Motivation in online or technology based learned is an important consideration to all who are involved in the field - students, teachers, course designers, administrators and institutions. Motivation affects dropout rates and attrition, which are of particular interest to institutions which are evaluating cost effectiveness of online delivery and perceived value and credibility of eLearning programs and qualifications. Various sources rate attrition between 20 - 45%. (Tyler-Smith 2006). Motivation is also key in student performance and engagement in a course and while not a new consideration in the theory of education, the new arena of distributed learning has definitely posed some new variables in the complex mix of successful learning and motivational factors. In this essay, I will list defining factors that affect motivation in technology based learning (which will serve as an umbrella phase for various types of e-learning), focus on factors that impact online success, and finally, summarize implications the research has for design and practice in technology based learning.

The body of the information in motivational factors is drawn from a slide presentation by graduate student Dan Clark, "An Analytical Review of the Literature on Motivation and Technology Based Learning" (2011)

In his introduction to a survey of scholarly studies on motivation in online learning, Dan Clark (2011) states:

"Motivation is an important theme as it is one of the most significant components of learning in any educational context. It is also the single most important predictor of student success in distance education."

Dennis, Bunkowski and Eskey (2007) delivering an article to practicing teachers point out:

"Motivation is a function of initiating and sustaining goal-directed action. In addition to individual variables, student motivation is influenced by situational variables that include course design, instructional approach, and to a great extent, faculty behavior."

They also quote Chickering and Kuh (2005) in saying it is the "key to persistence and to learning that lasts. The challenge is to help each person clarify his or her important purposes and then to find, or create, the combination of educational experiences that lead to those desired outcomes."

Overview of Factors in Motivation

Clark's research synthesized the results of 10 studies published in electronically peer reviewed journals in online education based on research studies from 2003 to 2011 in technology based learning courses which include distance, online, eLearning and open education courses. Three themes which were researched are learner characteristics, internal factors (more often referred to as intrinsic motivation) and external factors (extrinsic).
Learner characteristics

The learner characteristics in Clark’s survey of studies were gender, location (rural or urban), work experience, previous technology based learning experience, computer skills, and ethnic background. The results observed that females learn better than males in the online environment. His study also concluded that students in urban environments were not as motivated as those in rural environments. Those who had work experience or were working were not as motivated as their non working classmates but had more opportunities to apply knowledge to work environment. Students who had had previous technology based learning experience were more motivated than those who hadn’t, however, the technology itself or computer experience was not considered as impacting motivation and was considered rather as a temporary stumbling block which could be surmounted quickly thus increasing student motivation as ability and confidence increased. Ethnic background was shown to have no importance.

While Clark’s study makes no distinction between age and work obligations, the trend in online education is that the typical online student profile is an older, part time or full time employed college student who has more responsibilities and obligations than the typical on campus student and whose valued rewards vary according to their personal goals (Dennis et al. 2011).

Clark’s Survey

In Clark’s study, the internal factors or forces within a person influencing motivation are enjoyment in learning and interest. The factors relating to these were self competence, interest, affect, relevance, and satisfaction. The external factors were consequences or rewards which are reinforcement, flexibility, communication, and learner environments.

To further understand the variables in Clark’s survey, I looked at research by Dennis, Bunkowski, and Eskey of Park University (2007). The article reviews classic literature on motivation and also focus on intrinsic and extrinsic motivation through data which they gathered from over 200 online adjunct faculty surveyed. Another approach to studying the issue of motivation was conducted by Hartnett, St George and Dron (2011), a collaborative team from Massey University in New Zealand (Hartnett and St. George) and Athabasca University in Canada (Dron). Their research came from case studies with online students in a teacher education program in New Zealand. Their focus on motivation moves away from an intrinsic/extrinsic analysis and to a model based on self-determination theory (SDT).

The following list of factors is an amalgamation of the most useful information from these sources to aid in understanding the concepts and factors involved in motivation in technology based learning.
Intrinsic Factors in Motivation

- **Self competence or self efficacy**

Clark defines this as the degree to which a learner believes in their ability to achieve a task and to learn subject matter successfully. Students who were more independent could access information and had more control. This therefore increased motivation. Self competence is often referred to as self efficacy as well. This theory proposed by Bandura (1986) is the idea that a student will achieve what he believes he can and it is task specific. "Students who perceive themselves as limited in capability lack the confidence, energy, and motivation that successful study efforts bring." (Dennis et.al)

Clark concludes that self competence is increased with direct training to access information, (technological orientation and tutoring) develop information searching strategies (online study skills) and communicate the information they found. This is also seemingly related to theories of cognitive overload whereby students overwhelmed at the technological learning curves and new ways of studying and gathering information online are likely to drop out believing that they are not capable of mastering the multitude of tasks. (Tyler-Smith 2007) Tyler-Smith also quotes Bernard, Breuer, Abrami and Sturkes (2004) who consider that: “readiness for online learning” is critical in determining a learner's persistence. They identify four dimensions of readiness with the first three being related to self competence:

"online skills, such as computing, Internet and online communication via email or discussion forums; self-management of learning and learning initiative, which includes time-management, personal organisation and effective cognitive strategies; beliefs about online learning, which suggest that a learner's attitude about the relative efficacy of online learning as compared to classroom based teaching has an effect on their overall performance in an online course."

The fourth factor for readiness is tied to affect and communication: “the degree of interaction with the tutor and other students in an online course, and a high expectation of timely feedback on performance and support and involvement from tutors and fellow students. (p.33)

- **Interest**

Students who were intrinsically motivated are active learners and chose challenging tasks and online lectures. (Clark) While intrinsically motivated learners learn for interest or for the sake of the learning itself, they are still affected by external variables though interest affects initial engagement and retention in online study. (Dennis et al 2007)

- **Affect**

Emotional motivation in the online environment is increased by collaborative learning principles.

- **Relevance**

Clark observed that relevance is increased by customizing assignments and incorporating students own experience to increase relevance and thus internal motivation. Case studies done by Hartnett et al. (2007) pointed to results in higher motivational scores for pre service education students who were actually designing and
learning material to be used in a mini-practice rather than a comparative cohort group whose activity online focused on problem based learning. The perceived relevance of the task to the learner's goals greatly affected motivation in all participants and the task was perceived as meaningful and important in the microteaching unit. The problem based learning assignment participants were not as motivated and 50% failed to see the relevance of the assignment to their needs. (The population was part time adult distance education students ranging in age from 22 to 55 who were not near a campus)

**Satisfaction**
Clark's summary states that issues of satisfaction were due to perceptions of inequality in rural centers, consequences, and equity. While these are not expanded on, the factor of satisfaction is a common theme in intrinsic motivation as Malone and Lepper define activities as intrinsically motivating if

"People engage in it for its own sake, rather than in order to receive some external reward or avoid some external punishment. We use the words *fun, interesting, captivating, enjoyable, and intrinsically motivating* all more or less interchangeably to describe such activities."

**External Factors**
The most important external factors influencing motivation in technology based learning of Clark's survey include the following: reinforcement, flexibility, communication, and learner environments.

- **Reinforcement**
Reinforcement includes grades, instructor feedback, peer support, technical support, tracking, checking, encouraging, monitoring and rewards. Helping students feel competent encourages motivation. Passive learners who lack intrinsic motivations need a lot of encouragement.

- **Flexibility**
Flexibility in pacing, assignments, time schedules were found to be a motivating factor when course structure allowed for this. Students feel more in control of their learning.

- **Communication**
Increased communication with collaborative learning and learner interaction increases motivation. Whereas communication is generally regarded as a positive external motivator, it is also could have negative consequences as well in terms of student exchanges online, disrespectful comments and even bullying. (Dennis et al. 2007) Furthermore, in some cases a student may not be comfortable in an environment of discussion and collaborative learning as this is not their learning style. As Audrey Styer points out:
Some adult learners select online learning because they do not need and do not want to participate in social aspects of instruction, thus making socialization and collaboration activities demotivating factors for those learners. However, since some learners are motivated by online socialization and collaboration, making this type of interaction optional allows online adult learners control over their learning, which increases motivation. (Styer, Audrey 2007)

- Learner environments

The last external motivating factor is a catchall category for influences that include: status of the course, social situation, family context, economic conditions, access to technology and personal goals.

Clark's summary includes implications in practice for technology based learning and emphasizes the need to increase self competence with direct training in skills needed to succeed in the online environment. Reinforcement is also key with recommendations of rewards, timely feedback, and frequent emails as separation in time and space heavily impact normal communication. As well he suggests social networking, online discussion and messaging should be used to increase student motivation.

Conclusion and Implications

In conclusion, the survey found that motivation is complex interaction of learner characteristics, internal and external factors. (Clark 2011)

Research in this area continues to be of great consequence and importance. Audrey Styer whose in depth study, "A grounded meta-analysis of adult learner motivation in online learning from the perspective of the learner" (2007), confirms the direction technology based learning needs to grow in. She succinctly summarizes what most of know and feel in our capacity as students and/or facilitators in the online environment:

"...that adult learners choosing to enroll in online courses are intrinsically motivated, possess the ability to employ the cognitive strategies necessary to succeed online, value online learning, have high self-efficacy and set goals, but still may not be successful. Online courses that better motivate adult learners need to be well designed and frequently maintained, include extrinsic motivating factors such as grades, provide situational interest that builds on the experience-base adult learners bring to class, and allow learner personal control."
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