

EdTech 575

**Technology Integration Paper:
The Inevitability of E-learning**

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November 29, 2006**

This research was initially designed to ascertain the effectiveness of education derived from technology infused online courses as opposed to traditional, less technical face-to-face courses. A large group of technologically savvy supporters led by Thomas L. Russell's "No Significant Difference" movement have been collecting data in order to prove there is no loss of instruction when using alternative media rather than a physical teacher. Some researchers go further and claim a greater amount of content knowledge for students taking courses online (Maki, Maki, Patterson, & Whittaker, 2000; Poirier, & Feldman, 2004).

Unfortunately, as is typical with most educational studies, an "apples to apples" comparison with the method of instruction as the single independent variable is rarely viable (Brown & Wack, 1999). On the other hand, creating a synchronous online course that mimics the passive lecture-reading-lecture one-size-fits-all design of most physical classrooms in America goes against the instructional design strengths that are unique to online environments. Due to inherent differences within each model's strengths and weaknesses, believers in the potential of online education feel that a direct comparison would be a waste of design time, and aiming for "as good as" face-to-face instruction is too low a goal (McDonald, 2002).

Another current limitation in comparing online to face-to-face instruction is the reality that most studies have been run at the University level. This makes sense, as there are few purely online college preparatory courses that have been created for the K-12 levels of education. At present, there is yet to be a preponderance of data that would allow for widespread conclusions based upon chronological age ranges.

The focus of this treatment will be an overview of studies comparing the educational outcomes of online and traditional classrooms, possible advantages online education may offer, and a probable compromise offered to both camps.

OVERVIEW

Phipps & Merisotis (1999) cited a 1999 study by the Institute for Higher Education Policy which identified a number of key shortcomings in the comparative research of online and classroom education. Lacking control of extraneous variables negating the ability to find cause and effect, randomly selected subjects, and valid assessments are the major criticisms that have been aimed at the available research.

Shulman et. al. (1999) pointed to Gerald Schutte's California State Northridge study from the Fall of 1996 as an example of a methodologically rigorous model for future comparison studies. Although Schutte randomly selected subjects and had valid assessment, he was unable to isolate a single independent variable. Shulman's subsequent studies have included pre- and post-test scores in order to determine a more reliable comparison scale for overall student improvement; however, ten years after Schutte's vanguard experiment comparing online and traditional classroom results, current studies still have not eliminated experimental variables. Instead, researchers have moved towards focusing on topics such as how to predict the type of student who should do well in an online environment. Aragon, et. al in 2002 studied how learning style effected motivation in online versus face-to-face courses, and others have gone on to study self-efficacy, locus of control, and self-regulation as predictors of success in-class versus out-of-the-classroom settings.

It very well may be that educators have stopped working towards a truly scientific comparison because online instruction has built a critical mass, making its growth inevitable. Manzo reported in 2002 that Interactive Educational Systems Design, Inc. found 41% of American public high schools already offered at least one online course. Despite nearly half the public high schools possessing online courses in the new millennium, nearly all the e-learning studies have been done at the University level, making it even more difficult to make a comprehensive conclusion regarding the strength of online education. It is possible educators have already deduced a trend towards the accreditation of more and more e-learning courses. This realization has likely pushed educational researchers past questioning *if* online education can be useful and towards *how* to best use the online environment as an educationally valid and useful tool.

POTENTIAL

Equally important as realizing that e-learning is gaining momentum is the understanding that e-learning is fundamentally different than face-to-face learning. To create true, single independent variable scientific experiments comparing these two styles of teaching would be to ignore some of the acknowledged advantages inherent to online education. Proponents of online instruction point out that a modification of internet-based instruction to make it fit the mold of traditional education would be to destroy it's strengths and potential advantages.

Theoretically, computer based education has a greater potential for reaching the multiple intelligences (linguistic, logico-mathematical, intrapersonal, spatial, musical, bodily kinesthetic, and interpersonal) that Howard Gardner outlines in *Frames of Mind* (Smith, 2002). If Gardner is correct, learning could reach more students possessing

varied learning styles when the instructor uses a broader variety of instructional methods, such as small group discussion (boards/conferencing), graphics, sound, video, lecture, research, problem solving, writing/reflection, and reading (Berge, 1995).

McComb (1993) foresaw advantages made possible by this new form of education. He considered the advantages of online education to be the result of three characteristics: asynchronicity; efficient information access; and increased social distance. Asynchronicity is undoubtedly convenient, as it allows students and instructors to work at their own pace. Additionally, it allows individuals to share their thoughts with the rest of the class after they feel they have sufficiently researched, reflected, and formed a response she feels is appropriate. In this way, a student has the potential to give her best answer, rather than one she has to express on-the-spot.

Efficient access to information in computer mediated communication (CMC) occurs both inside and outside the class. Within the class, up-to-date information may be posted daily if necessary. Furthermore, an electronic “paper” trail of discussions is automatically saved in a chronologically organized format for future reference. Outside the course, links to web resources may easily be posted in a central location, divided by topic. This is generally used as a jumping off point for further research.

The increased social distance to which McComb makes reference, is a way of promoting democracy within a class. In a traditional classroom, extroverted and opinionated individuals take up a larger share of the limited classroom time. In an online classroom, each individual posts her thoughts, with a choice for engagement given to each individual within the course. In other words, while an opinionated individual may post more often to electronic discussion boards, her classmates have the choice whether

to read them or not. This distance may also give individuals with divergent viewpoints the confidence to express them without fear of face-to-face reprisals.

Twigg (2001) goes further than McComb in suggesting that internet based learning also has the advantages of potentially possessing individualized study plans, high-quality interactive learning materials, and continuous feedback from regular assessment. Individualized study plans in particular seem to be highly motivating, as they go far beyond simply allowing students to select when they wish to work. Assigning open-ended problem solving projects ensured differentiated instruction, allowing students to select a course of study that is meaningful to them and at their level of expertise.

The interactivity inherent within online learning is also a great motivator for students to engage. Despite the text-based nature of e-learning being detrimental to individuals who are not strong readers, the internet is much more interactive than reading from a static textbook. The ability of instructors to easily supplement student learning with web images, mpeg videos, and podcasts more than make up for the text-based nature of e-coursework. Additionally, students may communicate with the instructor and classmates through email and discussion boards at each person's convenience. There is nothing limiting traditional style instructors from incorporating these aspects into their face-to-face classes; however, this level of interactivity is inherent within the online experience, and there is a student expectation to be using these resources from day one.

Regular assessment and feedback are also characteristics of successful online programs. Due to the "social distance" between class members and their instructor, one might say that prompt feedback is mandatory within the e-learning community. Unlike the reading of instructions in the presence of the classroom instructor giving immediate

clarification, online instructions must be deduced by reading and looking at a model, perhaps a podcast or video supplement, and perhaps a follow-up email correspondence for clarification. Since the traditional model of all-or-none mid-term and final exams are being replaced; or at least heavily supplemented by project based open e-learning, periodic review of a project's stages help keep students engaged and working towards deadlines.

A "BLENDED" COMPROMISE

A compromise which allows for the maximum flexibility in designing and executing instruction appears to be a hybrid of face-to-face and e-learning termed "blended learning". Douglas (2004) proposed a list of consideration points for those designing blended learning environments. In no particular order, instructors must consider: who their audience will be, which contextual issues need to be considered, what learning outcomes and content are desired, which activities would best deliver the content, whether the organization supports blended learning, and whether the organization has the technological infrastructure for blended delivery. Designing the proper blended instruction for a target population would begin with Douglas' Instructional Design process.

Carman (2002) identified the five key components of successful blended learning as: occasional live events in which all learners may synchronously participate, self-paced learning, collaboration, pre- and post-assessments, and performance supported materials. In reality, these components are present in both traditional classrooms and in e-learning courses; however, an instructor of a blended classroom must determine which these

components will be performed together in the same physical space, which will be together in cyberspace, and of course the majority to be individually completed.

One might look upon blended learning as a transitory stepping stone towards completely online instruction; however, it is entirely likely that when all the data has eventually been studied regarding successes of content learning along with instructor/student satisfaction reports, blended learning may become the preferred method of delivery in the future.

The major advantage blended learning holds is the flexibility to build upon the strengths of the instructor while serving the specific needs of the learners. Alvarez (2005) touches upon the custom tailored potential of blended learning, when she presents five common blended learning models:

1. E-learning Self-Study blended with other media or events
2. Instructor-led program blended with self-study e-learning
3. Live e-learning centered with other media
4. On-the-job Training centered
5. Simulation and Lab centered

In the creative profession of teaching, these five models are clearly just the tip of the iceberg when it comes to establishing the blended components of a course. Blended learning should satisfy traditional teachers who do not wish to lose the motivational aspects of human contact and monitoring student progress in person. Technology driven educators will enjoy the ability to set up self-run open-ended learning lessons using the increased interactivity of computers.

When educational researchers and technologists are asked whether they believe education in the United States should be taught online, there is currently no clear cut answer to be given in response. E-learning has not been methodologically tested with enough rigor to claim that its education level is superior to the traditional model. There is however, a substantial amount of indirect evidence demonstrating that there is no significant decline in education when relying upon computer mediated instruction. If the delivery method does not detract from learning, the real question should be, what are the advantages and disadvantages of each instructional model? These questions should not be answered with the purpose of “proving” which model is better; rather, the intention should be to identify the strengths from each style. The strengths may then be blended together in order to best serve the population studying each particular subject from each unique instructor. Ultimately, it is a moot point to ask which educational model is better. In the end, the most helpful question to ask is, “How can we set up a class to best help students learn?”

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