

If There Is No Significant Difference, Why Should We Care?

Sharmila Basu Conger, Western Cooperative for Educational Telecommunications

Introducing: Media Comparison Studies

In the early 1900's, as correspondence courses came into vogue, there was a question that weighed on the minds of educators: **could students learn as well at a distance as they could face to face?** As with most controversial issues, there were proponents and opponents on both sides. Both sides were eager to gather evidence to substantiate their claims – and thus began the movement in media comparison studies (MCS) in education. In these studies, researchers looked to compare student outcomes for two courses that were delivered through two different methods, thereby identifying the “superior” method for teaching effectiveness.

A century has passed since the inception of MCS in education. In the years that have followed, we have seen the development of new technologies – from radio to television to two-way video to the internet – yet the basic battle rages on. Is face to face always better? Is one medium of delivery superior to another? Traditionalists hold face to face as the gold standard. Innovators hold that technology-mediated education can improve learning outcomes. And the MCS continue.

A Voice of Reason?

In the meantime, several researchers have tried to provide a voice of reason for the never ending deluge of results. Thomas Russell's book and companion website, “The No Significant Difference Phenomenon,” is a collection of hundreds of MCS from the 1920's to the present (Russell, 2001). In accordance with Richard Clark's theory that delivery medium has no effect on learning (Clark, 1983), Russell's collection highlights the fact that great majority of MCS have found *no significant difference* (with “significance” being used here as a statistical term) in student outcomes when the independent variable was the method of course delivery. With two opposing camps having access to the same data, it is no surprise that a shift in emphasis allows this finding to be interpreted in two different ways. One interpretation holds that the use of technology to deliver courses *does no harm* – that is, face to face learning has no inherent

advantage to students over learning at a distance. The other interpretation is that technology *does not help* – and if a course can be delivered for less expense without technology, there is no need to use technology at all.

Before we delve deeper into these findings, we need to take a moment to consider the caveats to MCS that affects *any* result gleaned from such research. First, a common criticism of MCS is that they fail to control a large number of variables (Phipps & Merisotis, 1999; Joy & Garcia, 2000; Lockee, Moore & Burton, 2001). In perfect MCS, course delivery method would be the only independent variable. However, as the sources cited above have shown, there are a host of variables in educational settings – including learner characteristics, instructional method, and media attributes – that are rarely accounted for in MCS. It follows that from a *scientific method* perspective, MCS are flawed. A second common criticism of MCS is that such studies are not grounded in educational theory. Quoting Lockee, Moore and Burton (2001), “Inquiry devoid of theory is not valid research.”

Answering the Critics

Given these considerations, is it even worth examining the results of prior MCS? MCS do have something to offer us, though the results must be viewed in context. The first criticism, that MCS fail to control all variables, can be extended to most research studies in education (Brown & Wack, 1999). We should be careful to watch for these variables in all education research; however, the lack of controls is not a MCS-specific flaw. And, like most research, we can draw some conclusions despite inevitable flaws in study design and conduct; we simply need to be careful to account for those flaws in our interpretation of results. For instance, instead of demonstrating how previous MCS have failed to control for certain variables, we might do better to assemble collections of MCS that control for similar sets of variables, and analyze their collective findings.

To answer the second criticism, that MCS are generally not grounded in educational theory, we must make sure that in future research design, we strive to ask the right questions (Ramage, 2002). When we ask if one media delivery method is *better* than another, what are we really asking? If the theory is that students learn better face to face, what is it *about* face to face

learning that we believe leads to better outcomes? Potential answers include levels and type of interaction, teacher attention, and social learning. These attributes can, and should, be tested in technology-mediated environments.

Another good question to keep in mind is the one Jeannette McDonald posed in her article: “Is ‘As Good As Face to Face’ As Good As It Gets?” (McDonald, 2002). Trying to make sure technology-mediated education, especially in the age of the internet, is ‘as good as’ traditional modes of education delivery seems a low goal to set. Instead, we should be examining how we might best utilize the unique capabilities afforded us by internet technology – asynchronous learning, interactive simulations, direct links to resources, individualized coursework – to improve learning outcomes (Twigg, 2001). Rather than continuing to perform MCS, then, we should move towards developing teaching pedagogies that make best use of current technologies (Sener, 2004). This, I believe, is the best lesson for us to take away, and the best way for us to move forward, from ‘No Significant Difference’.

References

- Brown, G. & Wack, M. (1999) “The Difference Frenzy and Matching Buckshot with Buckshot.” *The Technology Source*, May/June 1999.
- Clark, R. E. (1983) “Reconsidering Research on Learning from Media.” *Review of Educational Research*, 53(4): 445-459.
- Joy, E. H. & Garcia, F. E. (2000) “Measuring Learning Effectiveness: A New Look at No-Significant-Difference Findings.” *Journal of Asynchronous Learning Networks*, 4(1): 33-39.
- Lockee, B., Moore, M., & Burton, J. (2001) “Old Concerns with New Distance Education Research.” *EDUCAUSE Quarterly*, 24(2): 60-62.
- McDonald, J. (2002) “Is ‘As Good As Face-To-Face’ As Good As It Gets?” *Journal of Asynchronous Learning Networks*, 6(2): 10-23.
- Phipps, R. & Merisotis, J. (1999) *What's the Difference? A Review of Contemporary Research on the Effectiveness of Distance Learning in Higher Education*. The Institute for Higher Education Policy, Washington, D.C.

- Ramage, T. R. (2001). "The 'No Significant Difference' Phenomenon: A Literature Review." *e-Journal of Instructional Science and Technology*, 5(1).
- Russell, T. The No Significant Difference Phenomenon Website. URL:
<http://teleeducation.nb.ca/nosignificantdifference/>
- Russell, Thomas L. (2001) The No Significant Difference Phenomenon: A Comparative Research Annotated Bibliography on Technology for Distance Education. IDECC, Montgomery, AL.
- Sener, J. (2004) "Escaping the Comparison Trap: Evaluating Online Learning on Its Own Terms." *Innovate*, 1(2).
- Twigg, C. A. (2001) "Innovations in Online Learning: Moving Beyond No Significant Difference." The Pew Symposia in Learning and Technology 2001. Center for Academic Transformation at Rensselaer Polytechnic Institute, Troy, NY.