Blended learning is an education program (formal or non-formal) that combines online digital media with traditional classroom methods. It requires the physical presence of both teacher and student, with some elements of student control over time, place, path, or pace.[1][2][3][4] While students still attend "brick-and-mortar" schools with a teacher present, face-to-face classroom practices are combined with computer-mediated activities regarding content and delivery.[5][6] Blended learning is also used in professional development and training settings.[7]

A lack of consensus on a definition of blended learning has led to difficulties in research on its effectiveness in the classroom.[8] Blended learning is also highly context-dependent and therefore a universal conception of it is hard to come by.[9]

With the coming of modern times and ways of business, blended learning proposes a highly differentiated and contemporary approach, not only to educational institutes and students, but also to corporate organizations. A contextualized blend of classroom training with digital platform integration is a sought after option by professionals in corporate learning and development.[10]

"Blended learning" is sometimes used in the same breath as "personalized learning"[11] and differentiated instruction.[12]

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### Terminology

The terms "blended learning", "hybrid learning", "technology-mediated instruction", "web-enhanced instruction", and "mixed-mode instruction" are often used interchangeably in research literature.[13] Although the concepts behind blended learning first developed in the 1960s, the formal terminology to describe it did not take its current form until the late 1990s. One of the earliest uses of the term appears in a 1999 press release, in which the Interactive Learning Centers, an Atlanta-based education business, announced a change of name to EPIC Learning. The release mentions that "The Company currently operates 220 on-line courses, but will begin offering its Internet courseware using the company's..."
The term "blended learning" was initially vague, encompassing a wide variety of technologies and pedagogical methods in varying combinations (some making no use of technology whatsoever). In 2006, the term became more concrete with the publication of the first *Handbook of Blended Learning* by Bonk and Graham. Graham challenged the breadth and ambiguity of the term's definition, and defined "blended learning systems" as learning systems that "combine face-to-face instruction with computer mediated instruction".[15] In a report titled "Defining Blended Learning", researcher Norm Friesen suggests that, in its current form, 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".[2]

### History

Technology-based training emerged as an alternative to instructor-led training in the 1960s on mainframes and mini-computers. The major advantage that blended learning offers is scale, whereas one instructor can only teach so many people.[16] One example is PLATO (Programmed Logic for Automatic Teaching Operations), a system developed by the University of Illinois and Control Data. PLATO in particular had a long history of innovations and offered coursework from elementary to the college level.[17] Mainframe-based training had a number of interface limitations that gave way to satellite-based live video in the 1970s. The advantage here was serving people who were not as computer literate. The major challenge was the expense required to make this work. In the early 1990s, CD-ROMs emerged as a dominant form of providing technology-based learning as bandwidth through 56k modems weren't able to support very high quality sound and video. The limitation to CD-ROMs was tracking completion of coursework, so learning management systems emerged as a way to facilitate progress tracking. The aviation industry used this heavily to track how well one did on courses, how much time was spent, and where someone left off. AICC, Aviation Industry Computer-Based Training Committee, was formed in 1988 and companies such as Boeing used CD-ROMs to provide training for personnel. Modern blended learning is delivered online, although CD-ROMs could feasibly still be used if a learning management system meets an institution's standards. Some examples of channels through which online blending learning can be delivered include webcasting (synchronous and asynchronous) and online video (live and recorded). Solutions such as Khan Academy have been used in classrooms to serve as platforms for blended learning.[18]

### Models

There is little consensus on the definition of blended learning. Some academic studies have suggested it is a redundant term.[8] However, there are distinct blended learning models suggested by some researchers and educational think-tanks. These models include:[19]

- **Face-to-face driver** — where the teacher drives the instruction and augments with digital tools.[20]
- **Rotation** — students cycle through a schedule of independent online study and face-to-face classroom time.[21][22]
- **Flex** — Most of the curriculum is delivered via a digital platform and teachers are available for face-to-face consultation and support.[23]
- **Labs** — All of the curriculum is delivered via a digital platform but in a consistent physical location. Students usually take traditional classes in this model as well.[24]
- **Self-blend** — Students choose to augment their traditional learning with online coursework.[25]
- **Online driver** — Students complete an entire course through an online platform with possible teacher check-ins.[26] All curriculum and teaching is delivered via a digital platform and face-to-face meetings are scheduled or made available if necessary.[27]

It is important to note that even blended learning models can be blended together and many implementations use some, many, or even all of these as dimensions of larger blended learning strategy. These models, for the most part, are not mutually exclusive.[28]
There are many components that can comprise a blended learning model, including "instructor-delivered content, e-learning, webinars, conference calls, live or online sessions with instructors, and other media and events, for example, Facebook, e-mail, chat rooms, blogs, podcasting, Twitter, YouTube, Skype and web boards".[1]

Advantages

Blended instruction is reportedly more effective than purely face-to-face or purely online classes.[29] Blended learning methods can also result in high levels of student achievement more effective than face-to-face learning.[30] By using a combination of digital instruction and one-on-one face time, students can work on their own with new concepts which frees teachers up to circulate and support individual students who may need individualized attention. "Rather than playing to the lowest common denominator – as they would in a traditional classroom – teachers can now streamline their instruction to help all students reach their full potential."[31] Proponents of blended learning argue that incorporating the "asynchronous Internet communication technology" into higher education courses serves to "facilitate a simultaneous independent and collaborative learning experience".[32] This incorporation is a major contributor to student satisfaction and success in such courses. The use of information and communication technologies have been found to improve student attitudes towards learning.[33] By incorporating information technology into class projects, communication between lecturers and part-time students has improved, and students were able to better evaluate their understanding of course material via the use of "computer-based qualitative and quantitative assessment modules".[34]

Blended learning also have the potential to reduce educational expenses, although some dispute that blended learning is inherently less expensive than traditional classroom learning.[35] Blended learning can lower costs by putting classrooms in the online space and it essentially replaces pricey textbooks with electronic devices that students often bring themselves to class. E-textbooks, which can be accessed digitally, may also help to drive down textbook budgets.[31] Proponents of blended learning cite the opportunity for data collection and customization of instruction and assessment as two major benefits of this approach.[36] Blended learning often includes software that automatically collects student data and measures academic progress, providing teachers, students and parents detailed students data. Often, tests are automatically scored, providing instantaneous feedback. Student logins and work times are also measured to ensure accountability.[31] Schools with blended learning programs may also choose to reallocate resources to boost student achievement outcomes.[37] Students with special talents or interests outside of the available curricula use educational technology to advance their skills or exceed grade restrictions.[38] Blended learning allows for personalized education, replacing the model where a teacher stands in front of the classroom and everyone is expected to stay at the same pace. "Blended learning allows students to work at their own pace, making sure they fully understand new concepts before moving on."[31] A classroom environment that incorporates blended learning naturally requires learners to demonstrate more autonomy, self-regulation, and independence in order to succeed.[6] If teachers offer a form of initial program orientation before introducing blended learning strategies, it can better prepare students to feel confident navigating the different components and developing a stronger sense of independence.[1]

Some online institutions connect students with instructors via web conference technology to form a digital classroom. These institutions borrow many of the technologies that have popularized online courses at the university level. Some advantages of blended learning, particularly at a Kindergarten to grade 12 level of education, can be found under the general concept of educational technology. It is also one of the most effective ways for personalized learning at scale. Blended learning supports the use of standards as a way to manage quality and ease of use. This includes multiple kinds of standards: interoperability standards like the SIF specification from A4L or the Learning Tools Interoperability specification from IMS Global Consortium or academic standards like state standards and Common Core State Standards, which encourage integration of technology into a variety of subjects.[31]
A learning management system, or federation of systems, helps develop a better feel for an online community where discussions can be held to better aid students.[39] This virtual learning environment helps connect professors with students without physically being present, thus making this a 'virtual cafe'. Many schools use this online tool for online classes, classwork, question & answer forums, and other school related work.[40] Blended learning yielded positive results from the online community. Such results were compared and showed similar results from that of Alcoholics Anonymous and Weight Watchers.[39]

The advantages of blended learning are dependent on the quality of the programs being implemented. Some indicators of excellent blended learning programs are “facilitating student learning, communicating ideas effectively, demonstrating an interest in learning, organizing effectively, showing respect for students, and assessing progress fairly.”[41]

### Disadvantages

Unless successfully planned and executed, blended learning could have disadvantages in technical aspects since it has a strong dependence on the technical resources or tools with which the blended learning experience is delivered. These tools need to be reliable, easy to use, and up to date, for them to have a meaningful impact on the learning experience.[32] IT literacy can serve as a significant barrier for students attempting to get access to the course materials, making the availability of high-quality technical support paramount.[33] Other aspects of blended learning that can be challenging is group work because of difficulties with management in an online setting.[42] Reportedly the use of lecture recording technologies can result in students falling behind on the materials. In a study performed across four different universities, it was found that only half of the students watched the lecture videos on a regular basis, and nearly 40% of students watched several weeks' worth of videos in one sitting.[43] This has further implications for the educator and in how much online resources need to be revealed to the student but also ensure it is at the right level for the intended student.

From an educator’s perspective, most recently, it has been noted that 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.[44] Using e-learning platforms can be more time consuming than traditional methods and can also come with new costs as e-learning platforms and service providers may charge user fees to educators.

Another critical issue is access to network infrastructure. Although the digital divide is narrowing as the Internet becomes more pervasive, many students do not have pervasive and ubiquitous access to the Internet – even in their classrooms. Any attempt to incorporate blended learning strategies into an organization’s pedagogical strategy needs to account for this.[45] This is why learning centers are built with good wi-fi connections to make sure this issue is addressed.

### Digital natives

Students who were born in the last twenty years in first world countries are also known as digital natives. Because of the integration of technology into their lives, digital natives are thought to be adept users of technology.[46] With the use of ubiquitous mobile technologies like tablets and cellphones that allows digital natives to access information quickly, blended learning has been an integral part of digital natives' learning processes and habits. One major difference between digital natives and those born prior to this era is the former's reliance on IT, as they create and share their own work.

### 21st century literacies

The term "21st century literacies" was coined by The National Council of Teachers of English to describe the social nature of learning that is supported by the ability to collaborate using digital technologies in learning. These 'new literacies' are described as "skills students will need for the society in which they will work", including "strong communication and
collaboration skills, expertise in technology, innovative and creative thinking skills, and an ability to solve problems".[47] This set of skills and understandings will "prepare the workforce or citizenry for a changing, interconnected world".[48]

These literacies are dynamic due to the ability to be linked to one another. According to NCTE, active, successful participants in this 21st century global society must be able to:

- develop proficiency and fluency with the tools of technology;
- build intentional cross-cultural connections and relationships with others so to pose and solve problems collaboratively and strengthen independent thought;
- design and share information for 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.[49]

See also

- Digital badge
- Educational technology
- Flipped classroom
- Instructor-led training
- M-learning
- Media psychology
- Mixed reality
- Networked learning
- Synchronous learning
- Virtual university

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