BLENDED LEARNING

OVERVIEW:

One of the main challenges of addressing the effectiveness (or otherwise) of blended learning stems from the difficulty of defining it. Typically, courses are categorized as 'face-to-face', 'blended / hybrid', and 'online'. These three categories are both overlapping and impossibly broad. When does face-to-face become blended? What counts as blended? When does blended become online?

Despite this, there are a good number of reported studies on the effect of introducing a particular online tool or technology to support student learning. Different academic, governmental, and independent groups have extensively surveyed the empirical literature with the goal of gaining a fuller picture of the ways in which digital technologies have impacted teaching and learning across disciplines and institutions. The focus and scope of such reviews is varied. Halverson, Graham, Spring, Drysdale, and Henrie (2014) identified the following areas:

Instructional design - strategies and best practices, design process, implementation

Disposition - perceptions, attitudes, preferences and expectations

Exploration - nature and role of blended learning, benefits and challenges

Learner outcomes - performance, satisfaction, engagement, retention rates

Comparison - blended vs face-to-face vs online, blended vs face-to-face, and blended vs online

Technology - comfort with, effect of, types of, and uses/role of

Interaction - student-to-student, student-to-instructor, collaboration, community and social presence

The research findings summarized in the many published reviews are mixed. For instance, Wu (2015) reports that some studies found better outcomes in online and blended sections, some found effectively no difference and some others found significantly worse outcomes. On the other

> *"We live in a world in which digital technologies are increasingly becoming an integral part of our day-to-day lives. Technological innovation is also expanding the range of possible solutions that can be brought to bear on teaching and learning." (Bonk & Graham, 2012)*

hand, a study commissioned by the US Department of Education (Means, Toyama, Murphy, Bakia, & Jones, 2009) undertook a meta-analysis of published research into the effects of face-to-face and online methodologies on student learning outcomes between 1996 and 2008. Researchers found that student assessment results for online and blended learning environments were better than those for entirely face-to-face contexts.

The National Academy of Science recently published a meta-analysis of 225 studies that compare student performance in STEM courses under conditions of active learning vs traditional lecturing by looking a performance on diagnostic tests, examinations and failure rates (Freeman et al., 2014). Practically all of the courses included blended learning as a mechanism to free up class time for more interactive elements, though not necessarily reducing class time.

> *"The research on alternative online learning practices has been conducted for the most part by professors using their own courses and the different research conditions have often been ad hoc rather than theory based." (Means et al., 2009)*

Across the many studies analyzed, mean failure rates dropped from 34% (traditional lecturing) to 22% (active learning), and learning gains showed significant improvement when looking at exam scores and concept inventory performance (Freeman et al., 2014).

The many existing literature reviews have also highlighted the variety in the methodological designs employed across individual studies, and it has been indicated that relatively few studies employ methodologies that permit generalization of results, or the establishment of a causal inference between events.

COURSES & STUDENT ENROLMENT:

Instructors have implemented a blended classroom approach in various subject areas that include, but are not restricted to, STEM disciplines (chemistry, biology, statistics, engineering, math); information systems and computer sciences; economics; psychology; medicine and health disciplines (nursing, nutrition, stress management); library and archival studies; teacher education; social sciences and the humanities (sociology, languages, ESL, political science); the arts (liberal arts, creative writing); special education; veterinary; architecture; and accounting. Courses that have been modified into a blended format range from 100 to 500 level courses, mandatory, prerequisite, capstone, specialization courses, theory and laboratories, experiential and community service. Reported enrolments range from low (~20 students) to high (500+ students).

"Learners' individual needs should motivate the use of a particular blend and each component of the blend should be designed to deal with a significant pedagogical problem." (Boyle, 2005)

EVIDENCE OF IMPACT:

Findings on the effectiveness of different delivery modes are far from definitive. Methodological diversity and shortcomings, the timescale over which measurement of improvement takes place, and artificial lumping of essentially different courses into the same categorical space are all factors that contribute to the lack of clarity in an area so widely studied. It can be argued, however, that context is of paramount importance and that the particular circumstances of a given course will impact the outcomes of a blended classroom approach.

BENEFITS:

- Enhanced opportunity for student control of their learning
- Free up class time for more interactive elements
- Increased learning opportunities resulting from a greater variety in teaching modalities, approaches and resources
- More flexible access to content and instruction at any time, from any place
- Possibility of tackling multiple issues when a problem is multi-faced

LIMITATIONS:

- Design and implementation challenges
- Instructors are required to feel comfortable working with and managing technology
- Instructors need time and practice to develop the skills required to achieve the intended outcomes of an increased use of teaching and learning technology
- Risk of overloading students

REFERENCES AND RESOURCES:

For a complete list of references and resources, please visit: **flexible.learning.ubc.ca/blended-references**