tested Moore's (1997) transactional distance construct, specifically relating to perceived teacher effectiveness in an empirical study. The researchers found that technology did not affect student assessments, but rather "teacher effectiveness was rooted in ample dialogue with students and a flexible structure so that the course and educational process could be better suited to individual student needs" (p. 156). Though teachers involved in the study had perceived that their assessments were affected by the technology, the study results noted that transactional distance was the important factor,

"not the physical separation or intervening technology" (p. 156). This finding validates Moore's (1997) transactional distance as a construct.

Lemak, Reed, Montgomery, and Shin (2005) identified dialogue and structure as predictor variables of instructor effectiveness.

> Clearly, instructor effectiveness was predicted by how well the instructor interacted with the students both in and out of the classroom, regardless of physical location. Likewise, the ability of the instructor to be flexible (i.e., reduce structure), by including recent examples, incorporating contrasting views, and helping students develop useful skills was also a major factor. Reducing structure also meant that instructors had to employ various teaching strategies and evaluate various objectives, and thus respond to student learning needs in terms of exams, homework assignments, analyzing problems, and encouraging critical thinking. Collectively, all were driving factors in determining instructor effectiveness. (p. 157)

In a well-constructed empirical study, Lemak, Reed, Montgomery, and Shin (2005) found strong evidence in support of Moore's (1997) transactional distance as a construct with dialogue and structure as predictor variables. This provides necessary evidence of the basic construct for future studies aimed at improving the online learning experience by decreasing transactional distance.

Lih-Ching Chen, W., & Morgan, W. (2008). Student perceptions of using instant messaging software to facilitate synchronous online class interaction in a graduate teacher education course. Journal of Computing in Teacher Education, 25(1), 15-21. Retrieved from Education Research Complete database.

Contributing to the Instructional Needs of the Online and Adult Learner, Educational Technology themes, Lih-Ching Chen and Morgan (2008) investigated "student perceptions of class-related online interactions using [instant messaging] IM software, within the context of structured online class chapter discussions" (p. 17). The empirical study "focused on four of the seven "Principles for Good Practice in Undergraduate Education." These were: 1. encourages contact between students and faculty, 2. develops reciprocity and cooperation among students, 3. encourages active learning, 4. gives prompt feedback" (p. 17). Using a questionnaire that addressed the above principles, Lih-Ching Chen and Morgan (2008) found a statistically significant positive correlation between use of the IM software and student perceptions related to each of the four principles. Students reported,

1. Increased contact with the instructor, including "advice and encouragement", "concern", and "knowing the instructor as a whole person and valuing the instructor as a professional role model" (p. 20)
2. Greater collaboration among peers, including sharing course related ideas, suggestions for others, and a "more positive emotional responses to the interaction" (p. 20).
3. An increase in active learning, noted as spending additional time preparing for participation, sharing relevant life experiences, inspiration from the posts of others, reflection prior to posting, responsible preparation, and "a greater sense that their contributions had been appreciated and acknowledged by the classmates and by the instructor" (p. 20).
4. Prompt feedback from both peers and instructor answering questions. Students felt that they "more likely to know if the instructor and classmates agree with their contributions, and were less concerned about negative judgments of these contributions by their

classmates and instructor….heightened their sense that at the end of the discussion their understanding of the chapter was higher" (p. 20).

Lih-Ching Chen and Morgan (2008) findings suggest that IM software improves students perceptions of their experience in the classroom related to four particular principles identified as good practice in undergraduate education. This study suggests a need for further investigation of how the IM software affected students' perception and if those perceptions actually correlated to improved learning.

Lih-Ching Chen and Morgan (2008) provide additional empirical evidence of an improved learning experience connected to an educational technology that encouraged collaboration and feedback.

McBrien, J., Jones, P., & Cheng, R. (2009). Virtual spaces: Employing a synchronous online classroom to facilitate student engagement in online learning. International Review of Research in Open and Distance Learning, 10(3), Retrieved from ERIC database.

Contributing to the Educational Technology theme, McBrien, Jones, and Cheng (2009) investigated the use of Elluminate Live! as a virtual classroom for undergraduate and graduate courses based on Moore and Kearsley (1996) Transactional distance theory.

The researchers asked intentionally broad questions following their experience with the virtual classroom to better analyze emerging themes. 9% of students felt that the virtual classroom negatively impacted their learning experience. These students reported feeling,

1. Disconnected,
2. Frustrated by technical glitches which either blocked them from participation or decreased the quality of their interactions, and
3. Overwhelmed by the multiple technologies, which felt overstimulating.

Though those negatively affected represent a minority of study participants, their reported concerns should be further investigated. It would be interesting to compare student feelings within a traditional face to face course structure versus the virtual classroom. These negative feelings may be associated with something external to the learning environment.

The majority of students reported a positive learning experience with the virtual classroom. Contrary to Moore's (1997) findings, McBrien, Jones, and Cheng (2009) found that students positively responded to clearly defined structure with clear and consistent expectations and roles. Moore identified an inverse relationship between transactional distance and structure, which McBrien, Jones, and Cheng (2009) data seems to challenge.

In alignment with Moore (1997), students reported enjoying the autonomous convenience of the synchronous virtual classroom, but noted that technical glitches negatively impacted their sense of autonomy as a loss of control. McBrien, Jones, and Cheng (2009) found technical issues the greatest challenge to the virtual classroom study.

Overall, McBrien, Jones, and Cheng (2009) found that students had a positive experience with the virtual classroom, noting the need to address three problem areas,

1. Confusion from too many simultaneous interactions
2. Decreased non-verbal communication
3. Technical issues

This experimental study provided an initial insight into student perceptions of using virtual classrooms, but the lack of analysis outside the comparison to Moore's (1997) framework limited application of the results, thought the issues encountered do provide a stepping stone for additional research. The above noted problems provide ample opportunity for further studies.

Merrill, M. D. (2002). First principles of instruction. Educational Technology Research and Development, 50, 3, 43-59. Retrieved from http://mdavidmerrill.com/Papers/firstprinciplesbymerrill.pdf

Contributing to the Instructional Needs of the Online, Adult Learner theme, Merrill's (2001) survey of instructional design led him to the following five principles, which he called the first principles of instruction.

1. Learning is promoted when learners are engaged in solving real-world problems.
2. Learning is promoted when existing knowledge is activated as a foundation for new knowledge.
3. Learning is promoted when new knowledge is demonstrated to the learner.
4. Learning is promoted when new knowledge is applied by the learner.
5. Learning is promoted when new knowledge is integrated into the learner's world. (pp. 45-46)

This survey of the literature provides important concepts for consideration in instructional design. For the purpose of this review, these principles outline necessary doctrines that should be present in instruction to promote learning. Though Merrill (2002) did not include the work of Knowles, these findings align with the research of Knowles.

Schlitz, S. A., O'Connor, M., Pang, Y., Stryker, D., Markell, S., Krupp, E., Byers, C., Jones, S. D., & Redfern, A. K. (2009). Developing a culture of assessment through a faculty learning community: A case study. International Journal of Teaching and Learning in Higher Education, 21, 1, 133-147.

Contributing to the Instructional Needs of the Online, Adult Learner, Educational Technology and Guidelines for Feedback themes ,Schlitz et al (2009) described "the process of

creating a topic-based [faculty learning community] FLC centered on enhancing student assessment and on improving the quality of feedback provided to students" (p. 133). Successful FLCs incorporated " safety and trust, openness, respect, responsiveness, collaboration, relevance, challenge, enjoyment, esprit de corps, and empowerment" into their environment, as well as the following components, "mission and purpose, curriculum (topics), administration, connections, affiliated participants, meetings and activities, scholarly processes, assessment, and enablers and rewards" (p. 133). These factors align with best practices for dialogue, structure, autonomy and the needs of adult learners. Schlitz et al (2009) discussion of their experience setting up a web-based rubric model concluded that additional analysis of these factors as they relate to collaborative success for learning communities is needed.

Staarman, J. (2009). The joint negotiation of ground rules: establishing a shared collaborative practice with new educational technology. Language & Education: An International Journal, 23(1), 79-95. doi:10.1080/09500780802152796.

Contributing to the Guidelines for Feedback theme, Staarman (2009) investigated "how new collaborative practices were created in interaction, and how participants made visible to each other what counted as appropriate collaborative practice" (p. 80). As part of a larger computer supported collaborative learning (CSCL) research project, this study used an online discussion tool called Knowledge Forum (KF). This software documents "argumentation and reasoning, e.g. by providing textual supports such as 'opinion', 'reason' and 'evidence' for categorising the written contributions" in a web-like structure organized by topic (p. 81). Using a methodological approach based on Interactional Ethnography, Staarman (2009) focused on the "exploration of the construction of meaning in and through interaction by participants, how

participants negotiate events through interaction and how knowledge and texts can become resources for participants' actions" (p. 84)

Staarman (2009) noted a need for "implicit ground rules as configurations of implicit discourse conventions that are in place when participants interact" (p. 93). This study found that "although the mode of communication may be familiar, the lack of shared understanding of the genre of communication may lead to false assumptions about participants' communicative competence or their linguistic awareness" (p. 94). The results of Staarman (2009) highlighted the need to assess the practicality of discourse when introducing new technologies into the classroom.

Tanner, H., & Jones, S. (2007). Using video-stimulated reflective dialogue to learn from children about their learning with and without ICT. Technology, Pedagogy & Education, 16(3), 321-335. doi:10.1080/14759390701614454.

Contributing to the Instructional Needs of the Online, Adult Learner, Educational Technology and Guidelines for Feedback themes, Tanner and Jones (2007) examined video-stimulated reflective dialogue as a tool " to stimulate children to reflect on their own learning and expose their perceptions of teaching episodes" related to interactivity with information and communication technologies (ICT) (p. 322).

Though students liked the instantaneous and individualized feedback supplied by ICT, they noted the difference between ICT feedback on correctness versus the feedback they received from peer and instructor discussion. Students shared their preferred environment for receiving feedback, including the safety to "make mistakes and to be able to test ideas out for themselves practically or through discussion with others" and "being able to engage in a learning discourse in which viewpoints were challenged and answers had to be justified" (p. 332). Tanner

and Jones (2007) noted that "such strategies demand pedagogical and conceptual rather than just technical interactivity and require deeper levels of interaction and more dialogic teaching styles," concluding that "the affordances of ICT to be utilised to encourage deeper, more dialogic interactions in which pupils articulate their thinking and reflect on their learning" (pp. 332-333).

Tanner and Jones (2007) empirical data revealed the importance of the learning environment, culture and type of feedback, leading to a need for additional studies investigating the type of classroom culture necessary to support the identified need for deep dialogue.

Wheeler, S. (2007). The influence of communication technologies and approaches to study on transactional distance in blended learning. ALT-J: Research in Learning Technology, 15(2), 103-117. Retrieved from ERIC database.

Contributing to the Educational Technology and Guidelines for Feedback themes, Wheeler (2007) "utilized Entwistle's (1981) Approaches to Study Inventory and two additionally devised Likert-scale inventories to measure the variables predicted to influence transactional distance" (p. 104). The study tested two hypotheses related to technology-supported dialogue and transactional distance over two and a half years. Email was found to provide the most responsive form of dialogue and the highest level of social presence for autonomous students, even though it also had the greatest amount of structure, which was found to increase transactional distance. Telephone imposed the least amount of structure for strategic learners, decreasing transactional distance.

Wheeler (2007) concluded that "the future success of blended learning will rely heavily on technology-mediated communication, but even more on the skills and knowledge of responsive tutors" (p. 116). In this qualitative study, it was evident that the technology was just

the means to an end, the key to communication for learning was in how the technology was used to facilitate learning.

Literature Review Essay

In accordance with the Hattie and Timperley (2007) findings that feedback was the most important factor of influence on a student's academic achievement, Butler and Winne (1995), Espasa and Menses (2010), Furnborough and Truman (2009), Enyedy and Hoadley (2006), Hatziapostolou & Paraskakis, (2010), Lemak, Reed, Montgomery, and Shin (2005), Lih-Ching Chen and Morgan (2008), Schlitz et al (2009), and Tanner and Jones (2007) identified similar supportive data. A review of current literature indicated a positive relationship between instructor feedback and student learning. Evolving themes from the current research will be applied to those that emerged from the Breadth section.

- Instructional needs of the online, adult learner
    - Feedback (Hattie, 2003; Knowles, 1990; Hatziapostolou & Paraskakis, 2010; Espasa & Menses, 2010; Hattie & Timperley, 2007; Butler & Winne, 1995; Deng & Yuen, 2009; Furnborough & Truman, 2009; Lih-Ching Chen & Morgan, 2008; Schlitz et al, 2009; and Tanner & Jones, 2007),
    - Dialogue (Enyedy & Hoadley, 2006; Amhag & Jakobsson, 2009; Lemak, Montgomery, Reed, & Shin, 2005; Erkens and Janssen, 2008; Deng and Yuen, 2009; Khourey-Bowers, 2005; Tanner & Jones, 2007; Moore, 1997; Bohm & Nichol, 2004; Freire, Shor & Freire,1987),
    - Principles of instruction (Merrill, 2002),
    - Principles of interaction (Lih-Ching Chen & Morgan, 2008; Enyedy & Hoadley, 2006; Knowles, 1990; Knowles, 2001), and

  - Elements of a learning community (Schlitz et al, 2009)

- Educational Technology
  - Timely feedback (Bridge & Appleyard, 2008; Hatziapostolou & Paraskakis, 2010; Lih-Ching Chen & Morgan, 2008; Wheeler, 2007),
  - Increased social presence (Cavanaugh & Cavanaugh, 2008; Lih-Ching Chen & Morgan, 2008; Wheeler, 2007),
  - Improved collaboration (Cavanaugh & Cavanaugh, 2008; Amhag & Jakobsson, 2009; Deng & Yuen, 2009; Enyedy & Hoadley, 2006; Jung, 2001; Lih-Ching Chen & Morgan, 2008; Schlitz et al, 2009),
  - Increased dialogue (Cavanaugh & Cavanaugh, 2008; Amhag & Jakobsson, 2009; Deng & Yuen, 2009; Enyedy & Hoadley, 2006; Hatziapostolou & Paraskakis, 2010; Lemak, Montgomery, Reed & Shin, 2005; Lih-Ching Chen & Morgan, 2008; Wheeler, 2007),
  - Improved reflection (Amhag & Jakobsson, 2009; Khourey-Bowers 2005; Lih-Ching Chen & Morgan, 2008; Tanner & Jones, 2007),
  - Aligned with learning principles (Lih-Ching Chen & Morgan, 2008; Deng & Yuen, 2009; Erkens & Janssen, 2008; Espasa & Meneses, 2010; Jung, 2001; Lih-Ching Chen & Morgan, 2008),
  - Enriched feedback (Bridge & Appleyard, 2008; Erkens & Janssen, 2008; Espasa & Meneses, 2010; Furnborough & Truman, 2009),
  - Greater student satisfaction (Erkens & Janssen, 2008; Espasa & Meneses, 2010; Furnborough & Truman, 2009; Hatziapostolou & Paraskakis, 2010; Lih-Ching Chen & Morgan, 2008; McBrien, Jones, & Cheng, 2009), and
  - Challenge to educational technologies

    - Technical difficulties (Cavanaugh & Cavanaugh, 2008; Lih-Ching Chen & Morgan, 2008; McBrien, Jones, & Cheng, 2009; Bridge & Appleyard, 2008),
    - Transactional distance (Lemak, Montgomery, Reed & Shin, 2005; McBrien, Jones, & Cheng, 2009; Den & Yuen, 2009, Wheeler, 2007),
        - Structure (McBrien, Jones, & Cheng, 2009; Wheeler, 2007),
        - Autonomy (Den & Yuen, 2009; Wheeler, 2007),
        - Dialogue (Enyedy & Jakobsson, 2009; Lemak, Montgomery, Reed & Shin, 2005; McBrien, Jones, & Cheng, 2009; Den & Yuen, 2009; Wheeler, 2007)
- Guidelines for feedback
    - Task specific (Tanner & Jones, 2007; Hatziapostolou & Paraskakis, 2010; Schlitz et al, 2009),
    - Self-regulation (Butler & Winne ,1995; Espasa & Menses, 2010; Tanner & Jones, 2007; Furnborough & Truman, 2009),
    - Low task complexity (Gorsky, Capsi, & Smidt (2007),
    - Timing (Butler & Winne ,1995; Tanner & Jones, 2007; Lih-Ching Chen & Morgan, 2008; Hatziapostolou & Paraskakis, 2010; Schlitz et al, 2009),
    - Positive and negative feedback (Furnborough & Truman, 2009),
    - Non-threatening environment (Tanner & Jones, 2007; Schlitz et al, 2009),
    - Praise,
    - Two-way communication (Tanner & Jones, 2007; Lih-Ching Chen & Morgan, 2008; Schlitz et al, 2009),
    - Self-reliance (Butler & Winne ,1995; Schlitz et al, 2009),

- Technology enhanced (Lih-Ching Chen & Morgan, 2008; Schlitz et al, 2009; Hatziapostolou & Paraskakis, 2010), and
- A need for instructor training (Espasa & Mensese, 2010; Furnborough & Truman, 2009; Staarman, 2009).

Based on the theories and concepts of Peters, Moore, Hattie, and Knowles, this literature review will apply current findings to assess the instructional needs of the online, adult learner, educational technologies, and guidelines for feedback.

Instructional Needs of the Online, Adult Learner

Knowles (1990) described the adult learner as self-directed and independent, needing to connect learning to life experience, having a need-to-know and readiness-to-learn, concrete problem-solving, and motivated by complex internal factors. Knowles (1990) identified a critical element of his adult learning model, Andragogy, as "the ability to perceive one's self objectively and accept feedback about one's performance non-defensively" (p. 174).

Need for feedback.

Hattie (2003) defined feedback as "actions or information provided by an agent (eg. teacher, peer, book, parent, experience) that provides information regarding aspects of one's performance or understanding" (p. 2) after the initial learning experience. Hatziapostolou and Paraskakis (2010) concurred. Espasa and Menses (2010), noted two main elements of feedback, "verification (gives the resolution of the doubt and the correct answer) and elaboration (gives information about how to improve their work in order to achieve learning objectives)" (p. 284). Espasa and Menses (2010) defined feedback as "information on how to improve work and how to take learning further" (p. 289). Hattie's (2003) definition includes all activity in response to a learner's process, whereas Espasa and Menses (2010) limit feedback to activity that supports

improvement of learning. Espasa and Menses (2010) limited definition ignores the common, yet often irrelevant FS level of feedback. Hattie's definition seems more inclusive given the varied levels of feedback noted by Hattie (Hattie & Timperley, 2007), task specific (FT), task process (FP), self-regulation (FR), and personal or self-related (FS).

FT may simply denote correct or incorrectness, but can also "include directions to acquire more, different, or correct information" (Hattie & Timperley, 2007, p. 90). FP, feedback on the process used to create, complete, or learn, typically involves instructional strategies (Hattie & Timperley, 2007). FR involves "interplay between commitment, control, and confidence…. It addresses the way students monitor, direct, and regulate actions toward the learning goal…[implying] autonomy, self-control, self-direction, and self-discipline" (Hattie & Timperley, 2007, p. 93). The final level of feedback identified by Hattie (Hattie & Timperley, 2007), FS is feedback directed to the student's personal sense of self.

Based on feedback types defined by Hattie (Hattie & Timperley, 2007), the following table illustrates corresponding feedback elements identified in the literature review.

Hattie & Timperley, 2007	**FT (task specific)**	**FP (task process)**	**FR (self-regulation)**	**FS (self-related)**	**Other**
Butler & Winne, 1995	Outcome Feedback = knowledge of results	Cognitive Feedback = based on Bruswik's (1956) lens model that links cues to achievement	Model of self-regulated learning proposed by Butler and Winne (2005)		
Espasa & Menses, 2010	Doubt resolution - Interactive & Retroactive Regulation	Results - Interactive, Retroactive, & Proactive Regulation	Final results - Interactive, Retroactive, & Proactive Regulation		
Furnborough & Truman, 2009		"Retrospective and future gap-altering feedback" (p. 400).	Mentions the complexity of self-regulation.		
Hatziapostolou & Paraskakis, 2010	"Directly related to assessment criteria and learning outcomes" (p. 111). Constructive.			Personal	Timely, motivational, and manageable
Lih-Ching Chen & Morgan, 2008	n/a	n/a	n/a	n/a	Prompt
Schlitz et al, 2009	"Specific and tailored" via a rubric (p. 136)	n/a	n/a	n/a	
Tanner & Jones, 2007	Recognized a need for differentiation.	n/a	n/a		Students noted appreciation for promptness, individual, and a differentiation between FT and FP, though no construct was offered by the researchers.

Figure 6. Elements of feedback identified within the literature review (Hattie & Timperley, 2007; Butler & Winne, 1995; Espasa & Menses, 2010; Furnborough & Truman, 2009; Hatziapostolou & Paraskakis, 2010; Lih-Ching Chen & Morgan, 2008; Schlitz et al, 2009; Tanner & Jones, 2007)

In support of Hattie (Hattie & Timperley, 2007) findings on the influence of feedback on learning, Butler and Winne (1995), Deng and Yuen (2009), Espasa and Menses (2010), Furnborough and Truman (2009), Hatziapostolou and Paraskakis, (2010), Lih-Ching Chen and Morgan (2008), Schlitz et al (2009), and Tanner and Jones (2007) found evidence of the effectiveness of feedback for learning.

Butler and Winne (1995), Espasa and Menses (2010), Hatziapostolou and Paraskakis, (2010), Schlitz et al (2009), and Tanner and Jones (2007) recognized FT or some element of it as a feedback type. Hatziapostolou and Paraskakis, (2010) referenced a direct relationship between feedback and the assessment criteria as well as a need for the feedback to be constructive, Schlitz et al (2009) recognized the usefulness of a rubric to provide FT, and Tanner and Jones (2007) noted that students preferred a differentiation between FT and FP.

Other researchers presented their own terminology:

- Outcome Feedback, defined as knowledge of results without any additional information (Butler & Winne, 1995)
- Interactive & Retroactive Regulation, which correspond to feedback during the assessment process (Espasa & Menses, 2010)

None of the researchers provided information refuting FT as a feedback type. The literature review does suggest that FT may be too broad, incorporating a response indicating correctness [coined outcome feedback by Butler and Winne (1995)] and providing resources to support instructional needs. The literature also suggests the usefulness of rubrics to ensure that feedback is task specific (Schlitz et al, 2009).

Furnborough and Truman (2009) referenced "retrospective and future gap-altering feedback" (p. 400), which corresponds to FP (Hattie & Timperley, 2007). This type of feedback serves to help the student improve their learning process. Additional terminology regarding FP as a feedback type that occurred in the literature review included:

- Cognitive Feedback, which was based on Bruswik's (1956) lens model that linked cues (used through the cognitive process) to achievement (Butler & Winne, 1995),
- Interactive, Retroactive, and Proactive Regulation (Espasa & Menses, 2010),

Tanner and Jones (2007) found that students understood and preferred a differentiation between FT and FP from instructors. Each of these researchers either reiterated elements already inclusive in FP or provided an alternate name that does not improve the feedback type. Given this, it seems a fair assertion that the literature presented fails to challenge or provide additional information to the FP feedback type presented by Hattie (Hattie & Timperley, 2007).

The category of FR resulted in the greatest contribution from the literature, as Butler and Winne (1995), Espasa and Menses (2010), and Furnborough and Truman (2009) addressed the interrelatedness of feedback and self-regulation. In alignment with Butler and Winne (1995) and FR of Hattie (Hattie & Timperley, 2007), Furnborough and Truman (2009) noted the complexity and importance of self-regulation, "External and internal feedback are therefore interrelated; moreover, it can be argued that external feedback is unlikely to influence learning unless it is successful in stimulating internal feedback" (p. 401). In this statement, Furnborough and Truman (2009) provide a solid statement acknowledging the importance of FS and SRL in student use of feedback. Butler and Winne (1995) found that feedback served as an "inherent catalyst" to self-regulation, and that effective learners seek out external feedback (p. 246). The literature examined by Butler and Winne (1995)

> strongly suggests that learners' knowledge, beliefs, and thinking jointly mediate the effects of externally provided feedback. This mediation is the funneling through monitoring of information about various topics--task, self, epistemological characteristics of knowledge, goals, and cognitive tactics and strategies—to confirm, overwrite, add to, tune, or restructure extant knowledge and beliefs. That is, it is this mediation that offers an account of how knowledge is constructed in the process of learning. (p. 275)

Hence in their quest to investigate the role of feedback in self-regulated learning, Butler and Winne (1995) identified obstacles and influences in how learners used feedback:

- self-efficacy,
- self-awareness,
- beliefs (motivational, knowledge)
- existing knowledge,
- selected goals
    - learning (gaining expertise), or
    - performance (enhance perception of competence),
- tactics and strategies,
- lack of monitoring, and
- cognitive capacity.

Butler and Winne (1995, p. 248) proposed a model of self-regulated learning that illustrates the various response loops:

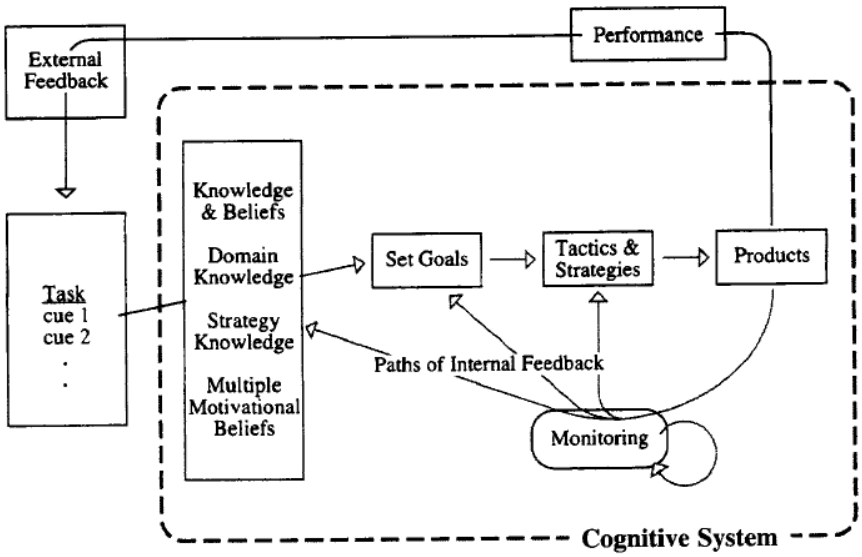


Figure 7. A model of self-regulated learning (Butler & Winne, 1995, p. 248).

In accordance with Hattie (Hattie & Timperley, 2007), Butler and Winne (1995) acknowledged different types of feedback such as outcome and cognitive, but they focused their work on how feedback relates to their model of self-regulated learning.

Interesting aspects of the Butler and Winne (1995) review include their review of obstacles and influences that affect learners' use of feedback, specifically notable are the role beliefs and preexisting knowledge play in the ability of a learner to accept new concepts and delve into a deep cycle of learning. This concept aligns that of dialogue, noted by Bohm (Bohm & Nichol, 2004), Freire (Shor & Freire, 1987) and Senge (Senge et al, 2004), that encouraged participants to suspended assumptions (preconceived beliefs) to delve into deep learning. Butler and Winne (1995) provided an enormous wealth of information to contribute to the FR feedback type, reinforcing the work of Hattie (Hattie & Timperley, 2007). A clear difference between the two bodies of work should be noted as Hattie (Hattie & Timperley, 2007) separated FP from FR, providing a clear distinction for future researchers.

Other researchers provided general support for the existing body of work with their findings. Deng and Yuen (2009) noted, “Feedback or comments can foster deeper thinking and learning” (p. 95). Espasa and Menses (2010) noted that “of those who had received feedback, the percentage of the students who gained good, very good and excellent grades (78.9%) was significantly higher”, as well as their finding that “a significant relationship exists between feedback received after assignments and student results” (p. 286). The Espasa and Menses (2010) study defined three types of feedback:

- “The resolution of student doubts about learning content…(interactive regulation)” (p. 279) throughout the assignment process;
- Results communication - “seeks to improve results in order to achieve objectives during the teaching and learning process” (p. 279), provided after an assignment (Retroactive, & Proactive Regulation);
- Final results - consolidate and prepare for future learning, provided after the final assessment (Proactive Regulation)

Espasa and Menses (2010) found Interactive Regulation during the assignment process the most common type of feedback, “this feedback is basically characterised by information on how to improve work and how to take learning further”, which aligns with FP and FR of Hattie (Hattie & Timperley, 2007). Problematically, Espasa and Menses’ (2010) Interactive Regulation may conflict with Hattie’s (Hattie & Timperley, 2007) presumption that feedback should be secondary to the initial learning. Interactive Regulation could be interpreted as part of the initial lesson, which would not be considered feedback by Hattie (Hattie & Timperley, 2007). Espasa and Menses (2010) feedback definitions do not seem to further the body of work on feedback,

but rather have presented additional elements regarding feedback in relation to assignment progress for further evaluation.

Hatziapostolou and Paraskakis (2010) relied on the work of Hyland (2000), "Feedback is an essential component in all learning contexts and serves a variety of purposes including evaluation of students' achievements, development of students' competences and understanding, and elevation of students' motivation and confidence (p.111). Given the essentiality of feedback, Hatziapostolou and Paraskakis (2010) referenced the research of Race (2006), Irons (2008), Juwah et al (2004), and Race (2001) in noting that formative feedback should be: "timely, constructive, motivational, personal, manageable and directly related to assessment criteria and learning outcomes" (p. 111). While a direct relation to assessment criteria aligns with FT and constructive aligns with FP, a potential link could be made between personal and FS, though the actual intent of the researchers may have been individualized rather than self-directed feedback. The other elements of timeliness, motivational, and manageable elements relate more to the characteristics of feedback better than feedback types. Hattie (Hattie & Timperley, 2007) recognized a need for timeliness, and low task complexity that could correspond to manageability. The relationship between confidence and feedback emerged in the work of Hatziapostolou and Paraskakis (2010) and Furnborough and Truman (2009). Furnborough and Truman (2009) found between confidence levels and the effectiveness of feedback, noting "students with high initial confidence levels tend to become successful long-term learners" (p. 412). This relationship could surely benefit from additional research.

Butler and Winne (1995), Deng and Yuen (2009), Espasa and Menses (2010), Furnborough and Truman (2009), Hatziapostolou and Paraskakis, (2010), Lih-Ching Chen and Morgan (2008), Schlitz et al (2009), and Tanner and Jones (2007) found evidence of the

effectiveness of feedback for learning supporting Hattie (Hattie & Timperley, 2007). Regarding feedback types, Butler and Winne (1995), Espasa and Menses (2010), Hatziapostolou and Paraskakis, (2010), Schlitz et al (2009), and Tanner and Jones (2007) provided support for FT, Butler and Winne (1995), Espasa and Menses (2010), Furnborough and Truman (2009), and Tanner and Jones (2007) provided support for FP, Butler and Winne (1995), Espasa and Menses (2010), and Furnborough and Truman (2009) provided support for FR, while the literature review offered no support or discussion of FS. Butler and Winne (1995) differentiated outcome feedback from FT, suggesting a need for FT to be broken down into a response of correctness and a response including instructional resources. FR received incredible attention as Butler and Winne (1995) provided a thorough review supporting their SRL model that now needs empirical testing. The model does not conflict with Hattie (Hattie & Timperley, 2007), but rather delves into this particular feedback type and its relation to self-regulated learning.

Need for dialogue.

Similar to feedback, Enyedy and Hoadley (2006) and Amhag and Jakobsson (2009) identified the reciprocal quality of dialogue in its ability to create shared meaning.

Schirch and Campt (2007) provided a comprehensive definition of dialogue:

> Dialogue is a communication process that aims to build relationships between people as they share experiences, ideas, and information about a common concern. It also aims to help groups take in more information and perspectives than they previously had as they attempt to forge a new and broader understanding of a situation. (p. 6)

This definition of dialogue extends across all disciplines. The literature review specifically referred to the use of dialogue within education.

Enyedy and Hoadley (2006) found dialogue integral in the learning process by "Helping students to publicly articulate and 'make visible' one's initial and emerging understanding," which then provides open "comment, criticism and negotiation… opportunity for meanings (and people) to shift to and appropriate the words and ideas of others" (p. 417). This exchange allows "timely feedback on each other's ideas, leading to the iterative refinement of partial meanings and the construction of increasingly sophisticated approximations of normative concepts (Roschelle, 1992)" (Enyedy & Hoadley, 2006, p. 417). Amhag and Jakobsson (2009) "Meaning is first created when two or more voices encounter each other by means of the reading or listening voice answering or reacting to the writing or speaking voice. Therefore, every utterance also becomes a link in a chain of voices since each utterance can be considered as an answer to preceding utterances, that is, it has addressivity. To understand another person's utterance means that one must orient oneself in relation to the utterance within the particular context of the utterance" (p. 658). The reciprocal and interactive nature of dialogue serves as feedback within particular contexts.

Lemak, Reed, Montgomery, and Shin (2005), Enyedy and Hoadley (2006), Amhag and Jakobsson (2009), Erkens and Janssen (2008), Deng and Yuen (2009), Khourey-Bowers (2005), Tanner and Jones (2007) focused their studies on the dialogue and its influence on learning. Moore (1997) stated that the focus of dialogue in "educational relationships is towards the improved understanding of the student" (p. 23). Contrary to Moore's narrow definition, Bohm and Nichol (2004), Amhag and Jakobsson (2009), and Enyedy and Hoadley (2006) identified the goal of dialogue to create shared meaning, and Schirch and Campt (2007), Freire, Shor & Freire (1987) and Erkens and Janssen (2008) described it as a mutual inquiry of a subject by all participants. For the purpose of future investigations, the definition of dialogue should be

expanded from Moore's (1997) narrow focus of student understanding to include creating shared meaning and mutual inquiry.

Several researchers identified dialogue as supportive of learning, such as reflection, teacher effectiveness, and collaborative learning. Deng and Yuen (2009), Enyedy and Hoadley (2006), Khourey-Bowers (2005), Tanner and Jones (2007) found dialogue an integral element of reflective practice. Lemak, Reed, Montgomery, and Shin (2005) found that "teacher effectiveness was rooted in ample dialogue with students and a flexible structure so that the course and educational process could be better suited to individual student needs" (p. 156). Erkens and Janssen (2008) relied on the work of De Wever et al (2006) and Kreijns et al (2003) to establish that "the interaction between group members is the mechanism which fosters students' learning during collaborative learning, whether online or face-to-face" (p. 448).

Based on the work of Bohm and Nichol (2004), Amhag and Jakobsson (2009), and Enyedy and Hoadley (2006), Freire, Shor & Freire (1987), and Erkens and Janssen (2008), the operational definition of dialogue within educational contexts should include creating shared meaning and mutual inquiry. A working definition of dialogue for further studies should be that of Schirch and Campt (2007), where communication builds shared meaning through mutual inquiry for improved understanding of all participants. The amended definition encourages participant collaboration and reciprocity.

As noted in the Breadth, dialogue has played a critical role in conflict resolution, personal growth and enlightenment, improved communication, and education. Deng and Yuen (2009), Enyedy and Hoadley (2006), Khourey-Bowers (2005), Tanner and Jones (2007), Lemak, Reed, Montgomery, and Shin (2005), and Erkens and Janssen (2008) identified dialogue as a key component for learning. Dialogue, the medium of communication for shared experiences has the

potential to create shared meaning through mutual inquiry, improve reflection, collaboration, and deep learning. Dialogue demands openness that relieves participants of the burden of their assumptions, priming them for learning. Within the appropriate environment, a skilled instructor can facilitate dialogue and improve the opportunity to learn for all.

In addition to the finding that learners need feedback and dialogue, the literature supports principles of instruction.

Principles of instruction.

Merrill (2002) identified five First Principles of instruction that correspond with many of the characteristics of the adult learner identified by Knowles (Knowles, Holton, & Swanson, 2006). I created the following illustration to show the corresponding ideas:

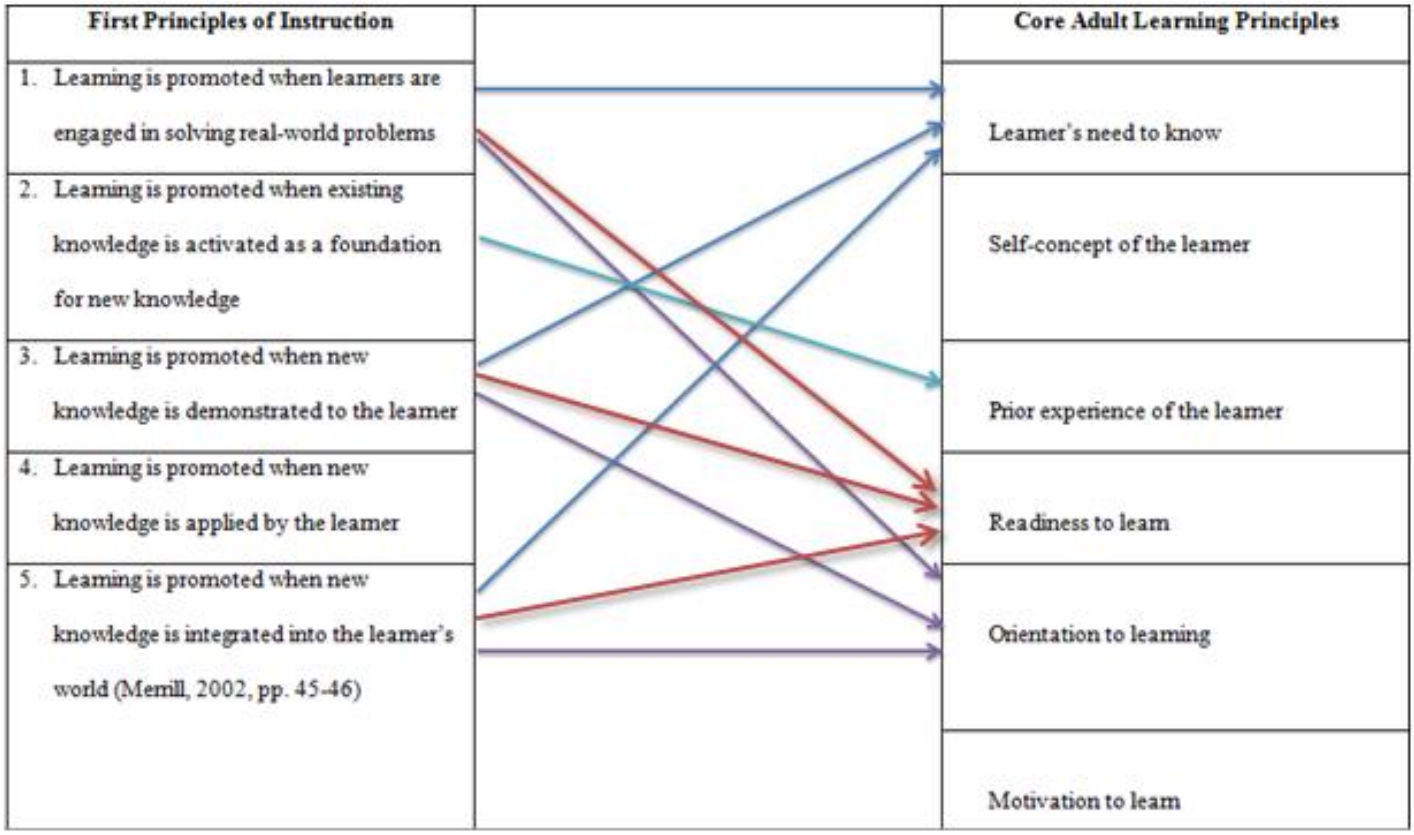


Figure 8. Connections between Merrill (2002) First Principles of Instruction and Knowles (2006) Core Adult Learning Principles.

The first of Merrill's (2002) First Principles involved engaging students in real-world problem-solving, third relied on knowledge demonstration, and the fifth on incorporating the use of that new knowledge into the student's everyday life. These types of activities support the core principles for adult learning of Knowles (Knowles, Holton, & Swanson, 2006), specifically a student's "orientation to learning", "readiness to learn", and "need to know" (p. 9). The second of Merrill's (2002) First Principles encouraged connecting new knowledge with existing knowledge aligned succinctly with Knowles (Knowles, Holton, & Swanson, 2006) concept of acknowledging the learner's previous experience. Thus it seems as though Merrill's (2002) principles of instruction support the adult learning principles noted by Knowles. Though Knowles (Knowles, Holton, & Swanson, 2006) wrote specifically of learning principles for adults, he provided no empirical evidence discerning which ages his principles supported. With that information, the use of Knowles for the purposes of this review is that of a general learning model. The independent corroboration of many of Knowles (Knowles, Holton, & Swanson, 2006) learning principles seen in the work of Merrill (2002) indicates a good basic structure for understanding teaching and learning in Knowles.

Merrill (2002) addressed the need for feedback in Principle 4, "Learning is promoted when learners are guided in their problem solving by appropriate feedback and coaching, including error detection and correction, and when this coaching is gradually withdrawn" (p. 49). As noted earlier, Hattie (Hattie & Timperley, 2007) distinguished feedback from instruction as secondary to the initial lesson. The reference to feedback during guided problem-solving as noted by Merrill (2002) should be clearly defined as secondary to the initial lesson to align with the given definition used in this analysis. Merrill (2002) delved even further and identified feedback as the greatest form of instructional guidance. Noting the importance of feedback as

instrumental for instruction, Merrill (2002) contributed to the growing body of evidence in support of the role of feedback for learning.

Merrill (2002) and Knowles (Knowles, Holton, & Swanson, 2006) provided a foundation for instructional and learning principles. Engaging students through Merrill's First Principles with attention to Knowles' Core Adult Learning Principles ensures that students are primed for learning. Each theorist acknowledged the importance of feedback as a necessary element for learning. With attention to these foundational principles, the investigation of feedback as a key factor for student achievement continues.

Principles of interaction.

Lih-Ching Chen and Morgan (2008) conducted an empirical study "focused on four of the seven "Principles for Good Practice in Undergraduate Education." These were: 1. encourages contact between students and faculty, 2. develops reciprocity and cooperation among students, 3. encourages active learning, 4. gives prompt feedback" (p. 17). Interestingly, the principles Lih-Ching Chen and Morgan (2008) based their study upon, focus on interaction rather than the more instructional principles of Merrill (2002). Focusing here on the principles that Lih-Ching Chen and Morgan (2008) used to measure good education practices, with the use of instant messaging software IM) students reported on the following,

1. Increased contact with the instructor, including "advice and encouragement", "concern", and "knowing the instructor as a whole person and valuing the instructor as a professional role model" (p. 20)
2. Greater collaboration among peers, including sharing course related ideas, suggestions for others, and a "more positive emotional responses to the interaction" (p. 20).

3. An increase in active learning, noted as spending additional time preparing for participation, sharing relevant life experiences, inspiration from the posts of others, reflection prior to posting, responsible preparation, and "a greater sense that their contributions had been appreciated and acknowledged by the classmates and by the instructor" (p. 20).
4. Prompt feedback from both peers and instructor answering questions. Students felt that they "more likely to know if the instructor and classmates agree with their contributions, and were less concerned about negative judgments of these contributions by their classmates and instructor….heightened their sense that at the end of the discussion their understanding of the chapter was higher" (p. 20).

The participants' positive response to the communication with the instructor, peer collaboration, time engaged in active learning, and feedback supports the important role of interaction for learners.

The difference between Merrill (2002) and Knowles (Knowles, Holton, & Swanson, 2006) and the empirical data of Lih-Ching Chen and Morgan (2008), could be two parts of a complementary systems of learning, highlighted by Enyedy and Hoadley (2006) as monologue and dialogue. Whereas Merrill (2002) focused on the internal monologue of the learner interacting with content, the Lih-Ching Chen and Morgan (2008) study focused on the external dialogue of the learner interacting with others in pursuit of mastering the content. Knowles (Knowles, Holton, & Swanson, 2006) acknowledged the need for both, as did Enyedy and Hoadley (2006), in their proposed learning principle that recognized "the dialectical relationship and complementary functions of engaging in a back-and-forth dialogue with one's peers and reflectively reorganizing that dialogue into a monologic text for public presentation" (p. 414).

Elements of a learning community.

Schlitz et al (2009) identified necessary elements of a learning community " safety and trust, openness, respect, responsiveness, collaboration, relevance, challenge, enjoyment, esprit de corps, and empowerment" into their environment, as well as the following components, "mission and purpose, curriculum (topics), administration, connections, affiliated participants, meetings and activities, scholarly processes, assessment, and enablers and rewards" (p. 133). These factors align with best practices for dialogue, structure, autonomy and the needs of adult learners. Schlitz et al (2009) discussion of their experience setting up a web-based rubric model concluded that additional analysis of these factors as they relate to collaborative success for learning communities is needed.

Collaboration stands out as a great contributor to learning, as noted by Cavanaugh and Cavanaugh (2008), Amhag and Jakobsson (2009), Deng and Yuen (2009), Enyedy and Hoadley (2006), Erkens and Janssen (2008), Jung (2001), Khourey-Bowers (2005), Lih-Ching Chen and Morgan (2008), in addition to Schlitz et al (2009). Following the tenets of dialogue identified in a previous KAM, collaboration can flourish in support of a learning environment.

> Participants need persistence to get through the various frustrations of the process, and presence to engage self-awareness and authenticity. They should be open to the process, which includes a willingness to be wrong, suspending assumptions, and the critical reflection that others are unique beings. The process of dialogic interaction involves whole-body, tacit, engaged learning with an understanding that students bring previous knowledge or experience to the conversation. Attention to power differences should be illuminated through transparency enforced by the facilitator….The overall conclusion based on the literature review exposed that interaction leads to learning and dialogue

> supports that interaction, which supports the findings of the breadth portion of this KAM. (Hemerda, 2009, pp.86-87)

As seen in the review of the need for dialogue and feedback, self-awareness is regularly regarded as a necessary element for learning. In order to participate in a community of learning, learners need a level of self-awareness supportive of the openness necessary to learning. Amhag and Jakobsson (2009) found that self-awareness supports collaboration and collaboration supports learning. The importance of collaboration supports the need for feedback, as a collaborative environment nurtures feedback.

Regarding the instructional needs of the online, adult learner, the literature supports a need for feedback (Hattie, 2003; Knowles, 1990; Hatziapostolou and Paraskakis, 2010; Espasa and Menses, 2010; Hattie & Timperley, 2007; Butler and Winne, 1995; Deng and Yuen, 2009; Furnborough and Truman, 2009; Lih-Ching Chen and Morgan, 2008; Schlitz et al, 2009; and Tanner and Jones, 2007). Feedback supportive of learning included those defined by Hattie (Hattie & Timperley, 2007), FT, FP and FR. The work of Butler and Winne (1995) indicated a potential need to narrow FT into a correctness response and learning resource response, otherwise FP and FR were supported by the current literature. Hatziapostolou and Paraskakis (2010) and Furnborough and Truman (2009) highlighted a relationship between student confidence levels and feedback effectiveness that could benefit from future research. None of the current authors referenced the fourth type of feedback identified by Hattie (Hattie & Timperley, 2007) as FS. Interestingly, Hattie noted the high incidence of FS that he deemed ineffectual and potentially harmful. The literature also supports a need for dialogue (Enyedy and Hoadley, 2006; Amhag and Jakobsson, 2009; Lemak, Montgomery, Reed, and Shin, 2005; Erkens and Janssen, 2008; Deng and Yuen, 2009; Khourey-Bowers, 2005; Tanner and Jones, 2007; Moore, 1997;

Bohm and Nichol, 2004; Freire, Shor & Freire, 1987). Based on this review, the definition of dialogue should be communication that supports mutual inquiry in creating shared meaning between teachers, learners, and peers. Current literature also identified principles of instruction (Merrill, 2002) and learning (Knowles, Holton, & Swanson, 2006) that expanded upon with principles of interaction (Lih-Ching Chen and Morgan, 2008; Enyedy and Hoadley, 2006; Knowles, 1990; Knowles, 2001) leading to elements of a learning community (Schlitz et al, 2009). Engaging learners requires attention to Merrill's (2002) First Principles that includes real-world problems, activating prior experience, demonstrating knowledge, applying knowledge, and integrating knowledge as well as to Knowles (Knowles, Holton, & Swanson, 2006) core learning principles that acknowledge a learner's need to know, self-concept, prior experience, readiness and orientation to learning, and motivation to learn. Though Knowles (Knowles, Holton, & Swanson, 2006) work failed to provide strong empirical evidence, its synchronicity with Merrill (2002) provides enough credence to use the learning model as a basic foundation of learning. Most importantly, both models support a need for proper instructional feedback for learning.

Educational Technologies

Numerous technologies in the online classroom promote communication; some provide a framework for collaboration while others allow a place to share ideas, all in hopes of stimulating learning. Amhag and Jakobsson (2009), Bridge and Appleyard (2008), Cavanaugh and Cavanaugh (2008), Deng and Yuen (2009), Enyedy and Hoadley (2006), Erkens and Janssen (2008), Espasa and Meneses (2010), Furnborough and Truman (2009), Gorsky, Caspi, and Smidt (2007), Hatziapostolou and Paraskakis (2010), Jung (2001), Khourey-Bowers (2005), Lemak, Reed, Montgomery, and Shin (2005), Lih-Ching Chen and Morgan (2008), McBrien, Jones, and Cheng (2009), Schlitz et al (2009), Staarman (2009), Tanner and Jones (2007), Wheeler (2007)

investigated technologies that supported learning. As indicated in the visual I created below, relying on appropriate learning principles, educational technologies can serve as a suitable tool of instruction.

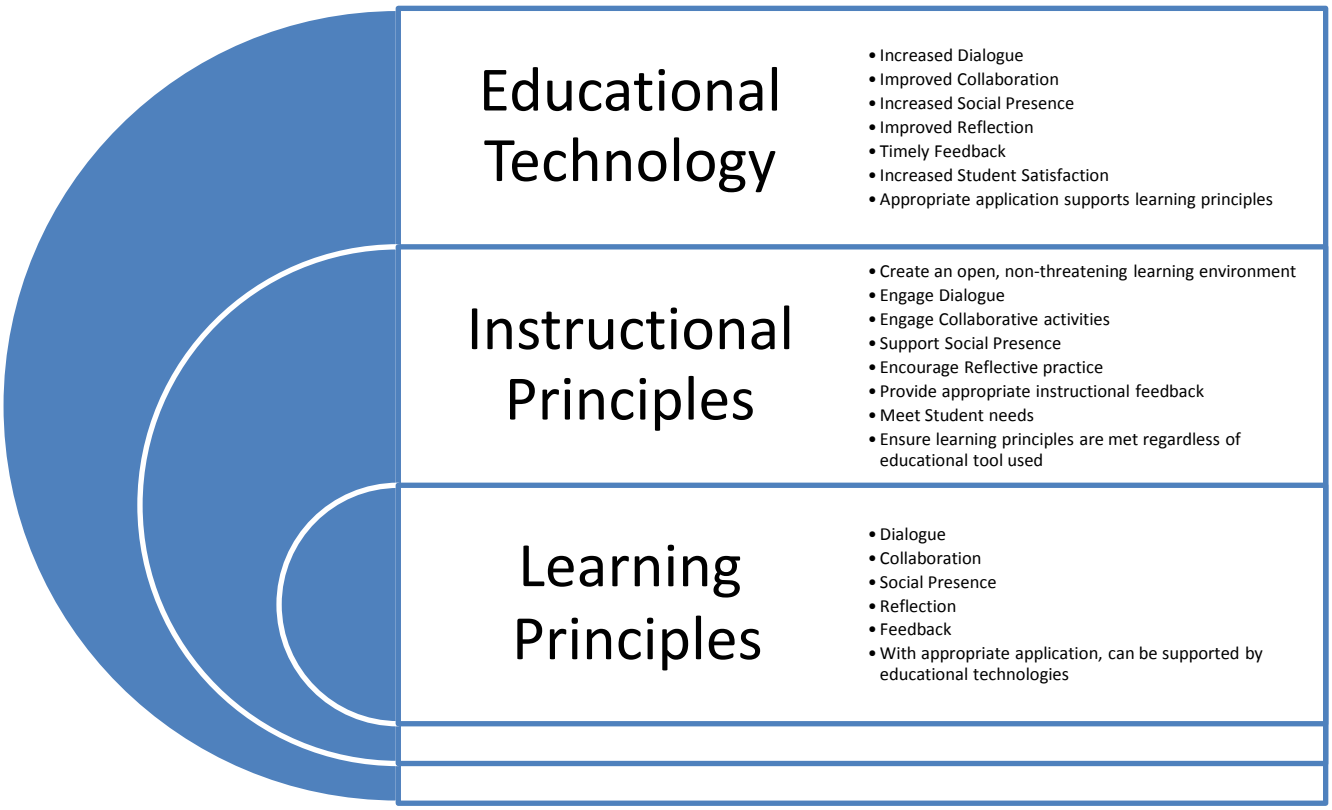


Figure 9. Foundational learning principles supported by instructional principles, reinforced with educational technology.

The reviewed educational technologies rose to the challenge and surpassed many traditional learning tools found in the traditional classroom.

Timely feedback.

Bridge and Appleyard (2008), Hatziapostolou and Paraskakis (2010), Wheeler (2007) and Lih-Ching Chen and Morgan (2008) found that students received feedback faster using an educational technology than traditional methods. Bridge and Appleyard (2008) found that 93% of students received feedback faster through the Online Assignment Submission and Management (OASM), with 88% of students finding the most dramatic improvement using the as time saved in the submission process. Wheeler (2007) identified an improved immediacy of dialogue for autonomous students who used email. Hatziapostolou and Paraskakis (2010) noted that during the two years that OFES (Online Feedback System) was used, a greater number of students believed that they received their marks and feedback in a timely manner and understood the mark allocated to their work. Lih-Ching Chen and Morgan (2008) investigation of IM (instant messaging) software indicated that students appreciated prompt feedback from both peers and instructor answering questions. This literature review found that reviewed online technologies reduced feedback response times.

Though the technology supports the ability to provide prompt feedback, it may not always be in the student's best interest to do so. Hattie (Hattie & Timperley, 2007) found that feedback timing for effectiveness depended on feedback type, concluding that the additional processing necessary for difficult tasks benefited from a delayed response. Therefore in simpler tasks requiring only a correct or incorrect response, learners benefited from an immediate response. Hence, FT should have immediate feedback and FP delayed. None of the current

literature addressed feedback timeliness alongside task difficulty, in fact there seemed to be an assumption that prompt feedback was best. For the intent of noting the relationship between timely feedback and educational technologies, the current literature resoundingly found reviewed technologies supported prompt interaction. This timeliness of feedback supports another important aspect of learning, social presence, as noted by Wheeler (2007), who identified an increase in social presence associated with timely instructor email responses.

Increased social presence.

Online learning interactions have encountered criticism due to the loss of the physicality of face to face interaction. Based on the current literature, it seems that numerous educational technologies have met the challenge by creating opportunities for social presence (Cavanaugh & Cavanaugh, 2008; Lih-Ching Chen & Morgan, 2008; Wheeler, 2007), defined as "the perception of connectedness between students and their tutors" (Wheeler, 2007, p. 103). Cavanaugh and Cavanaugh (2008) found interactive maps in an online course enhanced social presence. Deng and Yuen (2009) noted that blogs provided an opportunity for students to socialize and share inner thoughts within a collaborative environment. Lih-Ching Chen and Morgan (2008) examination of IM (instant messaging) software improved social presence by allowing students an avenue of "knowing the instructor as a whole person and valuing the instructor as a professional role model", greater peer collaboration, and "a greater sense that their contributions had been appreciated and acknowledged by the classmates and by the instructor" (p. 20). Both the blogs of Deng and Yuen (2009) and IM of Lih-Ching Chen and Morgan (2008) offered learners an ability to collaborate and connect in a way not typically available in a traditional classroom.

Physical cues, such as eye contact and other body language indicators, seem to be replaced with the invent of educational technologies in the current literature that provide a way for students to feel similarly connected as they would in a shared physical environment. In some instances, the asynchronous environment provided additional space for learners to connect and collaborate above and beyond interactions afforded in the physical classroom.

Improved collaboration.

Cavanaugh and Cavanaugh (2008), Amhag and Jakobsson (2009), Deng and Yuen (2009), Enyedy and Hoadley (2006), Jung (2001), Lih-Ching Chen and Morgan (2008), and Schlitz et al (2009) found data that educational technology improved student collaboration. With the Cavanaugh and Cavanaugh (2008) online mapping tool, the Amhag and Jakobsson (2009) asynchronous dialogues, the Deng and Yuen (2009) blogs, the Enyedy and Hoadley (2006) CSCL (computer-supported collaborative learning) tools, the Jung (2001) WBI (web-based instruction), the Lih-Ching Chen and Morgan (2008) IM (instant messaging) software, and the Schlitz et al (2009) FLC (faculty learning community), student collaboration improved in online learning environments.

Using Jung's (2001) model as an example of these educational technologies, web-based instruction (WBI) required learners to be both autonomous and collaborative (p. 529).

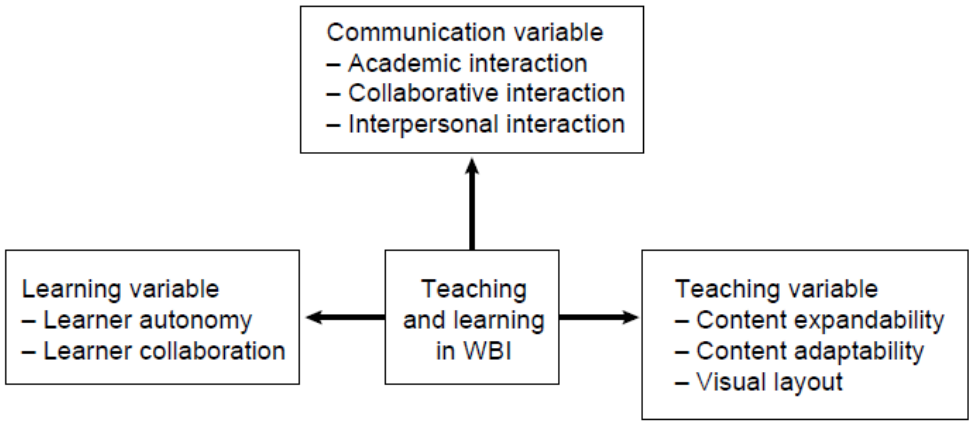


Figure 10. A theoretical framework for pedagogical features of web-based instruction (British Educational Communications and Technology Agency, 2001 as cited in Jung (2001, p. 529).

Jung (2001) concluded that "WBI contributes to increasing student' involvement in teaching and learning processes by allowing for various types of interaction" (p. 531). As noted by the diagram above, the three emergent types of interaction included:

(1) academic interaction between learners and instructors, including external experts;

(2) collaborative interaction among learners; and

(3) interpersonal interaction between learners and instructors, or among learners. (p. 531)

These findings indicate that WBI increases collaborative activities, specifically interactions between the learner and instructor, both academic and interpersonal in nature, and the learners.

Enyedy and Hoadley (2006) encouraged advancement of CSCL tools to fill the space between information and communication with progressive tools and activities that support structured dialogues, open monologues, and pivots to help students navigate between the two modes of collaboration (p. 414). In their review of blogs, Deng and Yuen (2009) found a tool that meets Enyedy and Hoadley's (2006) specifications. "With their capabilities for hyperlinks and comments blogs are argued to be conducive to facilitating collaborative and cooperative learning within a learning community" (Ferdig, 2007 as cited in Deng & Yuen, 2009, p. 96). The

blog provides the student an open space to share thoughts, accumulated knowledge, previous experience, and analysis where others can review, comment, expand, and encourage additional analysis. The ability to share inner thoughts, or monologue, in a way that supports dialogue and expansive collaboration revolutionizes learning. No longer should the discussion comparing the abilities of the online classroom to the traditional classroom continue. Educational technologies available in both the traditional and online course environment provide improved opportunities for collaborative learning.

Increased dialogue.

Cavanaugh and Cavanaugh (2008), Amhag and Jakobsson (2009), Deng and Yuen (2009), Enyedy and Hoadley (2006), Hatziapostolou and Paraskakis (2010), Lemak, Reed, Montgomery, and Shin (2005), Tanner and Jones (2007), Wheeler (2007), and Lih-Ching Chen and Morgan (2008) found evidence that educational technologies increased dialogue among students. Cavanaugh and Cavanaugh (2008) used interactive course maps, Amhag and Jakobsson (2009) measured asynchronous dialogues in an web-based learning environment, Deng and Yuen (2009) applied blogs, Enyedy and Hoadley (2006) employed dialogue encouraging software, Hatziapostolou and Paraskakis (2010) implemented OFES (Online Feedback System), Lemak, Reed, Montgomery, and Shin (2005) studied an interactive television system, Tanner and Jones (2007) examined the use of video-stimulated reflective dialogue (VSRD) technique that facilitated dialogue between students and teachers about the learning process, Wheeler (2007) revealed autonomous students' preference for email to face to face communication, and Lih-Ching Chen and Morgan (2008) reviewed IM (instant messaging) software. Each of these technologies resulted in increased dialogue among teachers and learners.

Additionally, Erkens and Janssen (2008) found a technology that analyzed online dialogue. The researchers tested the reliability and validity of Multiple Episode Protocol Analysis (MEPA) computer program for analyzing and manually coding discussions. The researchers concluded that the tool was suitable for automated coding of online collaboration, though some coding errors were identified, relating to jokes, online lingo, and nonsensical notations. These errors are of interest, specifically related to potential miscommunication leading to increased transactional distance. Further investigation of these errors could provide insight into elements which lead to miscommunication and transactional distance in the online classroom.

Overall, educational technologies reviewed in the current literature resoundingly improved dialogue. The asynchronous attribute provides time beyond that of the traditional classroom, the interface preferred by the autonomous adult learner, and a recording of conversation for further analysis and reflection.

Improved reflection.

The educational technologies studied in this review provoked improved feedback and dialogue that often led to improved learner reflection (Amhag & Jakobsson, 2009; Deng & Yuen, 2009; Khourey-Bowers, 2005; Lih-Ching Chen & Morgan, 2008; Tanner & Jones, 2007). Amhag and Jakobsson (2009) found that online students need to develop the ability to independently identify meaning potentials for enhanced learning, and the online interface provided a framework to "improve group efficiency and to present the group with the possibility of analysing their own dialogues retrospectively. This means that the students could use their own dialogues from earlier assignments in order to enhance their own development" (p. 667). The Deng and Yuen (2009) literature review identified blogs as an improved tool for individual

reflection due to the influence of peer interaction, collaboration, as "feedback or comments can foster deeper thinking and learning" (p. 95). Khourey-Bowers (2005) found that the virtual learning environment (VLE) provided the preservice teachers an opportunity for deeper reflection as the environment "encourages students to mull over personal and vicarious experiences, and reflect upon those experiences in light of theoretical considerations, values, and assumptions" (p. 90). Tanner and Jones (2007) observed increased student and instructor reflection with the video-stimulated reflective dialogue (VSRD) technique.

Khourey-Bowers (2005) concluded that the unique characteristics of asynchronous discussion led the preservice teachers to a state of "reflecting-in-practice" that accounted for "conceptually sophisticated and complex understandings of classroom management beyond the level traditionally expected of preservice teachers" (p.90). Hence, the VLE provided the collaborative space for sharing ideas which led to an opportunity for professional growth, all recorded in an environment that perpetuates the necessary reflection for reflective-practice. The permanency of the reflection in a VLE, where communication is shared, provides an opportunity for continual reflection, beyond the time constraints of the discussion. Khourey-Bowers (2005) recognized that this "reflecting-in-practice" provided participants an opportunity to grow while maintaining a record of that professional growth.

Lih-Ching Chen and Morgan (2008) found increased reflection spurred by the IM software,

1. An increase in active learning, noted as spending additional time preparing for participation, sharing relevant life experiences, inspiration from the posts of others, reflection prior to posting, responsible preparation, and "a greater sense that their

contributions had been appreciated and acknowledged by the classmates and by the instructor" (p. 20).

2. Prompt feedback from both peers and instructor answering questions. Students felt that they "more likely to know if the instructor and classmates agree with their contributions, and were less concerned about negative judgments of these contributions by their classmates and instructor….heightened their sense that at the end of the discussion their understanding of the chapter was higher" (p. 20).

Improved reflection corroborates the notion that educational technologies support learning principles. As with each of these items supported by educational technologies, the success of the tool lies in the learning principles applied through instruction of the tool.

Aligned with learning principles.

Educational technologies support student learning principles (Lih-Ching Chen & Morgan, 2008; Deng & Yuen, 2009; Erkens & Janssen, 2008; Espasa & Meneses, 2010; Jung, 2001). Using the Lih-Ching Chen and Morgan (2008) four learning principles, it is evident that several educational technologies support increased instructor contact, greater peer collaboration among peers, increased active learning, and prompt peer and instructor feedback (Lih-Ching Chen & Morgan, 2008; Deng & Yuen, 2009; Erkens & Janssen, 2008; Espasa & Meneses, 2010; Jung, 2001).

The Lih-Ching Chen and Morgan (2008) empirical study found a statistically significant positive correlation between use of IM software and student perceptions related to learning principles. Students reported,

1. Increased contact with the instructor, including “advice and encouragement”, “concern”, and “knowing the instructor as a whole person and valuing the instructor as a professional role model” (p. 20)
2. Greater collaboration among peers, including sharing course related ideas, suggestions for others, and a “more positive emotional responses to the interaction” (p. 20).
3. An increase in active learning, noted as spending additional time preparing for participation, sharing relevant life experiences, inspiration from the posts of others, reflection prior to posting, responsible preparation, and “a greater sense that their contributions had been appreciated and acknowledged by the classmates and by the instructor” (p. 20).
4. Prompt feedback from both peers and instructor answering questions. Students felt that they “more likely to know if the instructor and classmates agree with their contributions, and were less concerned about negative judgments of these contributions by their classmates and instructor….heightened their sense that at the end of the discussion their understanding of the chapter was higher” (p. 20).

Deng and Yuen (2009) found that blogs support many elements of learning principles, including reflection, collaboration, dialogue and monologue, and feedback. Erkens and Janssen (2008) found similar results for use of educational technology, “Students collaborated in a CSCL environment named Virtual Collaborative Research Institute (VCRI). The VCRI program is a groupware program designed to facilitate collaborative learning” p. 455. Espasa and Meneses (2010) noted improved satisfaction within the asynchronous learning environment where electronically submitted questions and submitted assignments led to instructional feedback that

led to student success. The review by Jung (2001) concurred, finding web-based instruction led to increased interaction

> (1) academic interaction between learners and instructors, including external experts;
>
> (2) collaborative interaction among learners; and
>
> (3) interpersonal interaction between learners and instructors, or among learners. (p. 531)

Several studies indicate the ability of educational technology to support general learning principles.

Others studies specifically highlighted how educational technology improved the ease of feedback (Bridge & Appleyard, 2008; Erkens & Janssen, 2008; Espasa & Meneses, 2010; Furnborough & Truman, 2009). Bridge and Appleyard (2008) noted improved student satisfaction in expedited feedback through the electronic submission tool, Erkens and Janssen (2008) saw the use of instantaneous feedback improve participants understanding of how they were communicating, thereby offering an opportunity to improve discourse, Espasa and Meneses (2010) students had increased satisfaction with the ease of electronic communication in an asynchronous learning environment, and Furnborough and Truman (2009) discovered the nuanced connection between student confidence and feedback, specifically how distance learners use the feedback received in an online learning environment.

As with all technologies, those reviewed here provide an opportunity when used with the correct intention, but in the absence of purpose, training, and review, the potential of educational technologies weakens. Deng and Yuen (2009) warned,

> Educators interested in incorporating blogs into teaching and learning should first address the pedagogical rationale for their use, that is, the crucial question of “why blog?”. Sound

> answers to this question can then ensure the meaningful and purposeful implementation of educational blogging. (p. 97)

This advice should be applied to all educational technologies to ensure support of learning principles. The tenets of Merrill (2002) and Knowles (Knowles, Holton, & Swanson, 2006) need attention in developing curriculum as much as the educational technologies do in the implementation.

Greater student satisfaction.

Numerous studies indicated an increase in student satisfaction with the use of educational technologies (Erkens & Janssen, 2008; Espasa & Meneses, 2010; Furnborough & Truman, 2009; Hatziapostolou & Paraskakis, 2010; Lih-Ching Chen & Morgan, 2008; McBrien, Jones, & Cheng, 2009). Ranging from ease of interaction (Erkens & Janssen, 2008; Espasa & Meneses, 2010; Furnborough & Truman, 2009) to increased feedback (Erkens & Janssen, 2008; Espasa & Meneses, 2010; Furnborough & Truman, 2009; Hatziapostolou & Paraskakis, 2010) to improved communication (Lih-Ching Chen & Morgan, 2008, McBrien, Jones, & Cheng, 2009). Though not an element necessary for learning, student satisfaction could support the retention efforts of highly competitive online schools. Dissatisfaction with course navigation, limited feedback, and lack of communication could lead learners to leave for a better experience.

Challenge to educational technologies.

While technical difficulties presented the most visible challenge to the usefulness of educational technologies (McBrien, Jones, & Cheng, 2009; Lih-Ching Chen & Morgan, 2008; Bridge & Appleyard, 2008), the challenge of Moore's (1997) transactional distance was carefully addressed by several researchers (Lemak, Montgomery, Reed & Shin, 2005; McBrien, Jones, & Cheng, 2009; Den & Yuen, 2009).

Technical difficulties.

McBrien, Jones, and Cheng (2009) and Lih-Ching Chen and Morgan (2008) found technical issues the greatest challenge to the virtual classroom study. In contrast to those grateful for the assurance of the online submission, Bridge and Appleyard (2008) found "the largest cause of concern for the students was the receipt system, [where] [f]orty-three per cent were unsure that their assignments had been safely received" (p. 646). Reliability of technology seemed to be a recurring theme among educational technology research.

In alignment with Moore (1997), the students interviewed by Lih-Ching Chen and Morgan (2008) reported enjoying the autonomous convenience of the synchronous virtual classroom, but noted that technical glitches negatively impacted their sense of autonomy as a loss of control.

Instances of this challenge highlight the need for technical support. Technical support should be easily accessible through multiple sources, including phone, instant message or web chat, and email. A 24/7 environment needs 24/7 technical support. In addition to technical support, some learners may not have the skillset compatible with online learning. It would be advantageous for those new to online learning to participate in an online aptitude test such as SmarterMeasure (SmarterMeasure) prior to beginning coursework.

Transactional distance.

Various researchers investigated elements of Moore's (1997) theory of transactional distance (Lemak, Montgomery, Reed & Shin, 2005; McBrien, Jones, & Cheng, 2009; Den & Yuen, 2009; Wheeler, 2007). Lemak, Reed, Montgomery, and Shin (2005) validated Moore (1997) transactional distance as a construct; specifically identified dialogue and structure as predictor variables.

Structure.

In a well-constructed empirical study, Lemak, Reed, Montgomery, and Shin (2005) validated structure as an element proportional to transactional distance (Moore, 1997). They identified instructor flexibility, individualized instruction and feedback as factors of instructor effectiveness that decreased structure, thereby decreasing transactional distance. Deng and Yuen (2009) found additional evidence for Moore (1997), noting that when the structure of blog activities decreased students had more opportunity to exercise their autonomy.

Contrary to Moore (1997), McBrien, Jones, and Cheng (2009) found that students positively responded to clearly defined structure with clear and consistent expectations and roles. Moore identified an inverse relationship between transactional distance and structure, which the McBrien, Jones, and Cheng (2009) data seems to challenge. Participants in the McBrien, Jones, and Cheng (2009) study appreciated the structure as a guide for participation. Wheeler (2007) also recognized the preference of autonomous learners for email that increased structure compared to the telephone that decreased structure. McBrien, Jones, and Cheng (2009) and Wheeler (2007) perceived their results as a contradiction to Moore's construct that structure and transactional distance were inversely related, but it could be interpreted as a discrepancy in definition of structure or preference of communication forms.

As McBrien, Jones, and Cheng (2009) noted, participants in their study interpreted structure as a guide, not as a restriction. Moore (1997) identified the importance of creating an appropriate structure for the online learner, "Much time and creative effort, as well as understanding of the characteristics of the learner population, have to be devoted to identifying the extent of structure needed in any programme, and in designing appropriately structured presentations and interactions" (p. 24). Given this clarification, it appears that the course

designers in the McBrien, Jones, and Cheng (2009) study did well to find the appropriate balance of structure.

Wheeler (2007) applied the finding that learners preferred email with greater structure than the telephone to refuting Moore (1997), though the issue here could be of preferred communication style. In 2007 there may simply have been more people preferring to communicate via email than the telephone. Consistent with interactive platform of online environments, online students may prefer an asynchronous form of communication.

Given the potential flaws in the conclusions of McBrien, Jones, and Cheng (2009) and Wheeler (2007) and the strength of the Lemak, Reed, Montgomery, and Shin (2005) and Den and Yuen (2009) study, the element of structure in transactional distance perseveres. Additional studies could be useful to enhance the understanding of the particular design to ensure minimized structure and decreased transactional distance.

Autonomy.

Industrialized education encourages "self-regulated autonomous" learning (Peters, 2010, p. 33), inherent in adult learners (Knowles, 1990). As noted above, Den and Yuen (2009) and Wheeler (2007) investigated autonomy as an element of transactional distance. Den and Yuen (2009) reviewed blogs, which supported Moore's (1997) findings of the connection between structure, dialogue, and learner autonomy. They found that student autonomy increased when the structure of blog activities decreased. Wheeler (2007) found that autonomous students preferred electronic communication, even though it increased structure. Though these two studies reviewed autonomy, more questions remain than answers. Wheeler's (2007) conclusion resonates with Peters' (2010) theory that "suggests that industrialized and digitally enhanced education transmit competencies to the very persons who are needed in this complex, multi-

faceted and highly industrialized information and knowledge society" (p. 33). In this perspective, it seems that autonomous learners attracted to online learning, may be those who do best in the online classroom, and are those best fit to meet the challenges of the new technical society. Do successful online learners need to be autonomous? What other characterizations do autonomous learners have and how can they be met in the online environment?

Dialogue.

Ample discussion about the importance of dialogue for deep learning can be found in the previous section. This section is committed to the investigating the effect of dialogue on transactional distance. As noted earlier, self-awareness supports good communication. According to Moore (1997), transactional distance is the miscommunication potential within physical distance.

Enyedy and Hoadley (2006) proposed a new learning principle recognizing the dialectical relationship and complementary functions of dynamic peer dialogue and reflective reorganization of that dialogue into a monologic text for further sharing. Amhag and Jakobsson (2009) used dialogic theories of "Bakhtin (1986, 2004) and Rommetveit (2003)" on "dialogic interactions and meaning potentials" which align with previous literature reviews on dialogue. Lemak, Reed, Montgomery, and Shin (2005) found that students perceived "teacher effectiveness was rooted in ample dialogue" (p. 156). Friere (1987) used dialogue as a student-centered, mutual inquiring, educative practice that lead to breakthrough learning and Bohm (Bohm & Edwards, 1991; Bohm & Nichol, 2004) brought groups of up to 40 individuals together to actively engage thinking, build trust, suspend presumptive thought, openly listen, and work toward creating shared meaning. While all of these findings concur with other findings noted here, the third finding highlights a level of awareness emphasized in the work of Senge

(1993, 2000, 2004, 2006). This unique level of dialogue where the participant has successfully suspended assumptions and opened to learning has been touted by Bohm, Freire and Senge as the essence to deep learning. Not only has Amhag and Jakobsson's (2009) study identified the importance of collaboration for learning and the need for students to learn how to use elearning collaboration tools, it has connected to a greater body of dialogue research in a meaningful way.

Wheeler (2007) suggested further study of dialogue as defined by two proposed subfactors, social presence and dialogue immediacy, specifically relating to Moore (1990). The interconnected, seemingly positively correlated factors emerged as a topic for further exploration.

Guidelines for Feedback

Butler and Winne (1995), Espasa and Menses (2010), Furnborough and Truman (2009), Hatziapostolou and Paraskakis, (2010), Lih-Ching Chen and Morgan (2008), Schlitz et al (2009), and Tanner and Jones (2007) expanded on the work of Hattie (Hattie & Timperley, 2007) providing a framework for feedback guidelines.

Task specific.

Hattie (Hattie & Timperley, 2007) identified the need for learning context, specifically task specificity, "to take on this instructional purpose, feedback needs to provide information specifically relating to the task or process of learning that fills [that] gap" (p. 82). Tanner and Jones (2007) and Hatziapostolou and Paraskakis, (2010) found that students benefited from individualized feedback with an explanation and discussion of the feedback. Specifically, Hatziapostolou and Paraskakis, (2010) identified that feedback be "directly related to assessment criteria/learning outcomes" (p.113). Task specific feedback guarantees that the learner receives relevant information.

To ensure that feedback was task specific and individualized, Schlitz et al (2009) produced rubrics to improve feedback communication.

> As a result, students seem to be having more "significant" learning experiences – that is, informal feedback from students indicates that they have found the rubrics to be very help in preparing for assignments and in understanding how assignments are graded, and they are appreciative of receiving immediate feedback on their performances. (Schlitz et al, 2009, p. 144)

Rubrics break down learning outcomes into very specific, itemized criteria that provide the learner details regarding the grading of their assignment. A well-written rubric transforms the assignment description into gradable criteria. This strong link between the assignment expectations and feedback based on those same criteria of rubrics support the need for feedback to be task specific. Rubric use should be expanded upon in further feedback studies.

Self-regulation.

"Expert teachers engage students in learning and develop in their students self-regulation, involvement in mastery learning, enhanced self-efficacy, and self-esteem as learners" (Hattie, 2003, p. 10). Bohm (Bohm & Nichol, 2004 and Bohm & Edwards, 1991) and Senge (Senge et al., 2004) identified self-awareness as critical to learning in their dialogue studies. Boys (1999), Howard (2002), Senge (Senge et al., 2004), Black (2005), Roberts (2005), and Innes (2006) concurred that dialogue required deep self-awareness.

Senge (Senge et al., 2004 and Senge 2006) identified deep learning based on sensing, presencing and realizing. Realizing includes space for collection of and response to feedback (Senge, 2006). In alignment with Senge's findings, Butler and Winne (1995) found that feedback served as an "inherent catalyst" to self-regulation, and that effective learners seek out external

feedback (p. 246). Espasa and Menses (2010) found data that supports, the "relevance of feedback in favouring self-regulatory competences within distance teaching and learning practices" (p. 289).

Furnborough and Truman (2009) took the concept of self-regulation further, suggesting that "external feedback is unlikely to influence learning unless it is successful in stimulating internal feedback" (p. 401), and concluding that "Students' ability to use feedback effectively appears to be related to their confidence and persistence, their capacity to learn and, in the long term, their potential for achieving self-regulation" (p 413). The extent of evidence connecting self-regulation and feedback denotes the importance of the interaction of the two for teaching and learning. Without some level of internalization, feedback is ineffective regardless of its other qualities.

Low task complexity.

Hattie (Hattie & Timperley, 2007; Butler & Winne, 1995) found that "feedback was also influenced by the difficulty of goals and tasks…[having] the most impact when goals are specific and challenging but task complexity is low" (Hattie & Timperley, 2007, p. 86). The current literature failed to include significant review of task complexity in addressing feedback.

The Gorsky, Capsi, and Smidt (2007) study investigated student dialogic behavior, and concluded that students sought out teachers for help with difficult course material and peers for moderately difficult material only after attempting to understand the material on their own. Understanding the dialogic behavior of learners helps identify when students reach out to their professors for instructional support. Understanding that learners tackling difficult subjects may have already exhausted their ability to understand the material, should be taken into account for an appropriate feedback response.

With the scant literature addressed here, the relationship between task complexity and feedback requires additional research. Given the positive role of rubrics in delivering task specific feedback, the issue of task complexity could be a matter of breaking down large, complex criteria into detailed, manageable ones. This is definitely a field in need of further review. Interestingly, Hattie (Hattie & Timperley, 2007) tied task complexity into timing of feedback.

Timing.

Difficult tasks benefit from a delayed response, whereas simpler tasks not needing the additional time benefit from an immediate response (Hattie & Timperley, 2007). According to Hattie (Hattie & Timperley, 2007), learners benefit from immediate FT and delayed FP. Butler and Winne (1995) had similar results in their literature, noting "if transfer of tactics for learning is the objective, delaying feedback to provide students time to reflect on how they learn may be more effective" (p. 268). The difference between the correctness of a response and the process of learning underlies this distinction. While FT provides feedback on the correctness of the learner, FP provides input on the learner's process.

Though Tanner and Jones (2007), Schlitz et al (2009), Lih-Ching Chen and Morgan (2008), Hatziapostolou and Paraskakis, (2010) did not take task complexity into account, they noted that students benefitted from timely feedback. Hatziapostolou and Paraskakis, (2010) added that timely feedback supports the student's ability to recall task activity and future application.

As recounted by Butler and Winne (1995), timing has been thoroughly addressed in the existing literature. Interestingly, the nuances of timing do not seem to be overwhelmingly understood as noted in this literature review where timely feedback seemed a foregone

conclusion (Tanner & Jones, 2007; Schlitz et al, 2009; Lih-Ching Chen & Morgan, 2008; Hatziapostolou & Paraskakis, 2010).

Positive and negative feedback.

Hattie (Hattie & Timperley, 2007) found that FT has the potential to benefit from both positive and negative feedback. Negative FS had the greatest affect when combined with FT.

In a complex relationship of motivation, the effectiveness of FR depended on "commitment, mastery or performance orientation, and self-efficacy" (Hattie & Timperley, 2007, p. 98).

- If commitment is high, positive feedback increases motivation to learn more than negative feedback.
- If commitment is low, "we are more likely to learn as a function of negative feedback" (Hattie & Timperley, 2007, p. 99).
- The motivation increase from the negative feedback might be temporary and eventually lead to avoidance in the future, whereas positive feedback could lead to greater persistence and an increased long-term interest.

Furnborough and Truman (2009) noted that positive feedback would encourage proactive users of feedback to use "feedback as a learning tool by analysing it and attempting to integrate it into the learning process… as well as boosting learners' confidence and creating a virtuous circle that spurs them on to greater achievements" (p. 412). These results indicate a strong connection between confidence, commitment, and use of feedback in the self-regulatory process.

The current literature did not address negative feedback, effectively ignoring a distinguishing characteristic of feedback. Behaviorism as a theoretical model has greatly influenced the traditional classroom; its value in understanding the role of positive and negative

reinforcement would strength the body of work on feedback. Additional behaviorism literature review combined with feedback studies could help better understand the role of both positive and negative feedback for learners.

Non-threatening environment.

For optimum learning and openness to feedback, the learning environment should be non-threatening, safe, and open to differing perspectives. Tanner and Jones (2007) found that pupils valued an environment where they were free to make mistakes. Schlitz et al (2009) noted that faculty in a faculty learning community needed an open safe environment to enhance collaboration. These findings correspond with those found in dialogue studies, highlighting the depth of learning instigated in bias-free environments where participants are safe to share differing opinions and make mistakes without fear of ridicule (Bohm & Edwards, 1991; Shor & Freire, 1987; Burbles, 2006).

Hattie (Hattie & Timperley, 2007) found FS the most prevalent form of feedback, which is feedback aimed personally at the student. Specifically, FS without FT "directs attention away from the task to the self" (Hattie & Timperley, 2007, p. 96). FS not only detracts from the learning content, it could lead to an unsafe learning environment. None of the literature reviewed investigated FS or similar non-task related feedback that could lead to an environment not conducive to learning. Given the literature supportive of a non-threatening, safe and open learning environment, the prevalence of FS and its effect on the learning environment requires additional research.

Praise.

Praise, a form of FS, is commonly used in the classroom (Hattie & Timperley, 2007). Though students liked praise, specifically for effort and achievement rather than for ability and

behavior, the majority of students preferred quiet and private praise (Hattie & Timperley, 2007). The actual analysis by Hattie (Hattie & Timperley, 2007) found praise to be a complicated element of feedback. Praise was not addressed in the current literature reviewed here. Given its common use and complexity, this field could benefit from additional studies of praise.

Two-way communication.

Moore (1997) highlighted the importance of two-way communication for education programs. "Teachers need to seek and learn from feedback (such as from students' responses to tests) as much as do students" (Hattie & Timperley, 2007, p.104). Tanner and Jones (2007) and Lih-Ching Chen and Morgan (2008) found instances of two-way communication. The Tanner and Jones (2007) study use of video for reflection provided students and teachers alike an opportunity to reflect on the interaction for further growth. Lih-Ching Chen and Morgan (2008) found that the use of instant messaging system (IM) resulted in students feeling that the increased back and forth discourse led to better understanding of the material, though it is unclear if teachers felt an improved learning experience as well.

While the above technologies supported two-way communication and teacher reflection as well as student reflection, others either failed to address student feedback or used a technology that did not support it. Schlitz et al (2009) discussed the need for collaboration within the FLC, but the educational technology used to transmit student feedback did not explicitly support two-way communication.

Two-way communication seems to be an important element of collaboration and dialogue, in addition to its role in feedback. Limited information regarding two-way communication within this current literature highlights an area in need of additional review.

Self-reliance.

Students need to incorporate proactive behavior in assessing the three feedback questions on their own. Hattie (2003) noted the importance of students working proactively to assess their learning by asking "Where am I going?". How am I going? and Where to next?" (p. 2). Butler and Winne (1995) noted that "self-generated feedback is rich" as it contains "current states of knowledge, goals set, the productivity of strategies or tactics employed, the rate of progress towards goals, and affective content in reaction to perceptions about achievements and progress" (p. 264). Though this could be incorporated into an area of self-regulation, specifically focusing on a student's self-reliance emerged as its own element.

In accordance with Hattie, Butler and Winne (1995) found that effective learners seek out external feedback. Schlitz et al (2009) discovered, "Waypoint rubrics on Blackboard has resulted in the instructor becoming more coherent, clear, and interactive in developing course learning and assessment activities that are compatible with course objectives, and, in turn, has enabled students to become more proficient and self-directed learners" (p. 144). Hence the rubric supports task specific feedback that results in self-directed learning.

Self-reliance emerged as a separate defining factor of successful learners. This independent characteristic aligns with the autonomous, adult learner (Knowles, 1990).

Technology enhanced.

The most effective forms of feedback provide cues or reinforcement to learners; are in the form of video-, audio-, or computer-assisted instructional feedback; and/or relate to goals" (Hattie & Timperley, 2007, p. 84). This review of literature identified numerous educational technologies that enhanced the student feedback experience (Tanner & Jones, 2007; Schlitz et al, 2009; Lih-Ching Chen & Morgan, 2008; and Hatziapostolou & Paraskakis, 2010. In the Tanner

and Jones (2007) study, students found the technology enhanced the interaction, deepened age appropriate reflection, and were fun. Schlitz et al (2009) found technology allowed their group to create web-based rubrics that will "enhance performance-based assessment, [during] the development of a culture of assessment" (p. 146). Lih-Ching Chen and Morgan (2008) concluded that IM improved course facilitation by: "promoting cooperation among the students, and active learning, and secondarily, prompt feedback and contact with the instructor" (p. 20). Hatziapostolou and Paraskakis, (2010) found the OFES tool effective in communicating student feedback, which resulted in improved student reception of feedback and student motivation.

As stated by Hattie (Hattie & Timperley, 2007), technology has the capacity to enhance how a student receives and interacts with feedback. Evidence found in this literature review indicates that continued use of technology-driven feedback could improve student learning.

A need for instructor training.

To ensure implementation of effective feedback best practices, several researchers recommended teacher training (Espasa & Mensese, 2010; Furnborough & Truman, 2009). Another advocated for training with use of educational technologies (Schlitz et al, 2009). Espasa and Menses (2010) identified the importance of teachers learning the types and characteristics of feedback. Though not explicit, Staarman (2009) uncovered a need for training "when introducing new communication technology in schools" to establish appropriate ground rules for discourse" (p. 94).

Identifying best practices and guidelines to improve the learning experience should not end with this literature review. Instead these emerging themes should be shared with those on the frontline of the classroom. Students everywhere should benefit from these findings.

Conclusion

Working from the foundational ideas presented in the Breadth section, this literature review provided empirical evidence and discourse on the importance of appropriate instructional feedback for learning. The literature review reinforced and expanded on the foundational knowledge of Hattie and Timperley (2007) and Peters (2010). Online learners benefit from feedback, and educational technologies designed with suitable learning principles enriched students' feedback experience within the online environment. Educational technologies supported timely feedback, social presence, dialogue, collaboration, reflection, improved student satisfaction, and aligned with learning principles. Reinforcing the findings in KAMI, the importance of dialogue for deep learning returned as a necessary element of online learning.

Challenges of online learning included technical difficulties and Moore's (1990) transactional distance. With appropriate technical support and qualifying requirements, online learning environments can overcome these technical challenges and meet the educational needs of learners. Though Moore and others highlighted the potential issue of transactional distance, as with other elements of learning environments, its harm seems easily minimized with careful instructional design, excellent instructor facilitation, and open dialogue. None of the challenges minimized the online environment as an appropriate venue for learning.

For too long the discussion surrounding distance education has centered on its ability to compete with traditional education. Comparisons should end. The focus should be on activities that support learning rather than how interaction in a new environment emulates the old one.

Depth Summary

The emphasis of this review on learning-promoting-feedback provides an opportunity to break down an instructional interaction to improve its use as an educational tool. This investigation provided clearly defined feedback types, their role in supporting learning, and

numerous holes in the research needing further investigation. Recommendations from this review of feedback include the following:

- Adopt FP, FR and FS as generally accepted feedback types
- Separate FT into two feedback types
    - FC, feedback that indicates correctness
    - FL, feedback that provides learning resources
- Comprehensive faculty training regarding effective use of feedback
- A need for additional research,
    - The connection between confidence levels and feedback effectiveness
    - Dialogic errors identified by MEPA
    - Ideal structure for feedback communication
    - Feedback guidelines,
        - Rubric use, development, and implementation
        - Task complexity
        - Positive and negative feedback connected to existing body of knowledge of behaviorism
        - Praise
        - Two-way communication
        - Timing, instant versus delayed feedback

The notion that dialogue encourages deep learning through collaboration persists. An open, collaborative space of diverse opinions and mutual inquiry fosters self-regulated learning. Such an environment supports dialogic communication through feedback, thereby encouraging deep

learning. Following the guidelines presented here, learners and teachers can maximize the effectiveness of feedback and optimize learning.

The overwhelming theme of this literature review regards the importance of feedback in student learning. Given its significance, several studies identified a need for instructor training (Espasa & Mensese, 2010; Furnborough & Truman, 2009, Schlitz et al, 2009). In an expansion of the work of Hattie, Moore, Peters, and Knowles, the authors in this literature review provided insight into the instructional needs of the online, adult learner, educational technologies, and guidelines for feedback. According to this review, instructional needs of the online, adult learner included a need for feedback, a need for dialogue, principles of instruction, principles of interaction, and elements of a learning community. Educational technologies addressed timely feedback, increased social presence, improved collaboration, increased dialogue, improved reflection, aligned with learning principles, greater student satisfaction, the challenge to educational technologies, and transactional distance. Guidelines for feedback included task specific, self-regulation, low task complexity, timing, positive and negative feedback, non-threatening, praise, two-way communication, self-reliance, and technology enhanced.

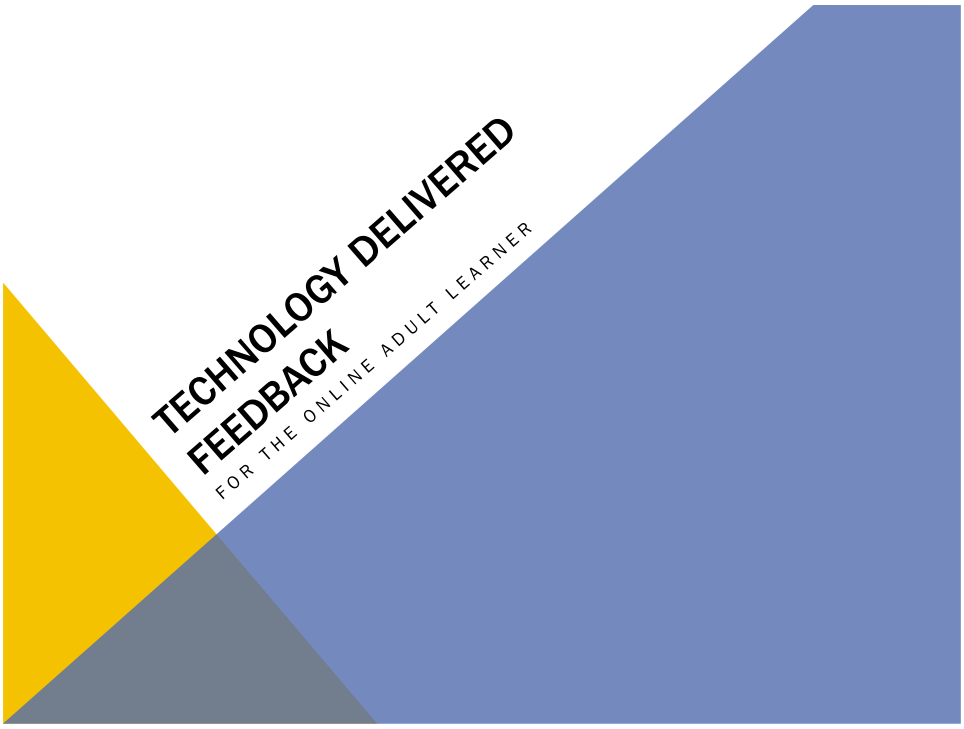
Incorporating the developing themes from this review into a presentation for instructor training specifically focused on feedback guidelines will be addressed in the Application section of this KAM.

Application

SBSF 8227: Current Research in Ways of Knowing & Individual Differences in Human Development

Based on the foundational knowledge supplied with a breadth from Knowles, Peters, Hattie, and Moore, a review of current literature regarding the use of educational technologies to communicate feedback in online environments, this paper will organize emergent themes into a presentation for instructor training. The training will introduce faculty to the needs of adult learners, the expansive field of online learning, and the use of dialogue to deepen learning. In an effort to optimize the learning experience of students, the presentation highlights the importance of feedback in the online classroom and introduces the instructional technology, Waypoint Outcomes.

Presentation - Technology Enhanced Feedback: For the Adult Online Learner



Discussion

Utilizing the work of Knowles, Peters, Hattie, and Moore, informed by the extensive literature review, I created the faculty presentation in an effort to educate faculty about the role and appropriate practice of feedback in helping their students achieve. Relying on Adragogy as a model for understanding adult learner characteristics, on technology to enhance feedback, on feedback to close the gap of transactional distance, the presentation applies the theoretical foundational knowledge of Hattie with the literature review findings to best practices for feedback.

Adult students are busy; their responsibilities may include caregiving, work, military service, volunteering, and other activities. Differing from the traditional aged college student, adult learners range from young adults to older adults. They have made a decision to invest in their education.

Characteristics of Adult Learners

As a basis for understanding the needs of adult learners, we rely on the work o Knowles. The core principles of Knowles' (Knowles, Holton & Swanson, 2006, p. 9) Androgogy involve self-concept, experience, a need to know, readiness, orientation to learning, and motivation.

Self-concept.

The self-concept of the learner requires recognition of the adult status. These learners are independent and self-directed. When treated otherwise, these learners may respond with resentment and resistance.

Experience.

Honoring the experience of learners improves lesson plans, as vague concepts come to life in a discussion among adults sharing their relevant life experiences. Bransford et al (2000) acknowledged the valuable connection between learning and previous experiences,

> All learning involves transfer from previous experiences. Even initial learning involves transfer that is based on previous experiences and prior knowledge…. Effective teachers attempt to support positive transfer by actively identifying the strengths that students bring to a learning situation and building on them, thereby building bridges between students' knowledge and the learning objectives set out by the teacher. (p. 237)

To encourage bridging between learned concepts and previous experiences, Knowles (1990) recommended action-learning techniques such as "discussion, laboratory, simulation, field experience, and team project" (p. 46). These activities encourage students to share their personal connections to learned concepts, which may trigger new connections for other learners.

Need to know.

In addition to a need for helping learners make connections between learning and life experiences, adult learners have a need to know. Students measure the value of the learning based on how it improves the effectiveness of their performance or the quality of their lives. Curriculum should provide a clear connection to performance or life quality to meet the need to know of students.

Readiness.

An adult learner needs to see relevance throughout learning within the program and courses, down to the coursework. The degree relevance may lose its effect on the learner's readiness to learn if the learner views coursework failing in practical application. Faculty should

emphasize the need-to-learn and experience connection. If learners have an opportunity to observe or witness accounts of goals met by graduates of the program, then their readiness to learn, openness to new ideas, engagement, and motivation will be primed for an optimal learning experience.

Orientation to learning.

As noted by Knowles (Knowles, Holton, & Swanson, 2006, p. 67), "Adult learners learn new knowledge, understandings, skills, values, and attitudes most effectively when they are presented in the context of application to real-life situations." As seen throughout, these core principles of learning overlap as the students' experience, need to know, readiness to learn, and orientation to learning are intertwined. Application of knowledge in real-life situation stimulates the necessary connections for deep learning.

Motivation.

Though adult learners may return to school to meet a work requirement, they typically find intrinsic motivators most inspiring. Awareness of these motives can help faculty properly encourage their students. As students' competence in their professional or personal life improves as a consequence of their learning, their confidence and motivation will be ignited.

Barriers to learning.

While many adults bring relevant experience into the classroom, others may feel unfamiliar with the learning. Senge (Senge et al, 2004) revealed the uncertainty that can interfere with a student's motivation,

> When we're learning something new, we can feel awkward, incompetent, and even foolish. It's easy to convince ourselves that it's really not so important after all to

> incorporate the new – and so we give up. This is our own psychological "immune system" at work. (p. 35)

Learning involves a sense of vulnerability that many may find uncomfortable. In a society that rewards competence, it is important that students feel safe in the classroom to build that competence rather than linger on it.

These barriers to motivation manifest in numerous ways. According to Knowles (Knowles, Holton, & Swanson, 2006), these barriers include

- Negative self-concept that underestimates the ability to learn
- Insecure self-concept that resists being challenged with new information
- Inability to physically attend class at a given time due to time and location of class
- Outside responsibilities
- Time constraints and other limited resources

Faculty can support a more positive self-concept by encouraging students as they deserve. Within instructional feedback, we need to integrate positive reinforcement. We need to create a safe, non-threatening learning environment to foster dialogue that allows learners to suspend assumptions and be open to new concepts. Educational technologies accompanying distance learning options provide solutions to the final three barriers.

Distance Learning

Distance learning is now accessible and accepted. In our current digital era, distance is no longer a barrier to education. As with most new trends, many turned a critical eye to distance learning in search of problems.

Transactional distance.

One identified problem was identified by Moore (1997) in his theory of transactional distance. Moore (1997) defined transactional distance as the "psychological and communications space" that could lead to potential misunderstandings (p.22). It could be argued that this transactional distance exists within all communication, distant and in person. Whether communicating via technology or face to face, is there not always the potential for miscommunication?

Dialogue.

In my studies, the resolution to potential miscommunication lies in dialogue. Dialogue has successfully worked as a means to resolve conflict (Bohm & Edwards, 1991), seek personal growth and enlightenment (Senge et al, 2004), educate the illiterate (Shor & Freire, 1987), and improve the level of communication (Bohm & Nichol, 2004). Moore (1997) found an inverse relationship between the use of dialogue and transactional distance. Though for Moore (1997) the focus of the dialogue in "educational relationships is towards the improved understanding of the student" (p. 23), Bohm and Nichol (2004) used dialogue to create shared meaning and Freire, Shor and Freire (1987) used dialogue as a tool of mutual inquiry for student and teacher.

Communication.

There are two basic forms of communication, one-way and two-way. One-way communication is what I am doing right now with this presentation. Once we move into the questions segment, this presentation becomes two-way communication. One-way communication in the classroom includes instructor video, text, audio, or lecture as presented to an audience in person or via technology in an online environment. One-way communication also includes a student's internal dialogue as they interact with the presented material. Two-way

communication provides an opportunity for an exchange of ideas. This includes the previous noted instructor presentations, now involving the ability for students to interact with the instructor. Two-way communication also includes dialogue through technology supported communication, such as email, instant message, learning platform, and video conference. Two-way communication can also be found in peer collaboration, as they support one another and generate new ideas.

Factors that affect dialogue.

Moore (1997) noted environmental factors that affect the quality of dialogue in the online environment, though you will recognize these as barriers within the face to face classroom as well. Course enrollment is always an issue, particularly obvious in large lecture halls. The frequency opportunities for communication certainly limit dialogue. The physical environment of the participant may not be conducive to dialogue, whether in a face to face or virtual environment. A student in a large lecture hall faces the same difficulty as a student trying to participate in an online discussion in a crowded, distracting lunchroom. The emotional environment of participants is equally at issue, as students and instructors alike benefit from supportive social structures and encounter similar difficulties in dealing with personal crises while trying to attend to their lessons. Moore (1997) also noted the personality of participants, as dialogue requires awareness and openness that may be difficult for some to embrace. Finally, course content can inhibit dialogue, as topics perceived as particularly challenging may bring students to class with a negative disposition, contributing to a negative emotional environment.

Numerous factors influence dialogue in an online environment. Dialogue relies on an open, authentic experience, therefore the social presence of participants needs to be sincere, authentic as well as break through the anonymity of the online environment. Participants come

with their personal burden of assumptions. It is imperative that they suspend their assumptions and be open to the new ideas being communicated. Nonverbal communication is readily accepted to account for a large percentage of any message. In the online environment, participants have overcome the lack of nonverbal cues with the use of emoticons, style, punctuation, and font. The final influence to dialogue rests in the technical skillset of participants. There should be a benchmark of technical skills for online users, as those uncomfortable with technology will perceive it as an access issue, which will then influence their ability and tone when participating.

Deepens learning.

Not only does dialogue decrease transactional distance, it also deepens learning. On the deeper level, learning is about developing a capacity to reliably produce a certain quality of result. It is about becoming a "bicycle rider" not just riding one time, and this capacity is what grows as a result of the deep learning cycle (Senge, 2006, pp. 284-285).

The deep learning cycle, coined the U Process by Senge et al, includes:

- Sensing: deep, inquiry into their mental models through seeing reality beyond their filters;
- Presencing: moving from there to a deep process of connecting with purpose and visioning, individually and collectively;
- Realizing: then moving into rapid prototyping to translate visions into concrete working models from which feedback can be garnered and further adjustments made. (Senge, 2006, Appendix 3)

Dialogue creates the space for presence, noted here as an opportunity to retreat and reflect, which leads to the deep learning described by Senge (2006). As presented here, dialogue supports

reducing the issue of transactional distance, collaboration, and deep learning. For the purpose of the presentation, feedback represents the mode of dialogue.

Feedback

Technology delivered feedback.

As depicted in the presentation, the self-directed adult learner needs "the ability to perceive one's self objectively and accept feedback about one's performance non-defensively" in an effort to be open to learning (Knowles, 1990, p. 174). Acknowledging feedback without defensiveness can be challenging. Some students are quick to defense, while others are able to suspend that response and engage in an openness that allows them to assess the feedback without defense. The immense power of feedback requires attention. In fact, feedback is the most important factor of influence on a student's academic achievement (Hattie, 2010).

Hattie and Timperley (2007) identified three main questions for the purpose of feedback. The first, where am I going? This answers the goal or objectives that the learner is attempting to understand. The second question, how am I going? This answers the current understanding and tracks the learner's progress. The third question, where to next? This answers the future understanding and prepares the learner to return to the initial question, beginning with a new goal. I created the following visual to illustrate how feedback fills in the gap between the goal and its progress.

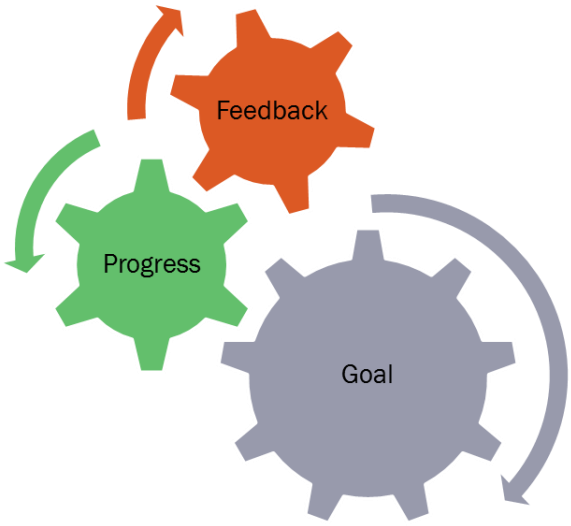


Figure 11. The role of feedback in supporting goal progression.

Feedback informs the discrepancy. Without proper feedback, the learner may believe they are making progress and not recognize gaps that will lead to future misunderstandings.

Hattie and Timperley (2007) identified four feedback types, task-specific, self-regulation, task-process, and self-related.

- Task-Specific (FT) may simply denote correct or incorrectness, but can also "include directions to acquire more, different, or correct information" (Hattie & Timperley, 2007, p. 90).
- Self-regulation (FR) involves "interplay between commitment, control, and confidence…. It addresses the way students monitor, direct, and regulate actions toward the learning goal…[implying] autonomy, self-control, self-direction, and self-discipline" (Hattie & Timperley, 2007, p. 93).
- Task-process (FP) provides feedback on the process used to create, complete, or learn, which typically involves instructional strategies (Hattie & Timperley, 2007).

- Self-related (FS) feedback is directed to the student's personal sense of self. Unfortunately, this is the least effective feedback and very common.

FR and FP combined lead to incredible outcomes; “FR (self-regulation) and FP (task process) are powerful in terms of deep processing and mastery of tasks” (Hattie & Timperley, 2007, pp. 90-91).

Effective feedback.

Effective feedback " needs to be clear, purposeful, meaningful, and compatible with students’ prior knowledge and to provide logical connections” (Hattie & Timperley, 2007, p. 104). Based on a literature review, the following were determined to be effective elements of feedback.

- Task specific
- Self-regulation
- Low task complexity
- Timing
- Positive and negative feedback
- Non-threatening
- Praise
- Two-way communication
- Self-reliance
- Assessment – a need for change
- Technology enhanced

Task specific.

Feedback needs to be task specific. Hattie (Hattie & Timperley, 2007) noted the need for learning context, specifically task specificity, "to take on this instructional purpose, feedback needs to provide information specifically relating to the task or process of learning that fills [that] gap" (p. 82). There is no advantage to tangential conversations when providing feedback.

Self-regulation.

Feedback should encourage student's self-regulation. "Expert teachers engage students in learning and develop in their students self-regulation, involvement in mastery learning, enhanced self-efficacy, and self-esteem as learners" (Hattie, 2003, p. 10). This concept corresponds with teaching learners how to learn.

Low task complexity.

Feedback should address tasks of low complexity. Hattie (Hattie & Timperley, 2007) found that "feedback was also influenced by the difficulty of goals and tasks…[having] the most impact when goals are specific and challenging but task complexity is low" (p. 86). This relates to the original goal of the where am I going question. Goals should be broken down into manageable tasks, as this increases the effectiveness of feedback.

Timing.

The timing of feedback is not as straight forward as some may think. Quick turnaround on the correctness of simple tasks benefits students. While students may prefer instantaneous feedback, the literature supports that task process feedback benefits from a delay where students have time to think about difficult tasks before receiving the feedback.

Positive and negative feedback.

The role of positive and negative feedback is complex.

- Negative feedback had the greatest influence when directed to the self (FS), especially when combined with task specific feedback (FT).
- FT has the potential to benefit from both positive and negative feedback.
- The effectiveness at FR depends on "commitment, mastery or performance orientation, and self-efficacy" (Hattie & Timperley, 2007, p. 98).
- If commitment is high, positive feedback increases motivation to learn more than negative feedback.
- If commitment is low, "we are more likely to learn as a function of negative feedback" (Hattie & Timperley, 2007, p. 99).
- The motivation increase from the negative feedback might be temporary and eventually lead to avoidance in the future, whereas positive feedback could lead to greater persistence and an increased long-term interest.

Dialogue.

Dialogue, learning, and feedback require a non-threatening, safe, and open learning environment. The common use of self-related feedback could lead to a threatening environment. As Hattie and Timperley (2007) noted, self-directed feedback without task-specificity "directs attention away from the task to the self" (p. 96). Though this is ineffective, it is also potentially threatening in the presence of negative self-related feedback.

Praise.

Praise is the most common form of feedback. Students liked praise, specifically for effort and achievement rather than for ability and behavior. The majority of students prefer quiet and private praise. (Hattie & Timperley, 2007).

Two-way communication.

Two-way communication was illustrated earlier in relation to one-way communication. Here, two-way communication emphasizes the need for the teacher to receive feedback from the student regarding their interaction. As with the student, feedback provides information to the teacher about how well they are meeting their intended goals.

Self-reliance.

The importance of self-reliance is noted in the myriad of self-direction, self-regulated, and other self-directed behaviors noted within this presentation. Self-reliance accords the student proactive behavior in assessing how they are meeting the three feedback questions.

Assessment.

Throughout this review it became apparent that assessment needs a change. Rather than results-driven assessment, we need to fine tune our assessments to address the three feedback questions. With this change, feedback can be seen as an instructional instrument rather than an after-the-fact correction.

Technology-enhanced.

Hattie and Timperley (2007) "The most effective forms of feedback provide cues or reinforcement to learners; are in the form of video-, audio-, or computer-assisted instructional feedback; and/or relate to goals" (p. 84). This finding confirms what we see with the use of instructional technologies, that technology enhances feedback.

Benefits of educational technologies.

- Timely feedback,
- Improved collaboration,
- Increased social presence,

- Increased dialogue,
- Improved reflection,
- Appropriate application supports learning principles,
- Increased student satisfaction.

Waypoint Outcomes.

The presentation provides good and bad examples (Brookhart, 2008) of feedback tied to the concepts above as well as screenshots of Waypoint Outcomes being used to provide feedback on a student's assignment. Waypoint is a grade book integrated technology that:

- Connects feedback to learning outcomes, as the outcome-based rubric is built within the system and becomes attached to the graded paper.
- Provides an opportunity for task-specific feedback, as the rubric is composed of outcome-based criteria. Rather than give a grade unrelated to the paper, the integrated rubric forces a connection between the task of the assignment and grading criteria.
- Enhances the ease and consistency for faculty in grading, as the rubric ensures criteria-based grading that is the same for all papers, and the tool increases the speed and efficiency of grading.
- Collaboration of effective instructional feedback deposited in preloaded Common Comments, as a library for faculty to add comments within the assignment. This is especially useful for common errors, such as APA, organizational, and grammatical errors.

Conclusion

The culmination of foundational theory and current literature led to the presentation of Technology Delivered Feedback that applies the best practices of feedback in an effort to

encourage student achievement. Whether learning face to face or not, the ideal environment for learners involves the initial interaction with learning material guided by an expert faculty member who then provides appropriately timed, low complex, task-specific feedback that emboldens self-regulation and self-reliant behavior with appropriate positive and negative comments in a non-threatening manner, giving private praise where due through two-way communication, and using technology to enhance the entire process. As more adult learners rely on distance learning options to continue their education, the importance of ensuring appropriate teaching and learning for these online learners has never been more important. Attention to the best practices identified in the faculty presentation is the first of many steps that will support learner achievement in the classroom.

References

Amhag, L., & Jakobsson, A. (2009). Collaborative learning as a collective competence when students use the potential of meaning in asynchronous dialogues. Computers & Education, 52(3), 656-667. Retrieved from ERIC database.

Aud, S., Hussar, W., Kena, G., Bianco, K., Frohlich, L., Kemp, J., Tahan, K. (2011). The condition of education 2011 (NCES 2011-033). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Black, L. (2005). Dialogue in the lecture hall: Teacher-student communication and students' perceptions of their learning. Qualitative Research Reports in Communication. 6(1), 31-40.

Bohm, D. & Edwards, M. (1991). Changing consciousness: Exploring the hidden source of the social, political and environmental crisis facing our world. Harper: San Francisco.

Bohm, D., Factor, D., Garrett, P., Burg, R. (1991). Dialogue – A proposal. Retrieved May 12, 2008 from http://www.david-bohm.net/dialogue/dialogue_proposal.html.

Bohm, D. & Nichol, L. (2004). On dialogue. London: Routledge.

Boys, M. C. (1999). Engaged pedagogy dialogue and critical reflection. Teaching Theology and Religion. 2(3), 129-136.

Bransford, J., National Research Council (U.S.), & National Research Council (U.S.). (2000). How people learn: Brain, mind, experience, and school. Washington, D.C: National Academy Press.

Bridge, P., & Appleyard, R. (2008). A comparison of electronic and paper-based assignment submission and feedback. British Journal of Educational Technology, 3(4), 644-650.

Brookhart, S. M. (2008). How to give effective feedback to your students. Alexandria, Va: Association for Supervision and Curriculum Development. Retrieved from http://www.ascd.org/publications/books/108019/chapters/Types-of-Feedback-and-Their-Purposes.aspx

Butler, D. L., & Winne, P. H. (1995). Feedback and self-regulated learning: A theoretical synthesis. Review of Educational Research, 65(3), 245-81.

Cavanaugh, T., & Cavanaugh, C. (2008). Interactive maps for community in online learning. Computers in the Schools, 25(3/4), 235-242. doi:10.1080/07380560802367811.

Collaboration. Retrieved June 26, 2012 from http://liu.english.ucsb.edu/wiki1/images/4/4c/Collaboration.gif

Council for Higher Education Accreditation (2011). Important questions about accreditation degree mills and accreditation mills. Retrieved from http://www.chea.org/degreemills/default.htm

Deng, L., & Yuen, A. (2009). Blogs in higher education: Implementation and issues. TechTrends: Linking Research and Practice to Improve Learning, 53(3), 95-98. Retrieved from ERIC database.

Dewar, T. & Whittington, D. (2000). Online learners and their learning strategies. Journal of Educational Computing Research, 23(4), 415-433.

Diamond, J. M. (1998). Guns, germs, and steel: The fates of human societies. New York, NY: W.W. Norton & Co.

Dickard, N. & Schneider, D. (2011). The digital divide: Where we are, a status report on the digital divide. Retrieved from http://www.edutopia.org/digital-divide-where-we-are-today

Enyedy, N., & Hoadley, C. (2006). From dialogue to monologue and back: Middle spaces in computer-mediated learning. International Journal of Computer-Supported Collaborative Learning, 1(4), 413-439. Retrieved from ERIC database.

Erkens, G., & Janssen, J. (2008). Automatic coding of dialogue acts in collaboration protocols. International Journal of Computer-Supported Collaborative Learning, 3(4), 447-470. Retrieved from ERIC database.

Espasa, A., & Meneses, J. (2010). Analysing feedback processes in an online teaching and learning environment: An exploratory study. Higher Education, 59(3), 277-292.

Furnborough, C., & Truman, M. (2009). Adult beginner distance language learner perceptions and use of assignment feedback. Distance Education, 30(3), 399-418.

Gajadhar, J., & Green, J. (2003). An analysis of nonverbal communication in an online chat group, The Open Polytechnic of New Zealand. Retrieved from http://repository.openpolytechnic.ac.nz/eserv.php?pid=openpoly:44&dsID=res_wp203gajadharj1.pdf

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. The Internet and Higher Education, 2(2-3), 87-105. Retrieved from http://tccl.rit.albany.edu/knilt/images/9/90/Unit_1-a.pdf

Gorsky, P., Caspi, A., & Smidt, S. (2007). Use of instructional dialogue by university students in a difficult distance education physics course. Journal of Distance Education, 21(3), 1-22. Retrieved from ERIC database.

Hamiton, J. (2011). Obama administration announces new steps to protect students from ineffective career college programs: Gives programs every chance to improve while

holding them accountable. Retrieved from http://www.ed.gov/news/press-releases/gainful-employment-regulations

Hattie, J. (2003). Formative and summative interpretations of assessment information. Retrieved from http://www.education.auckland.ac.nz/webdav/site/education/shared/hattie/docs/formative-and-summative-assessment-%282003%29.pdf

Hattie, J. (1992). What works in Special Education. Presentation to the Special Education Conference. Retrieved from http://www.education.auckland.ac.nz/webdav/site/education/shared/hattie/docs/special-education.pdf

Hattie, J. (1992). Educational trends likely to affect children's schooling by the year 2001. Swanbourne District Education Office. Retrieved from http://www.education.auckland.ac.nz/webdav/site/education/shared/hattie/docs/educational-trends.pdf

Hattie, J., & Jaeger, R. (1998). Assessment and classroom learning: A deductive approach. Assessment in Education: Principles, Policy & Practice, 5(1), 111. Retrieved from EBSCOhost.

Hattie, J. & Timperley, H. (2007). The power of feedback. Review of Educational Research, 77(1), pp. 81-112. doi: 10.3102/003465430298487 Retrieved from http://rer.sagepub.com/content/77/1/81.full.pdf+html

Hatziapostolou, T., & Paraskakis, I. (2010). Enhancing the impact of formative feedback on student learning through an online feedback system. Electronic Journal of E-Learning, 8(2), 111-122.

Howard, L. A. (2002). From ivory tower to town hall: Using dialogic inquiry as a critical pedagogy. American Behavioral Scientist. 45, 1125-1134.

Inderscience Publishers (2011, February 8). The international digital divide. ScienceDaily. Retrieved from http://www.sciencedaily.com /releases/2011/02/110208121345.htm

Innes, R. B. (2006). What can learning science contribute to our understanding of the effectiveness of problem-based learning groups? Journal of Management Education. 30(6), 751-764.

Instructional Methods. Retrieved from http://www.life-magazin.com/wp-content/uploads/2011/03/ins21.jpg

Isaacs, W. N. (1993). Taking flight: Dialogue, collective thinking, and organizational learning. Organizational Dynamics, 22(2), 24.

Jansen, J. (2010). Use of the internet in higher-income households. Retrieved from http://www.pewinternet.org/~/media//Files/Reports/2010/PIP-Better-off-households-final.pdf

Jung, I. (2001). Building a theoretical framework of web-based instruction in the context of distance education. British Journal of Educational Technology, 32(5), 525. Retrieved from Academic Search Complete database.

Khourey-Bowers, C. (2005). Emergent reflective dialogue among preservice teachers mediated through a virtual learning environment. Journal of Computing in Teacher Education, 21(4), 85-90. Retrieved from ERIC database.

Knowles, M. S. (2001). Lifelong learning: A dream. Retrieved from http://home.blarg.net/~building/future/Creating_the_Future/crfut_knowles.html

Knowles, M. S. (1995). Designs for adult learning: Practical resources, exercises, and course outlines from the father of adult learning. Alexandria, VA: American Society for Training and Development.

Knowles, M. S. (1990). The adult learner: A neglected species (4th ed.). Houston, TX; Gulf Publishing. Retrieved from http://www.eric.ed.gov/PDFS/ED084368.pdf

Knowles, M. S., Holton, E. F., & Swanson, R. A. (2006). The adult learner: The definitive classic in adult education and human resource development. Amsterdam: Elsevier.

Knowles, M. S., Nadler, L., & Nadler, Z. (1989). The making of an adult educator: An autobiographical journey. San Francisco: Jossey-Bass.

Kofman, F., & Senge, P. M. (1993). Communities of commitment: The heart of learning organizations. Organizational Dynamics, 22 (2), 5.

Lemak, D., Reed, R., Montgomery, J., & Shin S.J. (2005). Technology, transactional distance, and instructor effectiveness: An empirical investigation. Academy of Management Learning & Education, 4(2), 150-159. Retrieved from Business Source Complete database.

Lih-Ching Chen, W., & Morgan, W. (2008). Student perceptions of using instant messaging software to facilitate synchronous online class interaction in a graduate teacher education course. Journal of Computing in Teacher Education, 25(1), 15-21. Retrieved from Education Research Complete database.

Looi, C, Jonassen, D, Ikeda, M, Sixl-Daniell, Karin, & Williams, Jeremy. (2005). Paralinguistic discussion in an online educational setting: A preliminary study. IOS Press. Retrieved from http://www.u21global.edu.sg/portal/corporate/docs/wp_010.pdf

McBrien, J., Jones, P., & Cheng, R. (2009). Virtual spaces: Employing a synchronous online classroom to facilitate student engagement in online learning. International Review of Research in Open and Distance Learning, 10(3). Retrieved from ERIC database.

Merrill, M. D. (2002). First principles of instruction. Educational Technology Research and Development, 50(3), 43-59. Retrieved from http://mdavidmerrill.com/Papers/first principlesbymerrill.pdf

Moore, M. (Editor). (2007). Handbook of distance education (6th ed.). Mhwah, NJ; Lawrence Erlbaum Associates. Retrieved from http://www.scribd.com/doc/ 21818405/Handbook-of-Distance-Education-Moore-Anderson

Moore, M. (2006). Theory and theorists. European Distance Education Network. Retrieved from http://www.google.com/url?sa=t&rct=j&q=saba%2C%20transactional%20distance&source=web&cd=1&ved=0CCMQFjAA&url=http%3A%2F%2Fwww.eden-online.org%2Fcontents%2Fconferences%2Fresearch%2Fbarcelona%2FMichael_Moore.ppt&ei=4Ou_TqvDA8bkiAL75uGgAw&usg=AFQjCNFsctweCJCg9H4fynwuhBaAt673yA

Moore, M. (1997). Theory of transactional distance. In D. Keegan (Ed.). Theoretical Principles of Distance Education (pp. 22-38). New York, NY: Routledge. Retrieved from http://www.aged.tamu.edu/research/readings/Distance/1997MooreTransDistance.pdf

Moore, M.G. (1989). Three types of interaction. (Editorial). AJDE, 3(2). Retrieved from http://www.ajde.com/Contents/vol3_2.htm#editorial

Moore, M. G. (1973). Towards a theory of independent learning and teaching. Journal of Higher Education, (44), 661-679. Retrieved from http://www.ajde.com/Documents/theory.pdf

Objectives and Goals. Retrieved on June 26, 2012 from http://www.allfreelogo.com/images/vector-thumb/objective-and-goals-prev1222477279qx7b0u.jpg

Peters, O. (2010). Distance education in transition: Developments and issues (5th ed.). Oldenburg: BIS-Verl. der Carl-von-Ossietzky-Univ. Retrieved from http://www.mde.uni-oldenburg.de/download/asfvolume5_5_ebook.pdf

Peters, O. (2001). Learning and teachings in distance education. New York, NY: Routledge, Taylor & Francis Group.

Peters, O. (1967). Distance education and industrial production: A comparative interpretation in outline. Retrieved from http://www.fernuni-hagen.de/ZIFF/PETERS.HTM# rationalization

Roberts, P. (2005). Freire and Dostoevsky: Uncertainty, dialogue, and transformation. Journal of Transformative Education. 3(2), 126-139.

Russell, A. (2002). MBTI(R) personality preferences and diverse online learning experiences. School Libraries Worldwide. Retrieved from http://www.russellsynergies.com.au/pdf/ RussellSLWMBTIDiverseLearning.pdf

Schlitz, S. A., O'Connor, M., Pang, Y., Stryker, D., Markell, S., Krupp, E., Byers, C., Jones, S. D., & Redfern, A. K. (2009). Developing a culture of assessment through a faculty learning community: A case study. International Journal of Teaching and Learning in Higher Education, 21(1), 133-147.

Schirch, L., & Campt, D. W. (2007). The little book of dialogue for difficult subjects: a practical, hands-on guide. Intercourse, PA: Good Books.

Scottish Funding Councils for Further and Higher Education, AMA Alexi Marmot Associates, & HAA Design (Firm). (2006). Spaces for learning: A review of learning spaces in further and higher education. Edinburgh: Scottish Funding Council. Retrieved from http://www.jiscinfonet.ac.uk/Resources/external-resources/sfc-spaces-for-learning

Senge, P. (2006). The fifth discipline: the art and practice of the learning organization. New York: Doubleday/Currency.

Senge, P. (2000). Schools that learn: A fifth discipline fieldbook for educators, parents, and everyone who cares about education. New York: Doubleday.

Senge, P. (2000). Systems Change in Education. Reflections: The SoL Journal,1(3), 52-60.

Senge, P., Scharmer, C., Jaworski, J., & Flowers, B. S. (2004). Presence: Human purpose and the field of the future. Cambridge, MA: SoL.

SmarterMeasure (n.d.). SmarterMeasure: About. Retrieved from http://www.readi.info/about/

Shor, I., & Freire, P. (1987). A Pedagogy for liberation. New York, NY: Bergin & Garvey.

Sinclair, U. (1906). The jungle. New York, NY: Penguin Books

Sixl-Daniells, K., & Williams, J. (2005). Paralinguistic discussion in an online educational setting: A preliminary study. Retrieved from http://www.u21global.com/portal/corporate/docs/wp_010.pdf

Staarman, J. (2009). The joint negotiation of ground rules: establishing a shared collaborative practice with new educational technology. Language & Education: An International Journal, 23(1), 79-95. doi:10.1080/09500780802152796.

Tanner, H., & Jones, S. (2007). Using video-stimulated reflective dialogue to learn from children about their learning with and without ICT. Technology, Pedagogy & Education, 16(3), 321-335. doi:10.1080/14759390701614454.

The Regents of the University of California. (2009). Critical evaluation of resources. University of California at Berkeley Library. Retrieved from http://www.lib.berkeley.edu/instruct/guides/evaluation.html

The Universal Declaration of Human Rights. (2011). Retrieved at http://www.un.org/en/documents/udhr/index.shtml#a29

Time Clock. Retrieved on June 25, 2012 from http://www.markus-gattol.name/misc/mm/si/content/time_clock_1.jpg

U.S. Government Accountability Office (2010). For-profit colleges: Undercover testing finds colleges encouraged fraud and engaged in deceptive and questionable marketing practices. Retrieved from http://www.gao.gov/products/GAO-10-948T

Wheeler, S. (2007). The influence of communication technologies and approaches to study on transactional distance in blended learning. ALT-J: Research in Learning Technology, 15(2), 103-117. Retrieved from ERIC database.

Winking Smiley. Retrieved June 25, 2012 from http://www.cool-smileys.com/images/Winking-Smiley.jpg

X Versus Check. Retrieved June 26, 2012 from http://1.bp.blogspot.com/-eBKFd3OaF30/TzBLKXc9WuI/AAAAAAAACEY/iUhoYkmKHjw/s1600/xvscheck.jpg

Appendix

Transcript

Slide 1: Welcome faculty and thank you for joining this presentation Technology Delivered Feedback: For the adult, online learner

Slide 2: I am your presenter, Jodie Hemerda. I've taught general education courses specifically in the social sciences in a variety of formats, including traditional face to face, online, and a combination of the two. I am currently working on my educational technology dissertation proposal focused on the importance of feedback for learners. My particular interest involves technology delivered feedback aimed at improving learning for online learners.

Slide 3: Education is my passion, specifically for adults. My experiences in graduate school fueled this passion that continues today. Recurring themes of experience , dialogue, technology, suspended assumptions, self-awareness, and feedback throughout my experience have been reinforced in the readings of Senge, Peters, Bohm, Friere, Knowles, Moore, Hatttie, and numerous others.

Slide 4: For the online student, completed coursework typically requires a submission of work, typically referred to in the assessment world as an artifact. Students spend hours reading, analyzing, connecting theory to life experience, editing, revising, and finally submitting their work. Then wonder: How did I do?

Slide 5: Knowles (1990) recognized the need of adult learners to be self-directed. In this pursuit, he noted the need for students to possess, "The ability to perceive one's self objectively and accept feedback about one's performance non-defensively (Knowles, 1990, p. 174).

Slide 6: Acknowledging feedback without defensiveness can be challenging. Some students are quick to defense, while others are able to suspend that response and engage in an openness that allows them to assess the feedback without defense.

Slide 7: The immense power of feedback requires attention. In fact, feedback is the most important factor of influence on a student's academic achievement (Hattie, 2010). It's important to note that feedback should address errors in understanding after the initial presentation of information (Hattie & Timperley, 2007).

Slide 8: Hattie and Timperley (2007) identified three main questions for the purpose of feedback. The first, where am I going? This answers the goal or objectives that the learner is attempting to understand.

Slide 9: The second question, how am I going? This answers the current understanding and tracks the learner's progress.

Slide 10: The third question, where to next? This answers the future understanding and prepares the learner to return to the initial question, beginning with a new goal.

Slide 11: I created a visual to illustrate how feedback fills in the gap between the goal and its progress. Feedback informs the discrepancy. Without proper feedback, the learner may believe they are making progress and not recognize gaps that will lead to future misunderstandings.

Slide 12: Hattie and Timperley (2007) identified four feedback types, task-specific, self-regulation, task-process, and self-related.

Slide 13: Task-Specific (FT) may simply denote correct or incorrectness, but can also "include directions to acquire more, different, or correct information" (Hattie & Timperley, 2007, p. 90).

Slide 14: Self-regulation (FR) involves “interplay between commitment, control, and confidence…. It addresses the way students monitor, direct, and regulate actions toward the learning goal…[implying] autonomy, self-control, self-direction, and self-discipline” (Hattie & Timperley, 2007, p. 93). Butler and Winne (1995) provide an illustration of the recursive flow of information in the self-regulated learning model (p. 248).

Slide 15: Task-process (FP) provides feedback on the process used to create, complete, or learn, which typically involves instructional strategies (Hattie & Timperley, 2007). The two combined lead to incredible outcomes, “FR (self-regulation) and FP (task process) are powerful in terms of deep processing and mastery of tasks” (Hattie & Timperley, 2007, pp. 90-91).

Slide 16: Self-related (FS) feedback is directed to the student's personal sense of self. Unfortunately, this is the least effective feedback and very common.

Slide 17: Effective feedback "Feedback needs to be clear, purposeful, meaningful, and compatible with students’ prior knowledge and to provide logical connections” (Hattie & Timperley, 2007, p. 104).

Slide 18: Based on a literature review, the following were determined to be effective elements of feedback.

- Task specific
- Self-regulation
- Low task complexity
- Timing
- Positive and negative feedback
- Non-threatening
- Praise

- Two-way communication
- Self-reliance
- Assessment – a need for change
- Technology enhanced

Slide 19: Feedback needs to be task specific. Hattie (Hattie & Timperley, 2007) noted the need for learning context, specifically task specificity, "to take on this instructional purpose, feedback needs to provide information specifically relating to the task or process of learning that fills [that] gap" (p. 82). There is no advantage to tangential conversations when providing feedback.

Slide 20: Feedback should encourage student's self-regulation. "Expert teachers engage students in learning and develop in their students self-regulation, involvement in mastery learning, enhanced self-efficacy, and self-esteem as learners" (Hattie, 2003, p. 10). This concept corresponds with teaching learners how to learn.

Slide 21: Feedback should address tasks of low complexity. Hattie (Hattie & Timperley, 2007) found that "feedback was also influenced by the difficulty of goals and tasks…[having] the most impact when goals are specific and challenging but task complexity is low" (p. 86). This relates to the original goal of the where am I going question. Goals should be broken down into manageable tasks, as this increases the effectiveness of feedback.

Slide 22: The timing of feedback is not as straight forward as some may think. Quick turnaround on the correctness of simple tasks benefits students. While students may prefer instantaneous feedback, the literature supports that task process feedback benefits from a delay where students have time to think about difficult tasks before receiving the feedback.

Slide 23: The role of positive and negative feedback is complex.

- Negative feedback had the greatest influence when directed to the self (FS), especially when combined with task specific feedback (FT).
- FT has the potential to benefit from both positive and negative feedback.
- The effectiveness at FR depends on "commitment, mastery or performance orientation, and self-efficacy" (Hattie & Timperley, 2007, p. 98).
- If commitment is high, positive feedback increases motivation to learn more than negative feedback.
- If commitment is low, "we are more likely to learn as a function of negative feedback" (Hattie & Timperley, 2007, p. 99).
- The motivation increase from the negative feedback might be temporary and eventually lead to avoidance in the future, whereas positive feedback could lead to greater persistence and an increased long-term interest.

Slide 24: Dialogue, learning, and feedback require a non-threatening, safe, and open learning environment. The common use of self-related feedback could lead to a threatening environment. As Hattie and Timperley (2007) noted, self-directed feedback without task-specificity "directs attention away from the task to the self" (p. 96). Though this is ineffective, it is also potentially threatening in the presence of negative self-related feedback.

Slide 25: Praise is the most common form of feedback. Students liked praise, specifically for effort and achievement rather than for ability and behavior. The majority of students prefer quiet and private praise. (Hattie & Timperley, 2007).

Slide 26: Two-way communication was illustrated earlier in relation to one-way communication. Here, two-way communication emphasizes the need for the teacher to receive

feedback from the student regarding their interaction. As with the student, feedback provides information to the teacher about how well they are meeting their intended goals.

Slide 27: The importance of self-reliance is noted in the myriad of self-direction, self-regulated, and other self-directed behaviors noted within this presentation. Self-reliance accords the student proactive behavior in assessing how they are meeting the three feedback questions.

Slide 28: Throughout this review it became apparent that assessment needs a change. Rather than results-driven assessment, we need to fine tune our assessments to address the three feedback questions. With this change, feedback can be seen as an instructional instrument rather than an after-the-fact correction.

Slide 29: Hattie and Timperley (2007) "The most effective forms of feedback provide cues or reinforcement to learners; are in the form of video-, audio-, or computer-assisted instructional feedback; and/or relate to goals" (p. 84). This finding confirms what we see with the use of instructional technologies, that technology enhances feedback.

Slide 30: In addition to Hattie and Timperley (2007), the literature review revealed other benefits of educational technologies,

- Timely feedback,
- Improved collaboration,
- Increased social presence,
- Increased dialogue,
- Improved reflection,
- Appropriate application supports learning principles,
- Increased student satisfaction.

Slide 31: Web-based learning assessment includes rubric-based educational feedback tools. Some of these tools include

- Waypoint Outcomes
- Taskstream
- Built-in Learning Management Tools

Slide 32: Waypoint is a grade book integrated technology that:

- Connects feedback to learning outcomes, as the outcome-based rubric is built within the system and becomes attached to the graded paper.
- Provides an opportunity for task-specific feedback, as the rubric is composed of outcome-based criteria. Rather than give a grade unrelated to the paper, the integrated rubric forces a connection between the task of the assignment and grading criteria.
- Enhances the ease and consistency for faculty in grading, as the rubric ensures criteria-based grading that is the same for all papers, and the tool increases the speed and efficiency of grading.
- Collaboration of effective instructional feedback deposited in preloaded Common Comments, as a library for faculty to add comments within the assignment. This is especially useful for common errors, such as APA, organizational, and grammatical errors.

Slide 33: A preview of Waypoint Outcomes

Slide 34: Feedback examples

Good Feedback	**Bad Feedback**

• Making comments about the strengths and weaknesses of a performance • Making comments about the work process you observed • Recommendations about a work process or study strategy that would help improve the work • Making comments that position the student as the one who chooses to do the work • Avoiding personal comments • Private praise • Asking the student for feedback	• Feedback unrelated to the task • General feedback on a complex task • Untimely feedback, such as providing feedback on unit work after the unit test • Making criticisms without offering any insights into how to improve • Giving answers without instructional support • Making personal compliments or digs, "You idiot!" • Threatening comments, “What were you thinking? Were you thinking?”

Slide 35: Ineffective feedback includes self-related, non-task specific feedback Both positive and negative forms of this feedback are ineffective and distract from the task.

Slide 36: A detailed example of ineffective feedback using a fourth grade writing sample in response to the prompt, Do dogs or cats make better pets? The mark-up corrects mechanics without providing content feedback. Not only did the instructor correct mechanical errors without instructional feedback to help the student avoid the errors in the future, there’s no reference to the content of the essay. Using this writing sample, the next few slides offer examples of effective feedback.

Slide 37:

Possible Teacher Comments	**What's Best About This Feedback**
Your topic sentence and concluding sentence are clear and go together well.	TASK SPECIFIC: These comments describe achievement in terms of the criteria for the assignment. They show the student that you noticed these specific features and connected them to the criteria for good work.
You used a lot of details. I count seven different things you like about dogs.	

Slide 38:

Possible Teacher Comments	**What's Best About This Feedback**
Your paragraph makes me wonder if you have a dog who is playful, strong, cute, and cuddly. Did you think about your own dog to write your paragraph? When you write about things you know, the writing often sounds genuine.	FS WITH FT: This comment would be especially useful for a student who had not previously been successful with the writing process. FP: The comment identifies the strategy the student has used for writing and affirms that it was a good

	one.

Slide 39:

Possible Teacher Comments	**What's Best About This Feedback**
Your reasons are all about dogs. Readers would already have to know what cats are like. They wouldn't know from your paragraph whether cats are playful, for instance. When you compare two things, write about both of the things you are comparing.	POSITIVE AND NEGATIVE FEEDBACK ON FR: This constructive feedback criticizes a specific feature of the work, explains the reason for the criticism, and suggests what to do about it. *FR relates to commitment, control, and confidence. If commitment is high, positive feedback increases motivation to learn more than negative feedback

Slide 40:

Possible Teacher Comments	**What's Best About This Feedback**
Did you check your spelling? See if you can find two misspelled words.	FP, nonthreatening support: These comments about style and mechanics do not directly reflect the learning target, which was about paragraphing. However, they concern important writing skills. Their appropriateness would depend on how strongly spelling, style/usage, and word choice figure into the longer-term learning targets.
Feedback about making the topic sentence a stronger lead might best be done as a demonstration. Show the student the topic sentence with and without "This is why" and ask which sentence she thinks reads more smoothly and why.	

Slide 41: Technology Enhanced: Instructor view. Here is an instructor view using Waypoint Outcomes to mark-up a student's paper. The technology allows the instructor to highlight, strike through, and insert comments. A comment library allows the instructor to use common and consistent instructional and positive feedback. The use of technology empowers the instructor with a tool for clear communication in marking up the student's paper.

Slide 42: Here is a student view of the Waypoint Outcomes rubric. It contains preloaded criteria associated with the level of accomplishment and the ability or instructors to personalize the feedback, as noted here. Comments that begin with High or Low indicate the rubric criteria, whereas "Excellent analysis. See detailed comments within the document for areas that could use

more support" were comments I added to explain the grade. The use of an interactive rubric empowers the instructor with a tool for clear communication of feedback tied to assignment criteria that makes up the assignment grade, while empowering the student access to the detailed point distribution of their grade.

Slide 43: Here is an example of the student's view of the marked-up paper. As you can see, areas marked up within the paper are underlined and given a reference number. The number and feedback comment are given to the right side of the student's work. The use of this technology provides effective communication. The content of that communication needs relies on the skill of the instructor to pay attention to the before mentioned elements of effective feedback.

Slide 44: Questions?