



INTERNATIONAL
COUNCIL FOR OPEN AND
DISTANCE EDUCATION



Blended Learning State of the Nation

Dr. Ebba Ossiannilsson

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FOREWORD

In 2014, ICDE conducted a study through a Research and Innovation Task Force, to better understand the state of research and innovation in online, open and flexible education across the globe. One of the recommendations from the ICDE Research and Innovation Report (2015) was to develop a series of Insight papers that could reflect the emerging research and innovation issues that members of ICDE were interested in. Two Insight Papers on the first chosen topic *Learning Analytics* were published at the ICDE Presidents' Summit in November 2016 and are accessible from ICDE's website. An ICDE Cluster in Learning Analytics sharing knowledge and good practice has been established as a result of the focus on Learning analytics.

In our second call, we invited for writers and researchers who could collaborate with ICDE to produce a new Insight paper on the topic *Blended Learning*.

Blended learning has become a mainstream approach to learning in higher education. Teachers are commonly drawing upon a mix of digital technologies and face to face approaches to enhance the learning outcomes of their students. The term itself *blended learning* has many definitions which are varied in the explanation. Since there appear to be many interpretations of exactly what it is, how it works and what the benefits are, ICDE called upon authors to write a paper in our Insight series under the title *Blended learning – State of the Nation*.

Oslo, 13 October 2017

Gard Titlestad
Secretary General
International Council for Open and Distance Education - ICDE

ACKNOWLEDGEMENTS

ICDE would like to thank the author, Dr. Ebba Ossiannilsson, who has written an insightful and inspirational insight paper targeted towards a wide audience including practitioners, leaders and policy makers. The report demonstrates a consistent pedagogical focus taking into account the various perspectives of learners, teachers, technicians and educational leaders.

We will also acknowledge the valuable contributions in reviewing the paper from Professor Belinda Tynan, Deputy Vice-Chancellor Education and Vice-President of RMIT University, Australia. Her comments and input has been highly appreciated throughout the process from both the author and ICDE.



INTRODUCTION BY BELINDA TYNAN

Blended learning will not be new to many educators as it has a lineage in the scientific literature since the 1960s, but the phrase itself did not appear until the late 1990s. Over the past 20 years or so, numerous definitions have emerged that demonstrate the wide-ranging nature of the concept itself. The lack of a clear definition is mostly due to the changing nature of technologies and the convergence of technologies and pedagogical approaches as teachers experiment in their classrooms virtually and face-to-face.

This insight paper has much to offer a broad audience and especially practitioners, policy makers and leaders. The complexity of doing blended learning well will not go unnoticed as it is not a matter of merely combining the virtual and physical world of education. What is clear is that there is a renewed focus on the quality of teaching and learning, and that blended learning offers a contemporary approach to learning that is worthy of all our consideration. Here you will go on a journey through time and land in our current age hopefully with your own view of the merits or otherwise of blended learning.

What I do expect is a critical eye and that you leave refreshed and asking even more questions than Dr Ossiannilsson raises. Perhaps you will be inspired to relook your learning and teaching plans or how you go about teaching in your classrooms.

I do hope that you enjoy this paper and what it has to offer.

Professor Belinda Tynan
DVCE and Vice President RMIT University
ICDE Executive Committee Member

EXECUTIVE SUMMARY

This executive summary is designed as an infographic in which some definitions and main characteristics are highlighted. Moreover, some models for design, implementation, and quality enhancement are provided. The purpose of this report is to contribute to the discussion of blended learning, particularly its development, implementation, effects, and relationship with emerging trends in UNESCO global goals for education in 2030.

Blended learning designs have headed the list of trends in higher education the most recent five editions of the NMC Horizon Report, partly because of their role in increasing the flexibility and convenience of students (Adams et al., 2017). Briefly, blended learning is the fusion of online and face-to-face contact between teachers and students.

Blended learning environments include not only the physical presence of teachers and students but also the students' ownership and control of the time, place, setting, path, and pace at which their learning takes place (Banditvilai, 2016). Blended learning concerns mindset and pedagogy more than it does technology (Adams, et al., 2017). In educational programs, both formal and informal, the use of the blended learning model is accepted as the mainstream approach to learning in schools, colleges, and universities across the globe in line with technological development and increased digitization. Thus, the ecosystem of blended learning must be embraced to ensure the quality of a culture of blended learning.

The two most-often cited definitions are provided by the Christiansen Institute and Wikipedia. The former defined blended learning as:

[Blended learning is] a formal education program in which a student learns; at least in part through online delivery of content and instruction, with some element of student control over time, place, path, and/or pace; at least in part in a supervised brick-and-mortar location away from home, and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience (Christiansen, Horn & Staker, 2013 p. 8).

The latter defined it as follows:

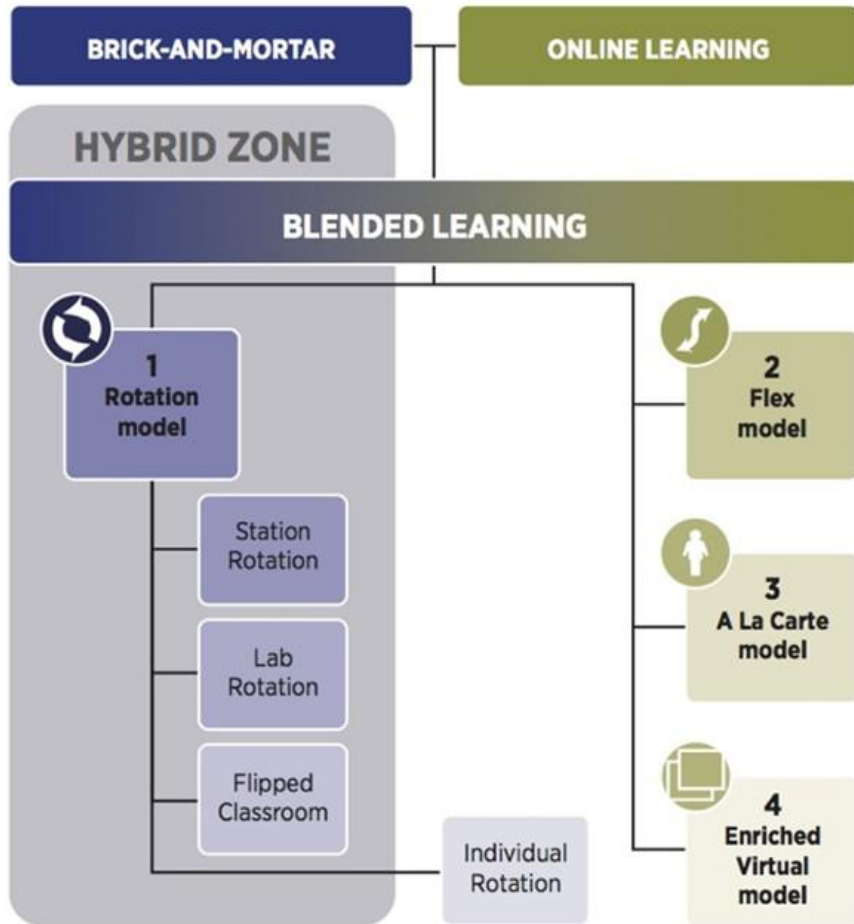
Blended learning is a formal education program in which a student learns at least in part through the delivery of content and instruction via digital and online media with some element of student control over time, place, path, or pace. (Wikipedia, 2017).

Because blended learning is highly context dependent, the concept has been interpreted and defined variously over time and in many cultural contexts. The terms blended learning, hybrid learning, technology-mediated instruction, technology-enabled (enhanced) learning, web-enhanced instruction, and mixed-mode instruction are often used interchangeably in the research literature (Bates, 2016, 2017; Commonwealth of Learning, 2015; Daniel, 2016; Martyn, 2003).

The term blended learning is sometimes synonymous with the terms personalized learning and differentiated instruction (Personalize Learning, 2012).

For example, the Commonwealth of Learning (COL) (2015) defined blended learning as an approach to teaching and learning that combines different methods, technologies, and resources to improve student learning. The Online Learning Consortium (OLC) (2015) defined blended and hybrid learning as online activities that supplemented by classroom meetings, replacing a significant percentage of the required face-to-face instruction. In other words, most course activity is done online, but some face-to-face instruction is required, such as lectures, discussions, labs, and other in-person learning activities.

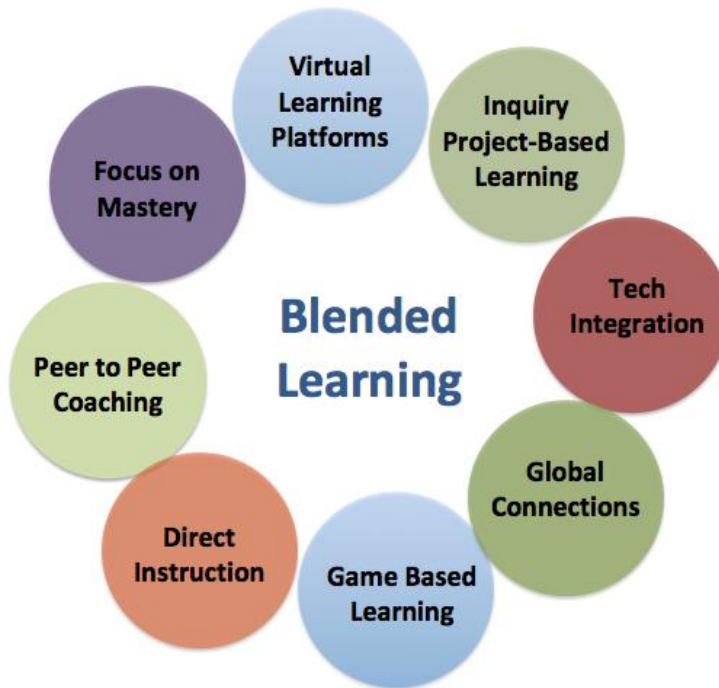
Some useful common models of blended learning are presented below.



The four models of blended learning according to Christiansen Institute, Christiansen, Horn, and Staker (2014)¹

¹ <http://www.christenseninstitute.org/publications/hybrids/>

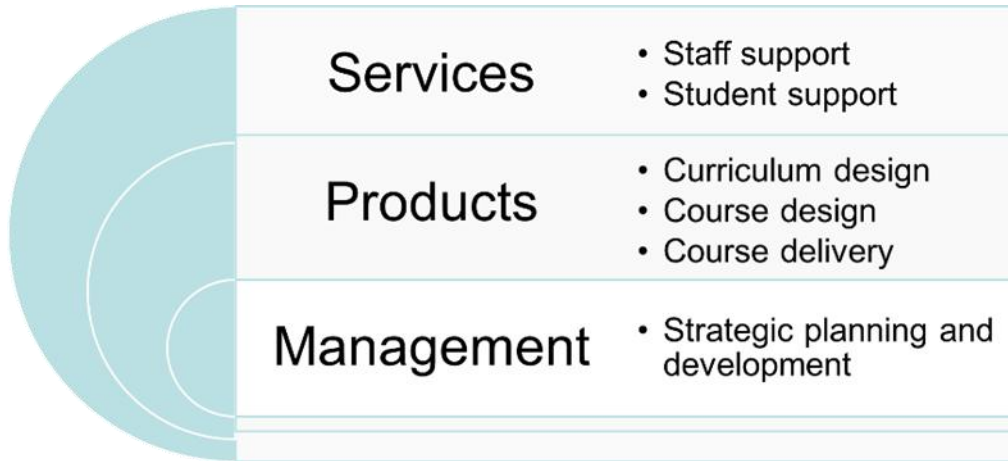
A common model of blended learning. The “blend” in the blended learning model (Mountain House High School, Mountain House, CA)



The eight attributes of open pedagogy by Hegarty (2015).



A model for quality dimensions in open online learning, including blended learning according to Ossiannilsson, 2012; Ossiannilsson, Williams, Camilleri & Brown, (2015).

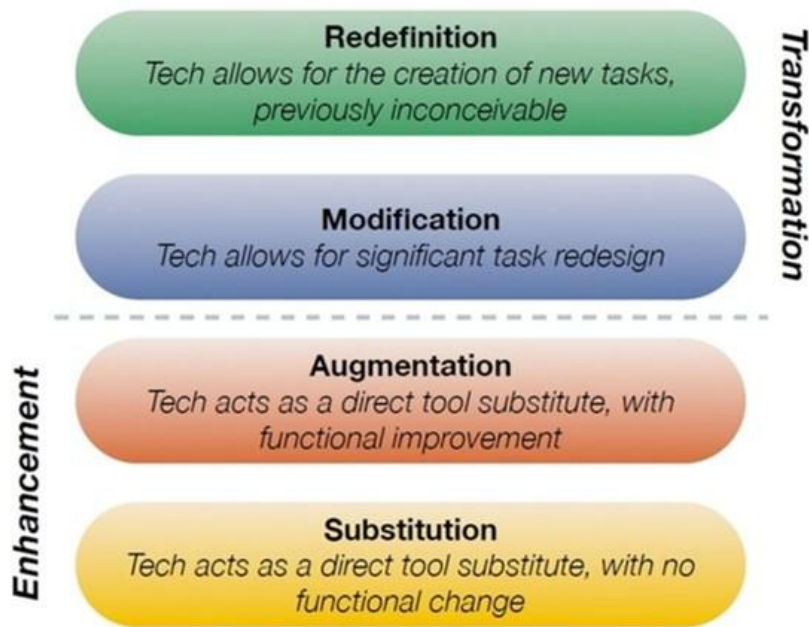


The iNOCOL framework for blended learning by Staker & Horn (2013)

Framework for Blended Teaching Competencies



The SAMR Model, from Enhancement to Transformation
by Puentedura (n.d.).



Any model of blending learning must be flexible enough to adapt to emerging developments in the institution's subject areas, maturity level, and incentives to ensure the quality of the learning they provide (Ossiannilsson, Williams, Camilleri, & Brown, 2015).

The case studies of UNESCO Bangkok and the Education University of Hong Kong (2016) could be used as examples by institutional leaders and policymakers to implement and support blended learning based on current and future needs, particularly if they emphasized the following:

- In the process of implementing blended learning strategies, attention should be paid to learning inputs, processes, and assessments and the measurement of overall personal development.
- In implementing a holistic approach, teachers and administrators should be well prepared, motivated, and have sufficient time and resources.
- To succeed, students need creative learning opportunities that include guidance by well-supported faculty in dynamic learning environments.
- Institutional leadership must be attuned to the needs of staff and students, as well as the need for an overall strategy to improve learning experiences both online and in person.

In summary, the following recommendations are provided for the successful implementation and sustainability of culture of quality in blended learning.

- Base success on people, that is, the human dimension.
- Promote the ownership of learning by allowing personal learning.
- Ensure that strategies, funding, and visions are understandable to all.
- Implement a culture of smart learning, open pedagogy, and mobile learning.
- Enable ubiquitous learning, time (anytime), space (anywhere), path, mode, and access.
- Apply the iNOCOL framework of blended learning.
- Apply the UNESCO Bangkok and the Education University of Hong Kong recommendations.
- Support and facilitate capacity building, incentives, and recognition in all staff.
- Cultivate a culture of quality and an ecology of blended learning.
- Encompass digitization throughout the curricula and assessments, including finding, evaluating, creating, disseminating, and communicating.
- Ensure that blended learning concerns all stakeholders at micro, meso, and macro levels.
- Ensure that leadership and management at all levels support and facilitate the culture and quality of blended learning.
- Conduct research that focuses on blended learning per se not only in comparison with other teaching and learning models.

CONCLUSIONS AND RECOMMENDATIONS

Dear reader,

Perhaps you find it unusual and somewhat surprising that the conclusions and recommendations are placed at the beginning of this report instead of at the end. The rationale is not only to raise your interest in continuing to read but also to provide a service for readers who want to stay abreast of the state of the art on blended learning.

The blended learning method is becoming increasingly common. Blended learning concerns mindset and pedagogy more than it does technology. More important than its technical definition is the purpose of blended learning, specifically the reasons that its adoption as an instructional modality is important for the future of learning. Thus, the eco-system of blended learning has to be embraced to cultivate a culture of quality in blended learning. Blended learning is a powerful method for differentiating and personalizing instruction, as well as for moving away from time-based models of achievement toward competency-based ones.

Blending is a strategy that helps teachers achieve what they strive to do every day—understand and enable each student to reach the very highest levels of educational mastery (Powell, Rabbitt, & Kennedy, 2014). Blended learning not only requires teachers to understand and have deep knowledge in their areas of content expertise but also understand and use online and blended modes of pedagogy. The blended model requires changes in the roles of not only teachers but also learners who are active, responsible collaborators, and even creators of their own learning materials. As McLaughlin and Lee (2012) argued, learners are prosumers.

This change in roles is accompanied by shifts in ownership and empowerment in which learners take control of and orchestrate their own learning. Efficient and effective learning starts with an effective mindset, which is one domain in the iNOCAL framework for blended learning. This framework is one of the models studied by educators to understand their evolving role in blended learning environments. This framework offers insights into the knowledge, skills, and dispositions needed to ensure that new instructional methods are successful. The iNoCAL framework (see Fig in the Executive Summary, and p 29) emphasizes the mindsets, qualities, and skills that support practitioners.

Porter and Graham (2016) proposed a three-stage framework for the institutional adoption of blended learning: 1) awareness and exploration; 2) adoption and early implementation; 3) mature implementation and growth. Their framework also identifies the key strategy, structure, and support issues that universities may address at each stage, which were emphasized by Ossiannilsson et al. (2015) in their recommendations for a quality model of open online learning.

The case studies of UNESCO Bangkok and the Education University of Hong Kong (2016) could be used as examples by institutional leaders and policymakers to implement and support blended learning based on current and future needs, particularly if they emphasized the following:

- In the process of implementing blended learning strategies, attention should be paid to learning inputs, processes, and assessments and the measurement of overall personal development.
- In implementing a holistic approach, teachers and administrators should be well prepared, motivated, and have sufficient time and resources.
- To succeed, students need creative learning opportunities that include guidance by well-supported faculty in dynamic learning environments.
- Institutional leadership must be attuned to the needs of staff and students, as well as the need for an overall strategy to improve learning experiences both online and in person.

In summary, the following recommendations are provided for the successful implementation and sustainability of culture of quality in blended learning.

1. Base success on people, that is, the human dimension.
2. Promote the ownership of learning by allowing personal learning.
3. Ensure that strategies, funding, and visions are understandable to all.
4. Implement a culture of smart learning, open pedagogy, and mobile learning.
5. Enable ubiquitous learning, time (anytime), space (anywhere), path, mode, and access.
6. Apply the INOCOL framework of blended learning.
7. Apply the UNESCO Bangkok and the Education University of Hong Kong recommendations.
8. Support and facilitate capacity building, incentives, and recognition in all staff.
9. Cultivate a culture of quality and an ecology of blended learning.
10. Encompass digitization throughout the curricula and assessments, including finding, evaluating, creating, disseminating, and communicating.
11. Ensure that blended learning concerns all stakeholders at micro, meso, and macro levels.
12. Ensure that leadership and management at all levels support and facilitate the culture and quality of blended learning.
13. Conduct research that focuses on blended learning per se not only in comparison with other teaching and learning models.

INTRODUCTION

Blended learning, is primarily a learner-centric approach that offers learners autonomy and flexibility throughout their learning process. Blended learning which embraces various combinations of classroom presence and online study, is now considered a mainstream approach to learning in most educational organizations. The method combines “brick-and-mortar” attendance with teachers in face-to-face classroom practices and computer-mediated content and delivery. The concept of blended learning is sometimes used synonymously with the terms hybrid learning, personalized learning, technology-enabled (enhanced) learning, and differentiated instruction (Commonwealth of Learning, 2015). Because the concept is highly context dependent, the meaning of blended learning has varied over time, and it has been interpreted and defined variously worldwide. Historically, blended learning has changed over time, and it will continue to take new directions. In general, the existing research on blended learning is divided. Some researchers have argued that the concept of blended learning is no longer relevant and even redundant, while others have considered the approach mainstream, emerging, and/or taking new directions. Powell et al. (2013) argued that blended learning concerns mindset and pedagogy rather than technology. Thus, the ecosystem of blended learning has to be embraced in order to cultivate a culture of quality. Daniel (2016), emphasized that blended learning has nothing to do with learning but concerns learning design and course delivery. He argued that the term blended teaching is more appropriate than the term blended learning to describe institutional strategies. Nevertheless, the lack of consensus on the definition of blended learning has led to difficulties in researching its effectiveness in learning. Therefore, a common understanding of the concept, how it works, its implementation, influence, its role in shaping the future, as well as its benefits and limitations, is required and need to be researched Bates, 2017; Beaver, Hallar, & Westmaas, (2014).

Building on increased Internet access and mobile platforms, blended learning provides a means of reaching UNESCO’s Sustainable Development Goals (UNESCO, 2015a, 2015b, 2016). UNESCO’s Education 2030 Framework for Action provides guidance for governments and partners in turning commitments into action, accessible, and equitable quality education and lifelong learning opportunities for everyone across all modes of formal and non-formal learning.

The only sustainable means of achieving these educational goals are scalability, opening up education, and the increased use of the potentials of technology and digitization, which includes the implementation of blended learning (UNESCO, 2015a 2015b; UNESCO, 2016).

Large world organizations such as the Organization for Economic Co-operation and Development (OECD) (2016), the Commonwealth of Learning (COL) (2017), and in Europe, the European Commission (EC) (2013, 2017) have called for changing the future of education and skills by 2030.

The EC (2013, 2017) has argued for opening up education to all in order to boost innovation and digital skills in schools and universities in preparation for the collaborative, but competitive, global market. Technology offers unprecedented opportunities to meet the needs and expectations of the next generation of learners. These organizations emphasize the increased demands on schools to prepare students for rapid economic and social changes, for jobs that have not yet been created, for technologies that have not yet been invented, and for solutions to social problems that have not yet been anticipated.

The most prominent challenges for education are globalization, technological innovations, climate, and demographic changes. The fourth industrial revolution (Schwab, 2016) has led to new demands and opportunities to which individuals and societies need to respond, as they will fundamentally alter the way people live, work, relate to one another, and learn in formal and informal settings. Although it is not yet known exactly how it will unfold, it is clear that the response to this technological revolution must be integrated, comprehensive, and include all stakeholders of the global polity in the public and private sectors, civil society, and academia, all of which it will affect on a large scale. Indeed, the velocity, scope, and impact of its breakthroughs have no historical precedent. This revolution is evolving exponentially rather than linearly, and it is disrupting almost every industry in every country across the globe. The breadth and depth of these changes herald the transformation of entire systems of production, management, and governance.

Most humans in many countries around the world are now able to access the digital world. For the billions of people connected by mobile devices with unprecedented processing power, storage capacity, and access to knowledge, the possibilities are unlimited. The use of these devices has led to the increase in mobile and ubiquitous learning, which has implications for blended learning. These possibilities will be multiplied by emerging technological breakthroughs in fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3D printing, nanotechnology, biotechnology, materials science, energy storage, and quantum computing.

Technology has made possible the remote access to new products and services that increase the efficiency and pleasure of the personal lives of this demographic. Further influences on blended learning are the 21st century skills, competences, and attitudes that are the required literacies in the fourth industrial revolution (the European Commission, 2017). These literacies concern the social nature of learning, which is supported by the ability to collaborate using digital technologies, and they refer to a range of abilities and competencies that go beyond what has traditionally been taught in the classroom, including complex problem solving, communication, collaboration, creativity, and innovation. This set of skills and understandings will prepare the workforce and all citizens for the changing, interconnected global world (EC, 2103; Partnership for 21st century learning,² n.d.). In addition, the agenda for opening up education, open pedagogy, and personal learning in new connected learning environments must be considered in the implementation of blended learning. Combined, these major developments challenge the acceptance, implementation, and use of blended learning, as well as its quality, effects, and influence throughout educational organizations and institutions.

This ICDE insight paper aims to contribute to the understanding and awareness of blended learning by discussing its terminology, history, etymology, development, implementation, influence, quality, and relationship to emerging trends in the goals for global education in 2030.

The remainder of this paper is structured as follows:

- Method
- Terminology, definitions, history, and etymology
- Models and implementation
- Advantages and disadvantages
- Quality in and with blended learning

METHOD

This study was based on a review of the literature available on the Internet, which consisted of mainly open-source articles found on Google Scholar by using the Boolean search method. Most of the literature fell into one or more of the following categories: unpublished papers, such as blog posts by researchers with international reputations; position papers by governmental organizations, such as UNESCO, COL, OECD, and the EC; journals and books.

BLENDED LEARNING TERMINOLOGY, DEFINITIONS, HISTORY, AND ETYMOLOGY

In educational programs, the blended learning model is accepted across the globe in line with technological development and increased digitization. Blended learning designs have led the trends in higher education in the past five editions of the *NMC Horizon Report*, partly because of their flexibility and convenience for students (Adams et al., 2017).

The term blended learning is commonly understood as referring to formal and classroom methods. Blended learning environments include not only the physical presence of teachers and students but also the students' ownership and control of the time, place, setting, path, and pace at which learning takes place (Banditvilai, 2016).

Blended learning is considering as learners centered, that offer flexibility, and ownership throughout the learning process. In short, the concept simply means the blend of virtual online digital media, training with traditional classroom methods, and face-to-face, instructor-led sessions.

Interpretations of the concept of blended learning have varied over time, and it has been defined variously worldwide. The term has been used since the advent of the Internet and the World Wide Web in the late 1990s. Although the concept was first developed in the 1960s, the formal terminology used to describe it did not take its current form until the late 1990s (Friesen, 2012). In a press release by the Interactive Learning Centers, when they changed name to Education Program Innovation Center, EPIC Learning), the concept was described as:

.... The company will begin offering its Internet courseware using the company's Blended Learning methodology. Our goal is to remain on the leading edge ... by continuing to provide our Blended Learning format to all our clients. Through Blended Learning, we have combined traditional instructor-led training with multiple forms of self- directed training to create flexible, convenient, and effective learning formats, both in a traditional classroom setting and online.³

The term blended learning initially encompassed a wide range of pedagogical methods and technologies in varying combinations. In the 1960s, technology-based training emerged as an alternative to instructor-led training on mainframes and mini-computers. In the early 1990s, CD-ROMs emerged as a dominant form of providing technology-based learning, as bandwidths were not able to support high-quality sound and video. Subsequently, learning management systems emerged as a way to facilitate progress tracking. In the 21st century, blended learning is delivered online. Some examples of channels through which online blending learning can be delivered include webcasting (synchronous and asynchronous) and online videos (both live and recorded). Solutions such as the Khan Academy and other open sources have been used in classrooms as platforms for blended learning (Friesen, 2012).

Friesen (2012), who conducted a historical and etymological study of blended learning, argued that in 2002 and 2003 in particular, many eclectic definitions of blended learning were available.

At least four interpretations were the most commonly used: (i) to combine modes of web-based technology to accomplish an educational goal, (ii) to combine several pedagogical approaches to produce an optimal learning outcome with or without instructional technology, (iii) to combine any form of instructional technology with face-to-face instructor-led training, and (iv) to combine instructional technology with actual job tasks in order to create a harmonious effect of learning and working. Friesen emphasized that blended learning is any combination of technologies, pedagogies, and even job tasks. In this eclectic view, blended learning means different things to different people. In reality, these definitions illustrate the untapped potential of blended learning. Another definition that is often cited was provided in a white paper by Elliot Masie. However, this definition is so broad that it includes nearly all forms of learning and instruction:

What is “blended learning”? It is the use of two or more distinct methods of training. This may include combinations such as blending classroom instruction with online instruction, blending online instruction with access to a coach or faculty member, blending simulations with structured courses, blending on-the-job training with brownbag informal sessions, blending managerial coaching with informal educational programs that combine online digital resources and media with traditional e-learning activities. (cited in Clark, 2003, p. 4)

Masie’s white paper goes further to define blended learning as a mixture that is appropriate to training and job performance, and it includes performance-support technologies, knowledge management, and online training technologies. These early definitions provide little clarity about the inclusion or exclusion of courses in blended learning.

These previous definitions indicate at least three characteristics of this type of learning. First, the term blended learning is a noun phrase containing a gerund, not a verb, which underscores that it is not as much about students’ activity as it is a method of instruction that concerns instructional and institutional personnel, which aligns with Daniel (2016).

Second, blended learning involves a combination of any number of technologies and techniques although most examples include only *two*, such as the classroom with online learning, online learning with coaching, instructional technology with actual job tasks, and so on. Third, blended learning denotes the combination of the classroom with online activities or modalities.

The definition of blended learning term became more specific with the publication of the first *Handbook of Blended Learning* by Bonk and Graham in 2006. They challenged the breadth and ambiguity of the term, and they succinctly defined blended learning systems as combining face-to-face instruction with computer-mediated instruction. Since 2006, the term has been interpreted more or less similarly. In the report, *Defining Blended Learning*, Friesen (2012, p. 1) suggested, “blended learning designates the range of possibilities presented by combining Internet and digital media with established classroom forms that require the physical co-presence of teacher and students.”

According to Graham (2006), blended learning refers to traditions, practices, and norms with which many educators have long been familiar. These are practices and norms of the physical, bricks-and-mortar classroom on one hand and of distance delivery on the other hand.

Graham also stated that blended learning is part of the ongoing convergence of two archetypal learning environments. On one hand are the traditional face-to-face learning environments that have existed for centuries. On the other hand, are distributed learning environments that have emerged and expanded in exponential ways in new technologies and increased digitization, which have expanded the possibilities for distributed communication. The strengths of each mode are blended into a unique learning experience that is congruent with the context and the educational purpose.

The Christiansen Institute offered the most-often cited definition of blended learning:

[Blended learning is] a formal education program in which a student learns; at least in part through online delivery of content and instruction, with some element of student control over time, place, path, and/or pace; at least in part in a supervised brick-and-mortar location away from home, and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience (Christiansen, Horn & Staker, 2013 p. 8).

The definition is from the learners' perspective, even if the school itself is not offering blended courses, the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience. (Horn & Staker).

This definition was shared by Powell, Rabbitt, and Kennedy (2014), who used it in their iNACOL framework of blended learning. They emphasized that more important than the technical definition of blended learning is its purpose, specifically, the reasons that its adoption as an instructional modality is important for the future of learning.

According to the Christiansen Institute, the majority of blended learning programs follow one of four models: the rotation, flex, a la carte, and enriched virtual models. The rotation model includes four sub-models (Figure 1). The flipped classroom model has become the most known, and enormously popular such that it is often used as a mainstream model. The flipped classroom is an instructional strategy and a type of blended learning that reverses the traditional learning environment by delivering instructional content, often online, outside the classroom. In the flipped classroom, learners have access to online materials, lectures, and resources, which they read or watch at home in advance, thereby taking ownership of their learning and studying in their own time, space, and mode before participating in a classroom environment. In the physical class, they meet with their classmates and their teachers to hold discussions and dialogs that deepen and refine their learning. They also mapped the models related to brick-and-mortar or online dominance (Horn & Staker, 2014, Christiansen, Horn & Staker, 2015).

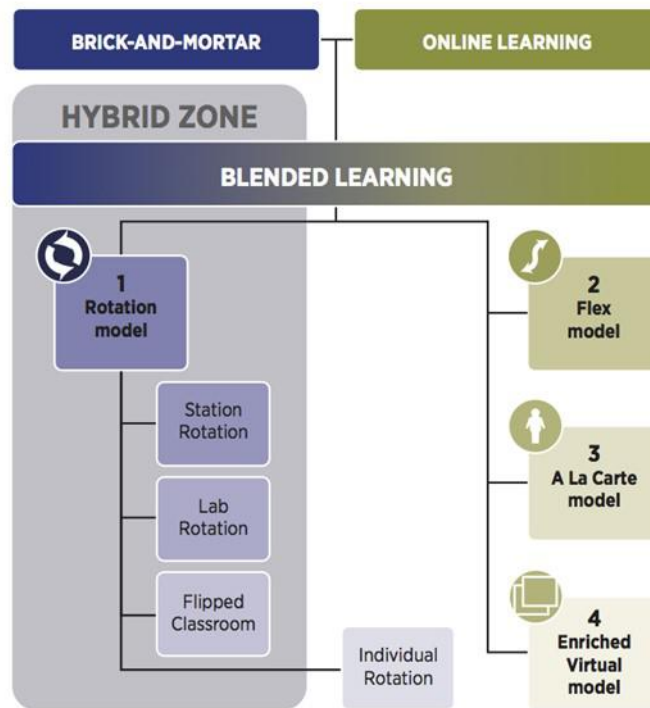


Figure 1. The four models of blended learning (Christensen, Horn, & Staker, 2013)⁴

Although the concept of blended learning may seem intuitive, its practical application is complex. The blended learning method combines brick-and-mortar attendance with teachers in face-to-face classroom practices. Educational models are combined with computer-mediated activities, computer-mediated content, and delivery. Blended learning is also used in professional development and training settings because it is cost effective, time saving, efficient, and learner friendly (Lothridge et al., 2013). Blended learning can thus be described in terms of a continuum along which a series of variations in practice and thinking can be arranged. Friesen (2012) argued that blended learning can be placed between fully online and fully face-to-face courses. Hence, one challenge to the definition of blended learning is determining where it fall on such a continuum. A common model of blended learning is shown in Figure 2.

⁴ <http://www.christenseninstitute.org/publications/hybrids/>

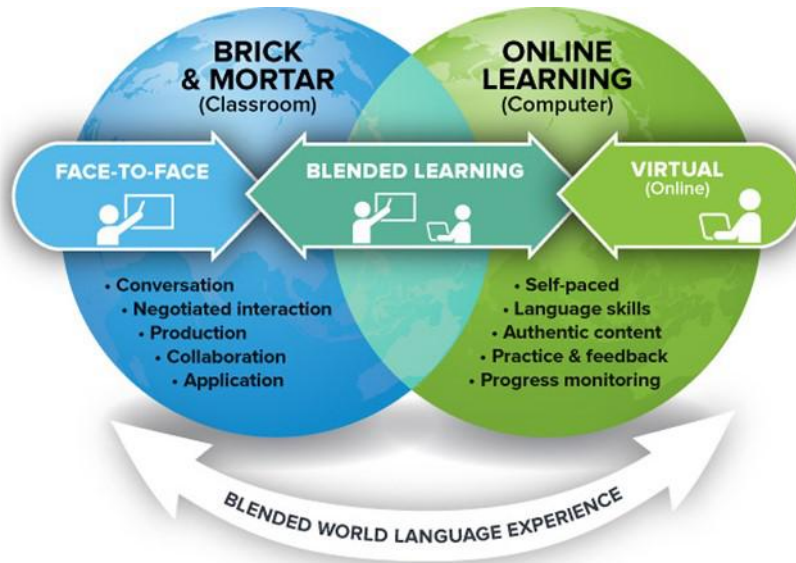


Fig. 2. A model of blended learning⁵

Bates (2016) also queried the definition of blended learning and referred to its place on a continuum. Similar to many others, he argued that it clearly means different things to different people. He asserted that blended, or hybrid, courses are designed to combine both online and face-to-face teaching in any combination (Bates, 2017). His description is similar to the model shown in Figure 3.

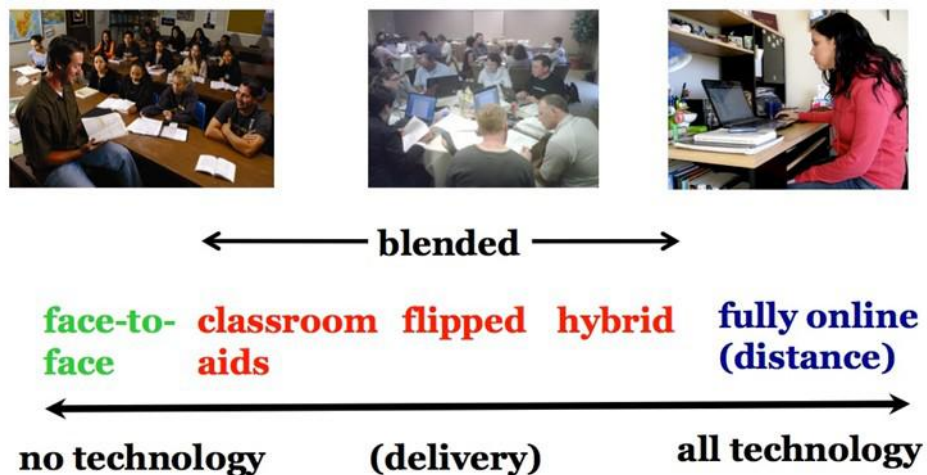


Fig. 3. The blended learning continuum (Bates, 2016)

⁵ <https://www.middleburyinteractive.com/curriculum-courses/blended-learning>

According to Bates (2016), blended learning can consist of PowerPoint slides in a classroom lecture, extra homework online after a face-to-face class, or a classroom where the lecture is recorded and available online, and the class time is used for discussion and questions about the video. Blended learning could also consist of a completely re-designed course in which careful choices are made about what is done online and what is done in class (i.e., a hybrid). He emphasized that hybrid or flexible learning requires the redesign of teaching to enable students to do the majority of their learning online and come to campus only for specific in-person sessions (e.g., laboratories) that cannot readily be done online. He also cautioned that when a term has many different meanings, it is meaningless.

The Commonwealth of Learning (COL) (2015) defined blended learning as an approach to teaching and learning that combines different methods, technologies, and resources to improve student learning, they also emphasized the student-centered approach, offering autonomy and flexibility. The Online Learning Consortium (OLC) (2015) defined blended and hybrid learning as online activities combined with classroom meetings to replace a significant percentage of but not all required face-to-face instructional activities. Most course activities are done online, but some are required face-to-face instructional activities, such as lectures, discussions, labs, or other in-person learning activities. The following definition is provided in Wikipedia (2017):

Blended learning is a formal education program in which a student learns at least in part through delivery of content and instruction via digital and online media with some element of student control over time, place, path, or pace.

The terms blended learning, hybrid learning, technology-mediated instruction, technology-enabled (enhanced) learning, web-enhanced instruction, and mixed-mode instruction are often used interchangeably in the research literature (Bates, 2015, 2016, 2017; Commonwealth of Learning, 2015; Daniel, 2016; Martyn, 2003). Blended learning is sometimes also used synonymously with personalized learning and differentiated instruction (Personalize Learning, 2012).

The term blended learning connotes the many possible combinations of instruction, information, and interaction that can occur in the classroom context of the physical co-presence of various forms of technical (generally online and digital) mediation.

In the literature, blended learning is discussed as mediated social interaction, Internet communication, and business communication (McLoughlin, & Lee, (2008). Mediated social interaction refers to the interaction between two or more individuals who are normally separated in time and/or space, which is enabled by various communication technologies. Jahnke (2016) and Jahnke et al. (2017) considered the same theme but somewhat differently. They argued that there is a move from interaction to cross-action. With increased digitization and emerging technological developments, the digital world constitutes new forms of multiple emerging communication spaces. In this networked world, human actions are grounded not only in interactions but also in multiple cross-action spaces.

Although the definition of blended learning varies, there is consensus on its interpretation. Some studies have suggested that because the definition is vague, the term is redundant (Oliver & Trigwell, 2005) and that it emphasizes teaching more than it does learning (Daniel, 2016). Daniel (2016) argued that the term *blended teaching* is a more appropriate than blended learning to describe this institutional strategy. Over time, blended learning has become an umbrella term that encompasses any combination of traditional, face-to-face teaching with modes of technology-facilitated instruction.

Briefly, this section has explored the concept of blended learning, in addition to its history, etymology, terminology, and definitions. The next section will present some insights into models of blended learning and their implementation.

MODELS AND IMPLEMENTATION

Drawing on best practices in both online and face-to-face methods, the practice of blended learning is increasing at colleges and universities as the number of digital learning platforms and ways to leverage them for educational purposes continues to expand (Adam et al., 2017). To reach the UNESCO goals for education in 2030, the practice of education has to change, transform, and innovate. The goal of education is to prepare students for an unknown and uncertain future and to do jobs that do not yet exist. Therefore, there is a need to move beyond knowledge recall to focus on the competencies and skills needed for lifelong learners and active global citizens, who will need to be flexible, entrepreneurial, collaborative, agile, and adaptable. Hence, today's students must harness the power of digital technologies and their social networks to support continued learning. Innovation must be an integral part of learning ethics to ensure that faculties and institutions are agile in responding to the external market and associated factors. Educational institutions must not only adapt but also to take the lead in innovation and cutting-edge technologies to enhance learning spaces. The New Media Consortium's annual Horizon report (Adam, 2017) prioritized the following:

- Blended learning design
- Collaborative learning
- Growing focus on measuring learning
- Redesigning learning spaces
- Advancing cultures of innovation
- Deepening learning approaches

Another source is the Open University's (UK) Innovating Pedagogy report for 2016, which listed 10 approaches that educators should be aware of in the near future. They highlight learning through social media, productive failure, teaching back, design thinking, learning from the crowd, learning through video games, formative analytics, learning for the future, trans-language, and block chain learning (Sharples et al., 2016). In addition, Gartner's hype curve positions technologies along a spectrum of hype expectation, including artificial intelligence, machine learning, and smart "things" that promise an intelligent future (Gartner, 2016). Adams et al., Sharples, and Garner, all advocated the use of blended learning with the emphasis on pedagogical, and learner centered approaches rather than on technology.

UNESCO Bangkok and The Education University of Hong Kong (UNESCO, 2016) conducted a study on the implementation of blended learning in the Asia–Pacific region. They addressed the following questions:

- How does blended learning work in practice?
- How can policymakers and institutional leaders promote the effective governance and sustainability of these emerging systems to support lifelong learning?
- How can sustainability and scalability of blended learning be implemented in a culture of quality?

Their results explored the ways in which leading institutions build capacity through using a holistic approach to drive, sustain, and scale their blended learning practices and to determine promising practices and lessons learned. Their case studies could be used as examples for institutional leaders and policymakers to implement and support blended learning based on current and future needs, particularly the following:

- In the process of implementing blended learning strategies, there are needs to pay attention to learning inputs, processes, and assessments and to measure overall personal development.
- In implementing a holistic approach, teachers and administrators should be well prepared, motivated, and have the resources and time required.
- To succeed, students need learning opportunities to be creative with guidance from well-supported faculty in dynamic learning environments.
- Institutional leadership must be attuned to the needs of staff, students, and the demands of an overall strategy to improve learning experiences both online and in person.
-

The authors of this study (UNESCO, 2016) emphasized that because governments have the fundamental responsibility for promoting access to quality education and the agenda for UNESCO’s Education 2030, relevant policy advice, and technical support must be provided.

The study also demonstrated what could be achieved when higher education institutions became the leaders, not just followers, of a blended learning movement, which could be the foundation for expanding the access through mobile devices and other modes of learning to high-quality education.

Many models of blended learning are applicable, some of which will be explored in this section. The common model used by Mountain House High School, Mountain House, CA is based on universal knowledge, practice, and common sense (Figure 4). The model uses the conscious pedagogical holistic approach to blended learning, which Bates (2016) and Ossiannilsson et al. (2015) have advocated. In this model, blended learning consists of inquiry project-based learning, technological integration, global connection, game-based learning, direct instruction, peer-to-peer coaching, the focus on mastery, and virtual learning platforms.

Banditvilai (2016) emphasized that a blended learning model could comprise several components, such as instructor-delivered content, e-learning, webinars, conference calls, live or online sessions with instructors, and other media and platforms, such as Facebook, e-mail, chat rooms, blogs, podcasting, Twitter, YouTube, Skype, and web boards.

The interactions or cross actions in digital spaces have become more complex than ever. Humans are also more mobile than ever before, and doubly so, not only because they are constantly on the move but also because almost everything can be accessed through mobile devices such as smartphones and tablets and the software applications (i.e., apps) that are designed to run on them.



Fig. 4. The “blend” in the blended learning model used by Mountain House High School, Mountain House, CA⁶

⁶ Mountain House High School in the Lammersville Unified School District, Mountain House, CA

Mobile devices are the first and sometimes individuals' only choice for connecting online or offline to learn in both formal and informal educational settings. Mobile technology is changing the way people live, and it is beginning to change the ways people learn in both formal and informal settings (UNESCO, 2013). Hence, to understand the full potential of blended learning, mobile learning models must be considered. According to UNESCO,

[m]obile learning involves the use of mobile technology, either alone or in combination with other information and communication technology (ICT), to enable learning anytime and anywhere. Learning can unfold in a variety of ways: people can use mobile devices to access educational resources, connect with others, or create content, both inside and outside classrooms. Mobile learning also encompasses efforts to support broad educational goals such as the effective administration of school systems and improved communication between schools and families.⁷

Mobile learning enables personal and ubiquitous learning possibilities (UNESCO, 2013), responds to the challenges of particular educational contexts, supplements and enriches formal schooling, and increases the accessibility, equitability, and flexibility of education for learners anytime and anywhere. Because mobile access is usually the first choice for learning materials and resources, mobile learning must be considered in the delivery of blended learning. The resources for mobile learning require both online and offline access, reliability, and easy navigation. In addition, the resources must be presented as micro learning, such as in short modules.

Blended learning includes the open pedagogy model defined by Wiley (2013). In this model, teaching and learning are only possible in the context of free access and the 5Rs approach (i.e., reuse, revise, remix, redistribute, and retain) of open educational resources (OER). Teachers who practice open pedagogy use open resources to facilitate learning and encourage their students to share their work openly with open content licenses, as for example creative commons (CC). The open pedagogy approach not only concerns resources but also changes the way work is performed. This approach requires infrastructure, policies, and strategies that support it, including the important factors of capacity building, peer work, and staff development in professional competence. It must be emphasized that open pedagogy requires a change in mindset, attitudes, and values as well as a culture of openness.

⁷<http://www.unesco.org/new/en/unesco/themes/icts/m4ed/>

Hegarty's (2015) framework of open pedagogy includes eight attributes (see Figure 5).⁸



Fig. 5. The eight attributes of open pedagogy (Hegarty, 2015)

Hegarty's framework of open pedagogy enables ubiquitous personal learning. Personal and collaborative networking are enhanced, and ownership and power are rebalanced. One of the attributes of open pedagogy is sharing and working in a connecting community. The framework based on these attributes includes collaborative online international learning (COIL),⁹ the aim of which is to develop intercultural awareness and competence across shared multi-cultural online learning environments.

Ossiannilsson et al.'s (2015) study on quality models for open online learning, including blended learning, found that although the models had different features, dimensions, or categories, they all had some features in common, such as services, products, and management, and they all emphasized the student-centered approach (see Figure 6).

⁸.The eight attributes are described as follows:

- Participatory technologies are used to interact with Web 2.0 and 3.0, social networks, and mobile apps
- People, openness, and trust refer to developing trust, confidence, and openness in working with others.
- Innovation and creativity refer to encouraging spontaneous innovation and creativity.
- Sharing ideas and resources refers to sharing ideas and resources freely to disseminate knowledge.
- Connected community refers to participating in a connected community of professionals.
- Learner generated refers to facilitating learners' contributions to open educational resources (OER).
- Reflective practice refers to engaging in opportunities for reflective practice.
- Peer review refers to the open critique of the scholarship of others.

⁹. The SUNY Center for Collaborative Online International Learning (COIL) is one of the leading international organizations focused on the emerging field of **globally networked learning** (GNL), a teaching and learning methodology that provides **innovative cost-effective internationalization strategies**. See <http://coil.suny.edu/page/about-coil-0>

One such model was developed by the European Association of Distance Teaching Universities (EADTU) E-excellence Associates Label. It is worth stressing the importance of leadership, management, incentives, and recognition in quality models. Ossiannilsson et al.’s findings included the importance of a holistic approach and an ecosystem.



Fig. 6. Significant areas related to quality in open online learning including e-learning (Ossiannilsson, 2012, Ossiannilsson et al., 2015).

The iNACOL framework for online and blended learning identifies 12 key competencies that are combined into four larger domains (see Figure 7). This framework emphasizes the mindsets, qualities, and skills that support practitioners’ creative and continuous improvement as well as their ability to thrive amidst change.¹⁰ The framework is adapted from the TPACK model (Technology, People, Assessment, Content and Curricula), 11 a framework for understanding quality online blended teaching and learning, which addresses all aspects of a student-centered, functional description of the key elements in an approach to systemic educational transformation. This framework assists educators in understanding their evolving roles in blended learning environments, by offering insights into the knowledge, skills, and dispositions needed for the successful implementation of new instructional methods.

¹⁰. The four domains are as follows: Mindset competencies include the core values or beliefs that guide an individual’s thinking, behaviors, and actions, and that align with goals of educational change and mission. In blended learning, practitioners need to understand, adopt, and commit to mindsets that help them shift towards new forms of teaching and learning. Quality competencies are those personal characteristics and patterns of behavior that help academic staff make the transition to new ways of teaching and learning. These qualities, like perseverance, flexibility, and transparency, need to be coached, reinforced, and developed over time.

Adaptive skills are generalizable skills that apply across roles and subject areas. These skills—which include things like collaboration and problem-solving—are complex; they help practitioners tackle new tasks or develop solutions in situations that require organizational learning and innovation. They are mastered through modeling, coaching, and re active practice. Technical skills are domain-specific “know-how” and expertise that educators used to execute against the known tasks in their jobs. They are acquired and mastered through instruction, training, and practice (p. 7).

¹¹. <http://www.tpack.org>. The abbreviation stands for (i) T for technology platform and tools to teach, network, collaborate, and communicate, (ii) P for people, professional development, and pedagogical shift toward student-centered learning using technology, data to inform instruction, and engaging digital content, (iii) A for assessment methods that demonstrate a student’s proficiency in knowledge, including adaptive and performance-based assessments that are data-driven, for improving and personalizing instruction, (iv) C is for digital content and curriculum, including adaptive content.

Framework for Blended Teaching Competencies



Fig. 7. The iNOCOL framework for blended learning

The substitution augmentation modification redefinition model (SAMR) by Puentedura (n.d) is worth considering for the implementation or enhancement of the quality of blended learning. The model offers a method of determining the effects of computer technology on teaching and learning. The SAMR model also provides indicators of progress that adopters of educational technology often follow as they learn to use it in teaching and learning (see Figure 8).

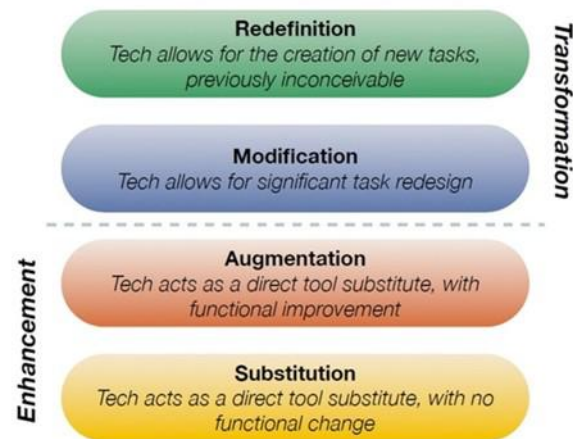


Fig. 8. The SAMR model

Even, the *Padagogy* wheel, developed by Carrington (2017),¹² based on Bloom's digital taxonomy, refers to the SAMR model, with its pedagogical approach it lends insights into blended learning.

In order to make the successful transition to a blended program with the goal of fostering active learning and experimentation during class, new policies are required, including guidelines for faculty development, strategies for curriculum changes, and new methods for structuring financing. Thus, the transition requires an ecological and holistic approach that extends the focus beyond teachers and teaching. It is crucial to promote strategies that promote, sustain, and scale blended learning in education. A key strategy is that institutions incorporate their blended designs into their vision and mission statements to ensure quality, and sustainability (Adams et al., 2017). Any model of blending learning must be flexible and agile enough to adapt to emerging developments in subject areas, maturity levels, and incentives to ensure the quality of education offered by an institution (Ossiannilsson, et al., 2015).

The following sections consider some advantages and disadvantages of blended learning.

ADVANTAGES AND DISADVANTAGE

Blended learning is advantageous for learners, teachers, and institutions if visions, strategies, infrastructure, qualitative blended learning design, capacity building, and teacher training are in place (Geissler, 2014). These advantages may be limited by the absence of attention to any of these factors.

Advantages of the blended model

Over the past several years, perceptions of online learning have become favorable as learners and educators have increasingly considered it a viable alternative to some forms of face-to-face learning. Hence, the affordances offered by blended learning are now well understood, and its flexibility, ease of access, and the integration of sophisticated multimedia and technologies are high on the list of its advantages. The current focus of this trend is on understanding the ways in which the application of digital modes of teaching influence students learning. Many findings have demonstrated increases in creative thinking, independent study, and the ability of students to tailor their learning experiences to meet their individual needs (Adams et al., 2017).

The growth in blended learning designs indicates that learners have become adept at navigating digital environments and engaging with online content, which are skills required in the 21st century. Global authorities, such as UNESCO, COL, and the EC, have emphasized that participants in the global society in the 21st century must be able to do the following:

- Develop proficiency and fluency with the tools of technology.
- Build intentional cross-cultural connections and relationships with others, pose and solve problems collaboratively, and strengthen independent thought.
- Design and share information with global communities to meet a variety of purposes.
- Manage, analyze, and synthesize multiple streams of simultaneous information.
- Create, critique, analyze, and evaluate multimedia texts.
- Attend to the ethical responsibilities required by these complex environments.

These sets of competences, attitudes, and values can be enabled through a conscious approach to the design of blended learning. Students born in the last 20 years have grown up using technology in their daily lives. Because they use ubiquitous mobile technologies that allow them quick access to information, blended learning is consistent with the learning processes and habits of these “digital natives.”

The growing need for blended learning designs on university campuses has led to the development of policies to guide teaching faculty in best practices (Wicks, Craft, Mason, Gritter, & Bolding, 2015). The blended learning approach and the flipped classroom are often considered more effective than purely face-to-face or purely online classes because they suit learners’ needs and serve to maintain their enthusiasm and motivation. Many learners also enjoy the convenience of blended learning (Adams et al., 2017). Saritepeci and Cakir (2015) argued that blended learning methods could result in levels of student achievement that were higher than in face-to-face learning.

By using a combination of digital and face-to-face instruction, students can work according to their own time and pace, and the teachers’ time can be focused on supporting individual students who need attention. In the blended learning model, all learners could reach their full potential. Learning and the learning environment are personalized, which contrasts the classroom environment in which the same materials and instructions are given to all students, regardless of where they are on their learning journey.

In the traditional face-to-face lecture format, the level of instruction is compromised to fit all students, which rarely suits any student. However, blended allows for personalized education by replacing the traditional model in which a teacher stands at the front of the classroom and students are expected to progress at the same pace. In the blended model, the time, pace, path, mode, and style of learning can be tailored to the needs of individual learners, which allows them to ensure that they fully understand new concepts before moving on to new ones. A classroom environment that incorporates blended learning requires learners to demonstrate autonomy, self-regulation, and independence in order to succeed, all of which are aligned with 21st century skills. Through blended learning, the skills, competences, and attitudes required for the 21st century are embedded in course design, assessments, and learning outcomes. If teachers offered an introductory orientation to blended learning strategies, students would feel confident in navigating the different components and in developing a strong sense of independence. Students with special talents or interests outside the available curricula could use educational technology to advance their skills and progress beyond the set curricula.

The incorporation of asynchronous Internet communication technology into education enables simultaneous independent and collaborative learning experiences. For learners, such experiences are a major contributor to their satisfaction and success. The use of information and communication technologies has been found to improve students' attitudes toward learning, as communication between lecturers and students, particularly part-time students, are improved. Blended learning has the potential to reduce educational expenses by lowering costs and replacing classrooms by the online space. In addition, expensive textbooks are replaced by the electronic devices that students bring to class. Because they are accessed digitally, e-textbooks may also help to reduce the costs of textbooks.

The supporters of blended learning emphasize the opportunity to collect data on learning analytics and personalized instructions and assessments. Blended learning often includes software that automatically collects student data and measures academic progress, thus providing teachers, students, and parents with detailed information. Tests can be scored automatically, hence providing instantaneous feedback. Student logins and work times are also measured to ensure accountability. The use of learning analytics has the potential to track learners' progress, to facilitate learning opportunities, and to assist and assess curriculum and organizational development (Gasevic, Dawson, & Gardo, 2017; Boyer & Bonnin, 2017). Tait (2015) showed that stronger links could be made to learning analytics in the planning and implementation of strategies to promote and increase students' success.

Many schools use online tools to conduct online classes, classwork, question-and-answer forums, and other school-related work. Web conferences technology can be used to connect students with instructors to form a digital classroom. A learning management system (LMS), a virtual learning environment (VLE), or an open personal learning environment (PLE) would provide an online community where discussions could be held without the need for the students' physical presence. Previous studies showed that human and emotional interactions are important factors in learners' success (Holmberg, 1983). According to Tait (2015), most successful strategies in open online learning and e-learning settings have a strong human resource element in the contact made with learners. The same element applies in blended learning because personal learning is enabled and learners can take ownership of their own learning.

Nevertheless, the advantages of blended learning depend on the quality of the programs being implemented. Some indicators of excellence are the following: the blended learning program facilitates student learning, communicates ideas effectively, demonstrates an interest in learning, is organized effectively, respects students, and assesses progress fairly. DreamboxLearn (2013) summarized five advantages of blended learning:

- Improves efficiency
- Saves money
- Personalizes learning
- Provides better student data
- States common core standards

Disadvantages of the blended model

The adage quality is as strong as its weakest link applies to blended learning. Accordingly, unless it is successfully planned and executed, blended learning could be disadvantageous, especially with regard to the strong dependence on the technical resources or tools with which the blended learning experience is delivered. Hence, the trustworthiness of the technology must be ensured to avoid the risk of failure and the criticism of skeptics. These tools need to be reliable, easy to use, and current in order to have meaningful effects on the learning experience (Garrison & Kanuka, 2004). The lack of digital literacy could be a significant barrier to learners attempting to access the course materials; therefore, the availability of high-quality technical support is paramount.

From the educator’s perspective, providing effective feedback is more time consuming (and therefore more expensive) when electronic media are used in comparison to traditional (e.g. paper-based) assessments (Grieve, Padgett, & Molfitt, 2016). In comparison, digital exams are more secure and fair. E-learning platforms can be more time consuming than traditional methods are, and they can incur new costs because service providers may charge user fees. Another critical issue is the access to network infrastructure. Although the digital divide is narrowing as the Internet becomes increasingly pervasive, many learners do not have ubiquitous access to the Internet—even in their classrooms. Any attempt to incorporate blended learning strategies into an organization’s pedagogical strategy needs to ensure that all learners have ubiquitous access to the technology that they need in their learning. It is also crucial that all staff, including leaders and managers, have the pedagogical competences to implement the blended approach successfully. Furthermore, any blended approach must be embedded in strategies, curricula, learning outcomes, and assessments.

It is commonly claimed that no replacement exists for face-to-face contact regardless of the extent to which technology has evolved. It is emphasized that face-to-face contact facilitates the transfer of tacit knowledge or knowledge that is not written or defined but is gained through experience. In communicating face-to-face, the speaker draws on visual cues to gain quick, immediate feedback and make rapid adjustments as necessary. Visual cues and social presence in face-to-face dialogs also enable learners to learn easily about one another’s background, skills, experiences, and areas of expertise. These cues build trust within group members that interact face-to-face. As discussed previously, human and emotional interactions are crucial for success. Today’s modern technology enables the feeling of close human interactions. Indeed, as Jahnke (2016) and Jahnke et al. (2017) argued, human interactions can be strengthened in cross-action learning spaces.

QUALITY IN BLENDED LEARNING

UNESCO Bangkok and The Education University of Hong Kong convened experts from higher education institutions in the Asia–Pacific region to explore the potential of blended learning, including its effects on the role of teachers, the relationship between teachers and students, the nature of educational institutions, and the quality of education as stated in UNESCO’s (2016) sustainable development goals.

The following key issues in the successful implementation of blended learning were identified:

- Capacity development of teachers and teacher trainers is key in improving educational quality worldwide.
- Teachers and teacher trainers must be supported effectively through professional development programs to transform their understanding and professional practice.
- The role of new media, especially mobile learning, in supporting teachers and teacher trainers must be included in this learning process.
- The ways in which traditional online courses can be replaced, supplemented, or supported by mobile technologies must be identified.
- Capacity building and teacher training and in blended learning should combine face-to-face workshops on the introduction, confidence building, group dynamics, and technology in blended learning, as well as include online modules for content reinforcement, communicative and collaborative learning, coaching, and ongoing support for the transfer of understanding into practice.
- Capacity building and teacher training in blended learning should be developed with partner institutions in local educational projects, such as universities and governmental agencies. The training should address a variety of subjects depending on the needs of the partners and the program design.
- New media should be implemented to facilitate access to training as well as new forms of learning and teaching, such as peer coaching and collaborative learning.

According to UNESCO (2015 a 2015b), COL (2017), the NMC Horizon Report (Adams et al., 2017) and Daniel (2016, n.p.), there is an emerging consensus that blended learning will become the most common approach to teaching and learning in higher education. Daniel queried whether this approach would be aimed to safeguard the tradition of face-to-face teaching against the invasion of fully online learning or whether blended learning could raise education to new levels of effectiveness and quality.

Another question concerns whether the blended learning approach will engender new levels of effectiveness and quality (Latchem, 2017). Chen and Yao (2016) found six critical factors in perceived e-learner satisfaction. Specifically, the e-learning component in the blended learning environment influenced learner satisfaction.

The six dimensions were learners, instructors, the course, technology, design, and environment. According to the learners, design and environment were the most important factors for success. Although blended learning has unique dimensions and features of quality, the recommendations in the ICDE study on quality models in online education and open education could serve as guidelines for quality in blended learning (Ossiannilsson et al., 2015).

Bates (2016) emphasized that the key question is not whether blended learning will be the norm but whether it will be done well or badly. This question is urgent because there is no guarantee that classroom instructors who adopt blended learning know anything about the best practices for online teaching, or indeed, whether these best practices will migrate successfully to the many different forms of blended learning that will emerge. Thus, blended learning is not a question of quantity but of quality, satisfaction, and effectiveness. Bates foresaw several challenges if the issue of quality in blended learning were to be taken seriously. His suggestions and solutions include the following:

- Develop an institutional strategy for teaching and learning.
- Allocate resources, time, and teamwork for the move to innovative teaching.
- Prioritize, encourage, and support innovative blended learning designs.
- Build an institutional community of practice so that different support units can learn from each other.
- Prioritize research on blended learning.

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