

Education Innovation

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Innovating Education in Technology-Supported Environments

 Springer

Chapter 1

Blended Learning: Approaches, Trends, Research, and Publication Opportunities



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Abstract This chapter focuses on blended learning approaches, trends, research, and publication opportunities. It begins with a discussion about campus-based and fully-online approaches to blended learning. Research trends are then described from student, faculty, and administrative perspectives. Research opportunities and challenges are presented for each of these three categories. The chapter concludes with an overview of the resources, conferences, and publication venues that are available in the field of blended learning.

Keywords Blended learning · Research trends · Research opportunities and challenges

Introduction

The idea of blending different learning experiences has been in existence ever since humans started thinking about teaching (Williams, 2003). Over the years, new features in blended learning practices have advanced educational delivery in terms of ease of access, cost effectiveness, and learning outcomes (Dziuban, Graham, Moskal, Norberg, & Sicilia, 2018; Smith & Hill, 2019). Higher educational institutions have been identifying the diversity of learning contexts, such as cross-cultural learning and promotion of internationalization, and exploring how blended learning can be effectively implemented (Philipsen, Tondeur, Roblin, Vanslambrouch, & Zhu, 2019). Examples include integrating blended-learning with mobile learning (Suana, Distrik, Herlina, Maharta, & Putri, 2019) and corrective feedback (Chen, Breslow, & DeBoera, 2018). What has recently brought blended learning into the

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limelight is the infusion of web-based technologies into the learning and teaching process (Clark, 2003). These technologies have created new opportunities for students to interact with their peers, faculty, and concepts in online courses and programmes.

The new developments in blended learning have also brought forth new opportunities for research and publication. They cover various potential topics such as the effectiveness, attitudes, and popularity of blended-learning (Clayton, Blumberg, & Anthony, 2018; Ma, Li, & Liang, 2019; Smith & Hill, 2019). At present, blended learning has been mainly deployed on a small-scale basis by individual teachers instead of an institutional basis. Related research has focused mainly on learning outcome, suggesting that many relevant research issues remain to be investigated (Smith & Hill, 2019). This chapter describes research trends in blended learning from student, faculty, and administrative perspectives, as well as providing an international perspective on resource, conference, and publication opportunities in this field.

Blended Learning Approaches

Blended learning is often defined as the combination of face-to-face and online learning (Williams, 2002). Ron Bleed, the former Vice Chancellor of Information Technologies at Maricopa College, argues that this is not a sufficient definition for blended learning as it simply implies “bolting” technology onto a traditional course, using technology as an add-on to teach a difficult concept or adding supplemental information. He suggests that, instead, blended learning should be viewed as an opportunity to redesign the way that courses are developed, scheduled, and delivered in higher education through a combination of physical and virtual instruction, “bricks and clicks” (Blead, 2001). The goal of these redesigned courses should be to join the best features of in-class teaching with the best features of online learning to promote active, self-directed learning opportunities for students with added flexibility (Garnham & Kaleta, 2002). This sentiment is echoed by Garrison and Vaughan (2008) who state that “blended learning is the organic integration of thoughtfully selected and complementary face-to-face and online approaches and technologies” (p. 148). A survey of e-learning activity by Arabasz, Boggs, and Baker (2003) found that 80% of all higher education institutions and 93% of doctoral institutions offer hybrid or blended learning courses.

With the development and growth of web-based synchronous communication tools, Power (2008) argues that a campus-based definition of blended learning (Fig. 1.1) needs to be expanded. He has coined the term “blended online learning environments” (BOLE) to describe the simultaneous and complementary integration and implementation of an asynchronous-mode learning environment (i.e. a

Synchronous = face-to-face, services such as Zoom

Asynchronous = messaging, LMS, e-class, pre-recorded videos, etc.

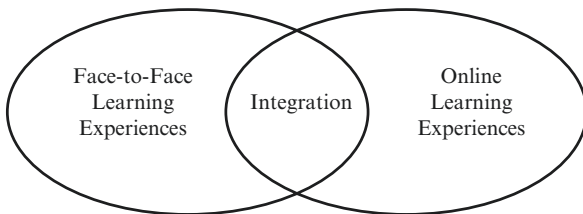


Fig. 1.1 Campus-based blended learning approach

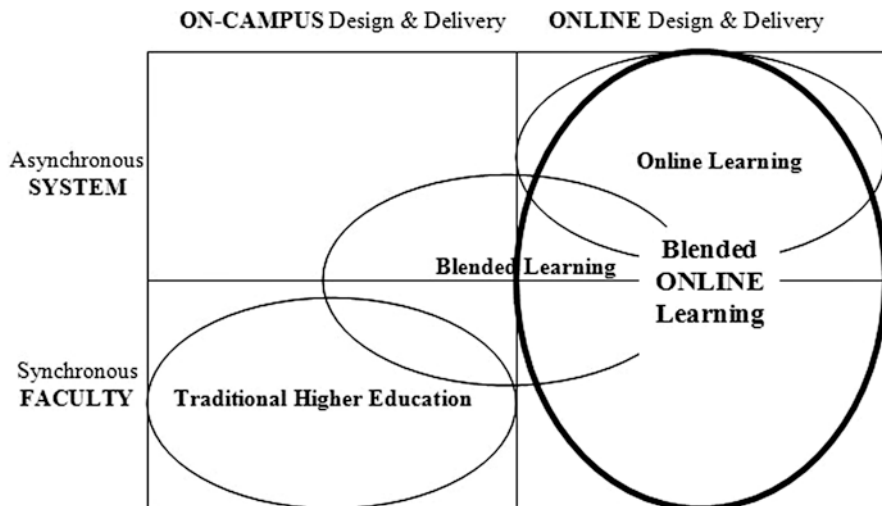


Fig. 1.2 Blended online learning environment (Power, 2008, with permission from Thomas Michael Power)

learning management system, or LMS) and a synchronous desktop conferencing environment (i.e. a virtual classroom) (Power, 2008). Figure 1.2 illustrates the distinction between campus-based and blended online learning environments.

Campus-based environments have their roots in traditional higher education systems where classes have been delivered by faculty in synchronous lecture settings. Initially, blended learning has been used to complement these synchronous lectures through the use of asynchronous discussion forums and learning management systems such as Blackboard and Moodle. With the advent of synchronous tools, such as Adobe Connect, opportunities have been created to provide students at a distance with both synchronous and asynchronous communication possibilities. In this chapter, these educational contexts are referred to as *online* blended learning environments in order to distinguish them from the campus-based versions.

How should courses be designed with synchronous and asynchronous tools? What are the strengths and weaknesses of each? How would you use them in your teaching?

Research Trends

The adoption of blended learning environments in higher education poses a series of research opportunities and challenges from student, faculty and administration perspectives. This section provides an overview of the research opportunities of both campus-based (see Garrison & Vaughan, 2008) and online blended learning (see Power, 2008), from the above perspectives.

Student Perspective

Opportunities

Students who have been involved in campus-based blended learning courses are generally very positive about their experiences. At the University of Wisconsin, Milwaukee campus, 80% of the students who took a blended learning course indicated that they thought the experience was worthwhile and that they would recommend a course offered in a blended format to others (Aycock, Garnham & Kaleta, 2002). The principal reason that students gave for their high level of satisfaction was the time flexibility provided by a blended format (see Table 1.1). Time flexibility was defined as the ability to control the pace of one's learning, the convenience of scheduling coursework, and a decrease in time spent commuting (Garnham & Kaleta, 2002). Table 1.1 summarises the key findings from the University of Wisconsin student survey.

Have you experienced blended learning in any other courses at HUFSS? How was it?

Time Flexibility

The students surveyed indicated that they liked to be able to control the pacing and location of their learning. They appreciated the blended design because it provided them with the flexibility to work from home, which was perceived much more positively than working from other locations, such as campus computer labs or work-places (Garnham & Kaleta, 2002).

The blended design also provided students with a much greater range of course scheduling options because of the reduction in synchronous meeting sessions. This

Table 1.1 Survey questions administered to students (n = 282) in blended courses at the University of Wisconsin, Milwaukee at the end of the spring 2001 semester (Garnham & Kaleta, 2002)

Statement	Agree	Disagree	No opinion
I could control the pace of my own learning.	69%	19%	12%
I could organise my time better.	77%	11%	12%
The time I spent online would have been better spent in class.	16%	67%	17%
There should be more courses like this.	61%	16%	23%

convenience of scheduling is increasingly important for the growing number of students who have multiple responsibilities such as work and family commitments.

In addition, a study by the National Clearinghouse for Commuter Programs in the United States (1999) found that 87% of all post-secondary students in the United States do not live in institution-owned housing on campus and thus commute to get to the institution. The costs of commuting are steadily increasing, as are the challenges of finding an available parking space at higher education institutions.

Do you think online learning will replace classroom-based learning? Why or why not?

Improved Student Learning Outcomes

Several research studies have demonstrated that blended learning designs contribute to improved learning outcomes for students (Dziuban, Hartman, Juge, Moskal, & Sorg, 2005; Garnham & Kaleta, 2002; Twigg, 2003a). In the United States, the Pew Foundation sponsored a study to investigate how large-enrolment introductory courses can be effectively redesigned using a blended format. The programme involved 30 institutions, with 20 of them reporting improved learning outcomes and 10 reporting no significant difference (Twigg, 2003b). In addition, 18 of the study institutions demonstrated a decrease in student drop-failure-withdrawal (DFW) rates compared to the face-to-face only sections (out of 24 institutions which measured DFW changes).

The University of Central Florida has been involved in an ongoing evaluation of web and web-enhanced courses since the inception of its Distributed Learning Initiative in the autumn of 1996 (Dziuban, Hartman, Moskal, Sorg, & Truman, 2004). These evaluation studies indicate that, on average, blended learning courses have higher success rates (percentage of students obtaining an A, B, or C) and lower withdrawal rates than their comparable face-to-face courses. The studies also show that student retention in blended courses was better than in totally online courses and equivalent to that of face-to-face courses.

Qualitative research studies at the University of Wisconsin in Milwaukee (Garnham & Kaleta, 2002) also suggest that students learn more in blended courses than they do in comparable traditional class sections. Teachers responsible for the blended sections report that students write better papers, perform better in exams, produce higher quality projects, and are capable of more meaningful discussions on course material. Sands (2002) states that, because of the text-based nature of web-based discussion forums and email, blended courses become “de facto writing intensive courses when the teachers work carefully to integrate the online and classroom components” (p. 1). Spika (2002) adds that the increased opportunities for self-directed learning in the blended model help students to develop project and time management skills.

Student Challenges

Studies at the University of Central Florida (Dziuban & Moskal, 2001) and the University of Wisconsin, Milwaukee (Garnham & Kaleta, 2002) both indicate that students encounter a number of challenges with blended courses. The four key challenges identified are: the expectation that fewer classes meant less work, inadequate time management skills, problems with accepting responsibility for personal learning, and difficulty with more sophisticated technologies.

Expectations

Students new to blended learning initially equate fewer in-person classes to having less coursework. In addition, a number of these students do not perceive time spent in lectures as “work,” but they definitely see time spent online as work, even if it is time they would have spent in class in a traditional course (Aycock, Garnham, & Kaleta, 2002).

Time Management

Time management is a struggle for many higher education students. This can become particularly acute in a blended online course where there is a lack of physical presence.

Responsibility for Learning

Many first-year undergraduate students, who are away from home for the first time, are in the early stages of “learning how to learn.” The notion of taking responsibility for one’s own learning can be very difficult for students accustomed to being passive learners within a traditional lecture format. Initially, students may be unprepared for the active learning role they must play in a blended course.

Technology

Most technology-related problems that students encounter in blended online courses usually occur within the first weeks of the semester. These problems are usually related to the procedure for accessing the online material and resources (i.e. website address and logon information). Problems that persist throughout the semester

sometimes involve either downloading large files or accessing more sophisticated web-based applications such as video clips (Aycock et al., 2002).

Faculty Perspective

Benefits

Faculty staff who have taught blended courses indicate that their teaching experiences were very positive. At the University of Wisconsin, Milwaukee, 100% of the faculty members involved in a blended learning pilot project recommended using this approach to others and planned to teach a blended course again (Aycock et al., 2002). Reasons for this high level of satisfaction included: enhanced interaction with students, increased student engagement in learning, flexibility of the teaching and learning environment, and opportunities for continuous improvement.

Enhanced Teacher and Student Interaction

Initially, one of the major concerns expressed by faculty members teaching blended courses at the University of Wisconsin was that they would become less connected to their students because of the decrease in face-to-face sessions (Aycock et al., 2002). In contrast, after teaching a blended course, they almost universally reported feeling more connected to their students and knowing them better. The faculty teaching blended courses at the University of Central Florida echoed these comments (Dziuban & Moskal, 2001). They indicated that not only did more interaction occur in their blended courses but they also thought this interaction was of a higher quality than what they typically see in the face-to-face classroom. Aycock et al. (2002) suggest that this increased interaction is often fostered by teachers developing new ways to engage their students online and through the creation of online communities. Bleed (2001) stresses how important this interaction is for restoring the “human moment in the educational process” (p. 18).

Increased Student Engagement in Learning

Faculty staff who have taught blended courses have observed that students do a better job of writing, learning course material, mastering concepts, and applying what they have learned compared to students in their traditional sections (Aycock et al., 2002). They suggest that this improvement is due to students being more engaged in

their learning process. This sentiment is captured in a comment from a faculty member at the University of Wisconsin who teaches blended courses, “My students have done better than I have ever seen; they are motivated, enthused and doing their best work” (Garnham & Kaleta, 2002, p. 3).

More Flexible Teaching and Learning Environment

Faculty at the University of Wisconsin indicate that they can accomplish course learning objectives more successfully within a blended course than within a traditional course because of the flexibility of the blended model (Garnham & Kaleta, 2002). The flexibility of time and the ability to use web-based multimedia allow the faculty to “develop solutions to course problems and to incorporate new types of learning activities that were not possible in traditional courses” (Aycock et al., 2002, p.1).

The Environment Forces Continuous Improvement

The blended model also allows teachers an ongoing opportunity to experiment with new approaches to learning and new types of educational technology. At the University of Central Florida, learning to use technology was cited as one of the outcomes that the faculty liked most about teaching on the web (Dziuban & Moskal, 2001).

Challenges

From a faculty perspective, the key challenges of teaching in a blended format are: time commitment, lack of support for course redesign, difficulty in acquiring new teaching and technology skills, and the risk factors associated with this type of course (Dziuban & Moskal, 2001; Garnham & Kaleta, 2002; Voos, 2003).

Time Commitment

The increased time commitment involved in a blended course is regarded as the biggest challenge by faculty (Dziuban & Moskal, 2001). Johnson (2002) states that planning and developing a large enrolment, blended course takes two to three times

the amount of time required to develop a similar course in a traditional format. At the University of Central Florida, the faculty members who are considered to be “web veterans” indicate overwhelmingly that a course with online components requires more time for both the development and weekly administrative duties than a similar course delivered face-to-face (Dziuban & Moskal, 2001). Despite this increase in workload, all the faculty involved in a blended learning pilot programme at the University of Wisconsin, Milwaukee stated that they would teach these types of courses again, as they believed their time was wisely invested in improving the learning environment for both students and themselves (Garnham & Kaleta, 2002).

Professional Development Support

These faculty members also indicated that blended learning is not a “solo” activity. To ensure a successful blended learning experience for students, there must be faculty support for course redesign and learning new teaching and technology skills. The course redesign support involves assistance in deciding what course objectives can be best achieved through asynchronous online learning activities, what can best be accomplished in synchronous events, and how to integrate these two learning environments (Dziuban et al., 2004). The faculty indicated that they needed to acquire new teaching skills, such as how to foster online learning communities, facilitate online discussion forums, and address and manage students’ online learning problems (Aycock et al., 2002).

In terms of technology, many faculty members initially needed to overcome their own fears and resistance through “hands-on” experience with various tools and applications. In addition, they are also challenged to provide “front line” technical support for their students. The faculty staff at both the University of Central Florida (Dziuban & Moskal, 2001) and the University of Wisconsin, Milwaukee (Aycock et al., 2002) were adamant that, in order to overcome these support issues, there must be an institutional professional development programme for the development phase of a blended learning course and ongoing institutional support during the initial delivery phase (Voos, 2003).

Risk Factors

The major risk factors identified by those who have taught blended courses include fear of losing control over the course, lower student evaluations, and an uneasiness about how this type of learning model fits into the university culture of teaching, research, and service (Dziuban & Moskal, 2001; Voos, 2003).

Administrative Perspective

Benefits

From an administrative perspective, blended learning presents the opportunity to enhance an institution's reputation, expand access to its educational offerings, and reduce operating costs.

Enhanced Institutional Reputation

The opportunity to enhance an institution's reputation is often linked to improving the quality of the institutional learning environment for students and increasing student and faculty satisfaction (Garrison, 2017; Twigg, 2003b). Heterick and Twigg (2002) have found that blended learning designs can have a positive impact on student learning when thoughtfully applied to support "active learning pedagogies" and increased student "time on task." Voos (2003) suggests that blended designs can enhance both student and faculty satisfaction with learning when the design, training and development, and systems and support are well organised. Graham Spanier, President of Pennsylvania State University, boldly stated that the ability of blended learning to support the convergence of online and residential instruction is "the single, greatest unrecognised trend in higher education today" (cited in Young, 2002, p. 4). Bleed (2001) has also actively explored how these types of courses can be used to recombine learning and social experiences within the Maricopa Community College District of Arizona.

Expand Access to the Institution's Educational Offerings and Increase Enrolments

As previously mentioned, blended learning provides increased choice and flexibility for students in the way that courses and entire programmes are delivered. Many students are now able to balance family and work commitments with their academic studies as a result of this blended model. Numerous higher educational institutions also hope that this expanded access will translate into increased revenue streams, but the results to date have been mixed (Carr, 2001).

Cost Reduction Strategies

Many in higher education are currently asking the question “How can we best serve our students in today’s society in light of increased enrolments and decreased government funding?” (Bates & Poole, 2003, p. 24). Twigg (2003b) suggests that blended learning provides institutions with two principal cost reduction strategies. These options are to either increase student enrolments in courses with little or no change in course expenditures or to keep student enrolments the same while reducing the instructional resource costs for the course.

In the Pew course redesign study, coordinated by Twigg (2003b), the majority of the 30 institutions involved in the study selected the second option. They attempted to keep the same student enrolment numbers and reduce costs while maintaining quality. The predominant technique used to accomplish this objective was to reduce the time faculty staff and other instructional personnel spent on large enrolment courses by transferring a number of tasks to technology. This was achieved through the use of online course management systems, online automated assessments, online tutorials, shared resources and staffing substitutions. These strategies are outlined in Table 1.2 and they allowed the study institutions to reduce course costs by about 40% percent on average, with a range of 20–84% (Twigg, 2003a).

One of the greatest cost savings, which is currently attributed to blended learning, is the reduction in space requirements. Prior to the deployment of blended

Table 1.2 Strategies for using technology to reduce costs in blended courses (Twigg, 2003b)

Technique	Description
Course management systems	The course management systems played a central role in a majority of redesign projects. These systems reduced (and in some cases eliminated) the amount of time that the faculty spent on non-academic tasks, such as grade calculations, photocopying handouts, posting changes to the course schedule, sending out special announcements, and updating course material for subsequent semesters.
Automated assessments	Over half of the projects used automated grading of exercises, quizzes, and tests. This dramatically reduced the amount of time the faculty and/or teaching assistants spent on preparing quizzes as well as grading, recording, and posting results.
Tutorials	Online tutorials were used in a number of the course redesign projects. The faculty involved with these projects reported that students came to the lectures and the face-to-face tutorials more prepared to ask good questions. In addition, the faculty and teaching assistants no longer had to present content in class which was already available online. This created more time for discussion and questions within the face-to-face sessions.
Shared resources	The use of shared resources across multiple sections of the same course allowed for a significant saving of faculty time. This was usually achieved by having one common general resource website for all sections of a particular course.
Staffing substitutions	The substitution of graduate teaching assistants with lower cost undergraduate learning assistants in these blended courses resulted in a substantial cost saving (non-technology).

course sections, the shortage of classroom space was so acute at the University of Central Florida (UCF) that it had to rent space at a nearby multiplex theatre for classrooms during the day (Young, 2002). Through the deployment of blended courses, with a significant or total reduction in class time, the University was able to schedule two or three course sections in the same classroom where only one could be scheduled before. This then allowed the UCF to reduce the amount of rented space through the more efficient utilisation of existing classrooms. Bleed (2001) states that reducing space costs may be the only way colleges and universities in the United States can keep up with the continuing population growth and the demands for lifelong learning.

Challenges

There is an abundance of literature describing the challenges that higher institutions face when attempting to incorporate technology into the teaching and learning environment (Barone, 2001; Cho & Berge, 2002; Twigg, 1999). The following issues can be particularly daunting when institutions attempt to adopt blended learning.

Alignment with Institutional Goals and Priorities

Twigg (1999) suggests that blended learning can only be effectively implemented if an institution is committed to improving the quality of the student learning experience in a cost-effective manner. This implies that technology is viewed as a means of achieving this strategic goal and the institution is committed to fully integrating computing into the campus culture. Barone (2001) adds that this goal can only be realised if an institution's leaders demonstrate affirmative action through proper resource allocation and necessary policy revision. The course redesign study coordinated by Twigg (2003b) demonstrates that this strategic alignment can be a formidable challenge. Senior administrators in many of the study institutions were unable to create policy changes to increase enrolments in the blended sections, and department chairs were unable to reduce seat time in these sections to the projected percentages. Resistance to organisational change was given as one of the main obstacles.

Resistance to Organisational Change

Resistance to organisational change in higher education is a well-documented phenomenon (Barone, 2001; Twigg, 1999). Change in post-secondary education is often compared to the "turning of the Titanic." Institutional bureaucracy and inertia can prevent changes in the curriculum, course structures, and timetables, which are critical for the success of blended learning.

Organisational Structure and Experience with Collaboration and Partnership

Lack of a collaborative organisational structure and internal partnerships can pose a formidable barrier to a blended learning initiative (Dziuban et al., 2005). Decisions must be made in a consultative fashion and communicated widely in order for a blended learning model to be successful (Barone, 2001). There must be significant cooperation through partnerships with students, faculty, instructional technology staff, faculty developers, and administrators in order to succeed (Twigg, 1999). In addition, there needs to be a commitment to assessing and communicating the impact of blended learning on student achievement, success, and satisfaction (Barone, 2001).

The next section describes international publication opportunities in the field of blended learning.

Resources, Conferences, and Publication Opportunities

This section begins with an overview of the blended learning research resources that are available from student, faculty, and institutional perspectives and then concludes with a list of conference and publication opportunities.

Resources

Student Perspective

From a student perspective, blended learning research focuses on student learning, engagement, and threshold concepts or bottlenecks. In terms of resources related to student learning research, case studies and methodologies are available from the National Centre for Academic Transformation (2018) and the University of Central Florida's (2018a, b) Centre for Research into Teaching Effectiveness.

There are various resources related to student engagement research. In North America, there is Indiana University's (2018) *National Survey of Student Engagement* and the *Times Higher Education's* (2017) *Student Experience Survey*.

A threshold concept is defined "as a core idea that's conceptually challenging for students, who struggle to grasp it — but once grasped, it radically transforms the students' perception of the subject. Although this material is difficult to learn, understanding threshold concepts is essential for the mastery of any field of study" (Meyer & Land, 2003, p. 1). The University of Calgary (2017) has created a handbook that describes how blended approaches to learning can potentially be utilised to help students obtain threshold concepts.

Faculty Perspective

With regard to the faculty perspective, blended learning research often examines course design, the scholarship of teaching and learning, and professional development. There are a variety of resources related to blended course design, such as in Concordia University (2018).

Many faculty members are researching their own teaching practices in blended course contexts and the International Society for the Scholarship of Teaching and Learning XE “Teaching and learning” (2018) provides resource, conference, and publication opportunities.

A key research topic is in the area of professional development or support for the design, development, implementation, and evaluation of blended courses and programmes. The University of Central Florida (2018b) has created a *Blended Learning Toolkit* that provides resources and survey instruments for evaluating faculty development initiatives related to blended learning.

Administrative Perspective

Finally, from an administrative perspective, blended learning research usually focuses on programmes, cost savings, and alignment with the institutional mission and mandate. At this level, the research is often conducted as an entire programme rather than on an individual course. In Canada, Royal Roads University (2018) engages in this form of blended programme research. With regard to cost savings research, the National Centre for Academic Transformation (2018) provides case studies and research templates. A number of institutions have conducted research on how a blended approach to learning and teaching aligns with their mission and mandate. One of the most extensive institutional blended learning research studies has taken place at the University of Ottawa (2018) in Canada.

Conferences

The number of conferences related to educational technology are ever growing, and Wright’s (2018) conference listing is probably the most extensive. However, there are several international conferences dedicated to blended learning, including the Online Learning XE “Online learning” Consortium’s (2018) Innovate Conference and the International Association for Blended Learning XE “Blended learning” (2018) Conference.

Publications

Corresponding to the increase in educational technology conferences, there is a growing number of publication opportunities for blended learning research. One of the most prominent publications is IGI's (2018) *International Journal for Mobile and Blended Learning*. Other highly regarded journals that feature blended learning research include Athabasca University's (2018) *The International Review of Research in Open and Distributed Learning*; Elsevier's (2018) *The Internet and Higher Education*; Wiley's (2018) *British Journal of Educational Technology*; and the Canadian Journal of Learning and Technology (2018).

Conclusions

This chapter has described and discussed research trends and publication opportunities in the field of blended learning. As regards research, blended learning trends have been identified from student, faculty, and administrative perspectives in higher education. From a student perspective, the key research topics include student learning, engagement, and ability to grasp and obtain threshold concepts. Blended learning research from a faculty perspective often focuses on course design, the scholarship of teaching and learning, and professional development. At the administrative level, research on blended learning usually involves the investigation of cost savings, alignment with the institutional mission and vision, and a focus on entire programmes rather than individual courses.

Resources, conferences, and publications related to blended learning research are ever increasing. This chapter has attempted to identify the most prominent and useful ones for the reader.

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