

Chapter 7

An Overview of K-12 Digital Content in North America

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Abstract As online and blended environments are developed and grow throughout North America, there is an increased need for high-quality digital content. This chapter provides a brief description of the field of K-12 online and blended learning in the United States, followed by an overview of the types of digital content available to K-12 students and teachers. Next, the chapter discusses how content is developed along with the pros and cons of building your own content versus purchasing it from a publisher. Finally, an overview of quality standards that have been developed to assist schools and districts in evaluating digital content is shared. Resources for schools and districts are provided for developing, purchasing, and evaluating digital content.

Keywords Digital content • Online learning • Education technology • Blended learning

7.1 Introduction

Online learning in the K-12 environment is growing fast. It provides opportunities for students who would not otherwise have access to a world-class education. In the United States, online learning for students in grades K-12 is growing at a rate of 30 % annually, showing no signs of slowing down. With over 82 % of school

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districts providing these services and all 50 states providing opportunities, roughly 16 % of the entire K-12 population are taking advantage of these opportunities.

The International Association for K-12 Online Learning (iNACOL) was founded to increase global access to online learning. The organization facilitates collaboration among online learning professionals, advocates and educates policymakers and the public, researches best practices, and provides professional development opportunities. Since 2003, iNACOL's unique approach has helped over 5 000 000 K-12 students access high-quality courses through the Internet that they would not have had the opportunity to take in their local schools last year.

Online learning is expanding access to courses in K-12 education and providing a new network of highly qualified teachers to schools and students in underserved communities. Online learning has numerous benefits, including expanding course offerings, offering customized, and personalized learning, giving struggling students a second chance to master a subject through online credit recovery when they fall behind, and providing a rigorous, interactive learning model for schools with embedded assessments that are data rich (Wicks 2010). Online learning is providing the content, pedagogical approach, and integration of digital tools and resources that now support new models of teaching and learning, including blended learning, personalized instruction, portable, and mobile learning.

Blended learning is also emerging in North America and around the world. "It is not the same as technology-rich instruction. It goes beyond one-to-one computers and high-tech gadgets. Blended learning involves leveraging the Internet to afford each student a more personalized learning experience, meaning increased student control over the time, place, path, and/or pace of his or her learning.

The definition of blended learning is a formal education program in which a student learns:

- (1) at least in part through online learning, with some element of student control over time, place, path, and/or pace;
- (2) at least in part in a supervised brick-and-mortar location away from home;
- (3) and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience (Horn and Staker 2012)."

Blended learning occurs in a variety of venues and models. It occurs at the district and school level, where both online and face-to-face classes are offered. At the classroom level, blended learning can occur when online courses are supported with in-class instruction or instructional support. At the instructional level, blended learning incorporates digital tools and resources into content and assessments, building students' digital literacy skills as well as content knowledge. Blended classrooms enable schools to maintain continuity of learning during a pandemic or natural disaster, offer opportunities for personalization of classroom instruction, and offer students multiple pathways to learning.

Blended learning may incorporate online content in the form of a lesson, a single course, or an entire curriculum. The roles of teachers and students may be quite similar to their roles in a typical classroom, or they may change dramatically as learning becomes student-centered¹ as shown in the diagram below. A blended classroom or course that includes online instruction may expand learning beyond the school day or school year, or it may still be defined by classroom hours.

The main issue with online and blended learning in the United States is whether every student has access to the highest quality education available today. Research has been collected and determined that “on average, students seem to perform equally well or better in online learning courses” (North Central Regional Education Laboratory, Learning Point Associates 2005). Through online learning, we can expand educational offerings, options, and opportunities to every student through this new delivery model, over the Internet. Online learning also helps to ensure that every student is college-ready and work-ready. With 20 % of college students taking an online course, part of college readiness is leveraging a new delivery model using online learning to increase access to courses and help students graduate from high school. With 30–50 % of workforce training done online, having students learn online in high school helps prepare and be more aware of options and opportunities available to them for success in college and in life.

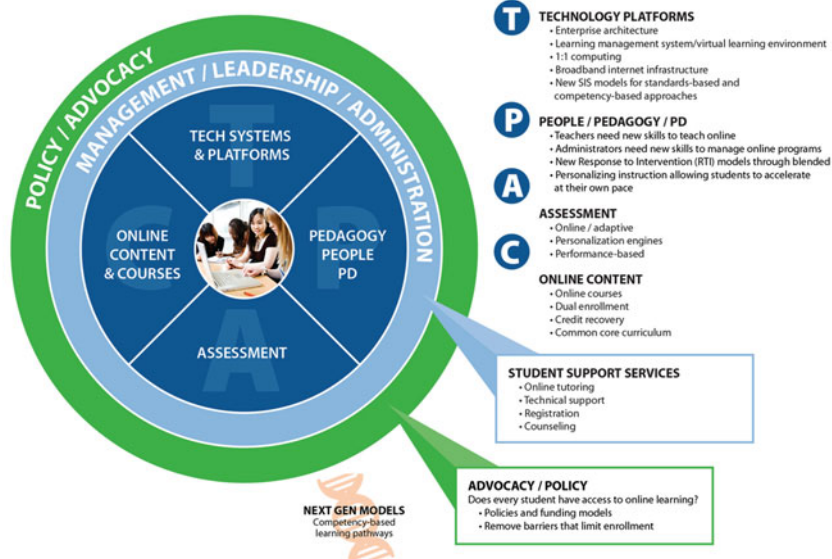
Individual schools, districts, and state departments of education have been developing Quality Online Courses for students within their states and beyond their borders for over 20 years. Twenty-six states have state virtual schools offering courses statewide, more than 70 % of public school districts offer online courses (Sloan-C 2009), and 30 states allow for full-time cyber charter schools (Watson et al. 2014).

7.2 Digital Content

When developing online and blended programs, school administrators should take into consideration: the technology, the people (teachers, administrators, and the professional development needed to support them), as well as assessments and content. Below is a graphic that shows how each of these pieces works together to support student-centered learning environments.

¹Watson et al. (2010).

New Models Using Online & Blended Learning



New Models Using Online and Blended Learning. Patrick (2012). Creative Commons License

For the purposes of this chapter, we will take a look at the online content piece of online and blended learning. Advances in technology provide a new distribution model for education institutions to offer online courses and degrees. Online courses are engaging for students (and can provide a wealth of data for administrators and teachers). Online teaching requires training in new instructional strategies and resources to enable personalization, greater interactions with students, and new models of student support—including multimedia applications and real-time and threaded conversations using the Internet.

The online curriculum landscape varies widely and covers the entire range of educational options. This section helps new programs make sense of the different types of courses, the ways in which courses can be developed or licensed, and how to evaluate the quality of digital content.

Many school districts use a Learning Management System (LMS), which is the core technology piece for operating an online learning program. The LMS is *the set of tools that houses course content and provides the framework for communication between students, teachers, and parents* (Watson and Gemin 2009, p. 18). Within the LMS, teachers can create and upload digital content to share with their students.

In many ways, digital content is merely a set of tools for teachers and students to use for a wide range of communication and interaction. Together, these tools provide a flexible means of delivering courses of any kind. There is no one right

kind of online course, and describing the range of online courses can be at least as complex as describing the kinds of courses presented in face-to-face environments.

Throughout North America, there are four common types of digital content being used in K-12 online and blended courses. These include supplemental resources/lessons, learning objects, e-books, and full courses. A combination of these types of digital content is used by the majority of online and blended schools and programs.

7.2.1 Supplemental Resources/Lessons

Supplemental resources and lessons are the most basic type of digital content. They may include digital content resources such as videos, podcasts, website URL's, games, etc., which can be used to supplement a teacher's lesson in the face-to-face or online course.

Sometimes, a teacher's lecture or the textbook may not be sufficient in explaining a specific concept for every student in the class. In these cases, supplemental resources are most often used to teach a various concepts in a different way than the teacher presented the material to the class. Students can choose from a variety of resources and lessons to learn the concept in order to demonstrate mastery. Once the student has mastered that skill or competency, the resource is no longer needed for that specific course.

A teacher and even individual students usually find these resources on his or her own to offer students an alternative way to learn a concept. Some may be developed and uploaded to the Internet by the teacher; however, the majority of these resources can be found through a simple web search. Many of these resources are free to use on the Internet, but in some cases, they may require a subscription or one-time fee to access them.

In addition to supplemental resources, many teachers post their lessons online for students to access in the classroom or at home. These lessons may include supplemental resources; however, many teachers just post the learning objective and assignment, requiring the individual students to search for their own resources to learn the concept.

7.2.2 Learning Objects

Learning objects is "a collection of content items, practice items, and assessment items that are combined based on a single learning objective" (Cisco Systems 1994). Learning objects provide smaller, self-contained, reusable units of learning. Common supplemental resources are grouped together to form a unit of study into a module, which includes instructional content, practice, and assessment.

Teachers find and/or develop supplemental resources to create a unit of study to share with individual, groups of, or entire classes of students. Teachers can customize learning objects to meet individual student needs. Students can access these units at home or school. Most learning objects are used to teach an entire unit of study, while others can be used to teach specific parts of a unit, usually replacing or supplementing textbooks and teacher lectures.

Within the LMS, teachers can curate a variety of supplemental resources to create a learning object to share with their students. Teachers can create a variety of learning objects customized for individual students, a small group, or an entire class. Students then access these resources and complete the assignment and assessment within the LMS, and receive feedback and new content from the teacher once the unit has been successfully completed.

7.2.3 *e-Books*

An e-book is an electronic version of a printed textbook. E-books consist of text, images, or both and can be read on a computer or mobile device. Several textbook publishers have digitized their textbooks and now offer schools both a print and digital version of the books.

E-books replace traditional textbooks and several e-books can be accessed from a single mobile device allowing students to easily transport several books to and from school.

The majority of e-books are in a format that cannot be customized or changed to meet different student needs. They are essentially a book, but in a digital format. However, as digital content advances and becomes more interactive and engaging, we are beginning to see more customizable e-books.

7.2.4 *Fully Online Courses*

Entire semester or year-long courses are also offered in digital formats. These courses pull together a combination of supplemental resources, learning objects, and e-books to create an entire course. Full courses can consist of basic files (pdfs, videos, links, etc.) uploaded to a Learning Management System in a sequential order all the way to a fully game-based course where students must fully engage with the content to master the concepts. Students enrolled in fully online courses can take these courses at their traditional schools or away from school, working with their teacher remotely.

Students choose to enroll in fully online courses for a variety of reasons. Their traditional brick-and-mortar school may not offer a specific course that a student

wants to take (specialized courses that are hard to staff), to make up a course they previously failed, scheduling issues, to graduate early, etc. These online courses replace the traditional classroom and allow students to access learning options they would otherwise not have.

Schools can purchase these courses from publishers or have teams of educators to develop them in house. Full digital courses begin with a syllabus and a list of the standards and objectives associated with the specific course. Some courses will be developed around a theme or game, while others are more text based.

Schools and districts must decide if they are going to buy or build their own courses. Many publishers have developed a fully online curriculum for grades K-12, while others focus on specific subject areas or grade levels. Content publishers tend to have more money to invest in developing courses, but can limit the teacher's ability to supplement the content.

With advancements in Learning Management Systems technology, content is becoming more adaptable to students individual learning needs. Individual student playlists are becoming more popular within fully online and blended courses. Students are assessed at the beginning of the course, and based on their assessment, the teacher and LMS can assign a "playlist" for the student based on the skills and concepts he or she needs to master. These playlists are not only based on the assessments, but also the students' interests and give the students more choices in how and what they are learning.

7.2.4.1 Types of Fully Online Courses

Online course content is available for core courses, credit recovery, Advanced Placement®, International Baccalaureate®, and a wide range of electives. Online project-based schools are also on the rise. This section describes various issues and characteristics to look for when selecting such content.

7.2.5 Core Courses

Naturally with core courses, you have the largest selection of providers and the largest variety of characteristics and quality. Major curriculum providers generally have a full range of courses in the core subject areas of English language arts, math, social studies, and science.

These courses are typically based on national standards, such as the Common Core, or in some cases, the state standards of the company's home state. Courses are usually designed to be equivalent to a semester course and to fit into a typical semester-based school calendar.

7.2.6 Credit Recovery

Credit recovery courses are designed for students who have previously taken a course in the specific subject, but were not successful. Although there are no universally agreed-upon standards for credit recovery courses, they tend to require less time than core courses for students to complete. These courses often include pretests designed to assess the knowledge the student gained from their previous experience so that they can use the credit recovery course to merely fill in the gaps.

7.2.7 Advanced Placement® and International Baccalaureate®

Both the College Board's Advanced Placement® (AP®) program and the International Baccalaureate program have approved online courses that meet the same standards as approved face-to-face courses. For AP® courses, online learning programs undergo an audit process that is identical to the process for face-to-face courses in bricks and mortar schools. The College Board has approved AP® courses in all of its subject areas, including science.

7.2.8 Electives

A huge variety of elective courses are available online. A wide range of world languages, sciences, social sciences, technology, and business classes allow even the smallest or most remote schools to offer dozens of courses. Career and technical education, and even driver's education, are available. Careful selection of a suitable licensure model can make such a robust catalog affordable.

7.2.9 Project-Based and Other Alternatives

Content and programs focused on a particular learning strategy or student audience are growing as well. The landscape includes options such as online project-based schools in which students design their own learning, religiously affiliated schools, and even a school designed specifically for gender and sexuality minorities.

Many of these programs welcome partnerships with other schools, allow part-time students, resell specific courses, or otherwise allow more traditional programs to tap into their unique offerings (This section was adapted from iNACOL 2008).

7.3 Digital Content Development

Schools and programs wanting to implement more online and blended learning must first ask should your program build your courses, buy them, or use a combination of both? The answer to this complex question depends primarily on the available resources, the skills of your staff, and your timeline. This section outlines that the variety of ways content is developed in North America, as well as the pros and cons of both building and buying or licensing courses.

Because many schools and district's curriculums are already standards based and many places have established course syllabi, online course development can be less of a challenge than if these things are not already in place. If these things are in place, then it is just a matter of applying current online learning best practices based on the literature and instructional experiences to already developed course objectives.

7.3.1 Individual Teachers

In many cases, individual classroom teachers create their own digital content. This can be as simple as recording themselves giving a lecture, to posting a lesson online, to even developing a full online course on their own.

One of the biggest challenges in having individual teachers creating digital content is in assisting teachers to use the tools to create the content. In the early days of developing digital content, teachers had to learn to use web design tools such as *Dreamweaver* and *Photoshop* in addition to some HTML as the tools available were not as easy as dragging and dropping content into the LMS as they are today.

Another challenge for teacher's developing digital content on their own is that many teachers know the content and best practices for designing face-to-face content well, but sometimes that does not transfer well into the online format. Professional development in instructional design as well as using the technology is necessary for teachers to be successful in developing digital content on their own.

Finally, compensation for teacher's developing digital content must be considered, in addition to who "owns" the content. If a teacher is being paid to develop the content for their students, the school, or the district, in most cases, the entity that paid for the development of the content has all rights to the content.

In many places, Open Educational Resources (OER) are becoming more popular and available. "OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to

knowledge” (William and Flora Hewlett Foundation 2002). More and more teachers are seeing the value in sharing the digital resources they have created with other teachers around the world.

7.3.2 Teams/Consortium

In many ways, creating a fully online course is similar to writing a textbook. It is a major undertaking and must be considered carefully to ensure a quality educational product for students. Teams, including a content expert, an instructional designer, and a web developer, work together to build these courses. Schools and districts that develop their own content in teams and consortia also have a clear process, including budget, timeline, and design standards. The process can be both challenging and rewarding. This section is not a complete how to guide for course development; it is intended to provide just a general overview of a typical process.

7.3.2.1 The Team

Effective course creation is always a team process. No one person has all the skills necessary to create a high-quality course. At the very least, a content expert, an instructional designer, and a web developer are the members of this team.

1. *A content expert*: This might be a teacher or an outside expert who understands the content at a deep level. This person should have skills and knowledge that goes far beyond a typical teacher and preferably is familiar with multiple textbooks so that wise decisions can be made that do not merely mimic any particular text. Content experts must also have a strong working knowledge of relevant state and national standards.
2. *An instructional designer*: Instructional design does not mean basic lesson planning. Principles of effective instructional design are rarely taught in teacher preparation programs. Such skills are generally reserved for focused graduate programs. Your instructional designer for online courses is not a teacher, but rather someone who is experienced in the principles of design and the wide range of tools and techniques available in the online environment. The instructional designer works closely with both the content expert and the web developer to insure integrity of the content and design.
3. *A web developer*: Effective course development goes beyond putting up a few files into the LMS. When developing an online course, integrating a range of graphics, animations, videos, and sound clips to engage your learners and make the most of the online experiences is essential. The web developer understands principles of layout, file management, compression, and other critical features that make the content efficient and usable. The web developer also needs to

understand the W3 design standards to ensure that course complies with Section 508.

Other potential team members can include the following:

4. *A project manager*: Depending on the size and complexity of the project, schools may wish to have someone assigned to oversee the course development and manage all aspects of the process.
5. *A content editor*: The content editor is another content expert that checks and verifies the accuracy of the content expert's work.
6. *A text editor*: The text editor is a writing expert who ensures that the entire course is clear, readable, and written at the appropriate reading level.
7. *LMS manager*: The LMS manager is the person in the organization responsible for maintenance and installation of the LMS. When it comes time to create a course shell and install the course in the LMS, the LMS manager will work with the rest of the team to make sure the final installation functions as designed, both technically and instructionally.

7.3.2.2 The Timeline

How long does it take to develop a fully online course? Although there is not a single, specific answer, many schools and districts have shared that it takes about 12–18 months for a course equivalent to a full year's content. Consider the following steps:

1. Project approval
2. Content research
3. Content writing
4. Instructional design
5. Multimedia purchase or development
6. Web development
7. Installation into the LMS
8. Preliminary approval
9. Piloting with students
10. Revision
11. Final approval
12. Launch

7.3.2.3 The Budget

Perhaps even more complex and variable than the timeline, the budget controls the pace, the size and caliber of the team, the amount of multimedia, and ultimately, the quality of the course.

Some commercial companies spend as much as \$250 000 or more to develop a semester course. Rarely is that feasible for those schools and districts who wish to develop their own. Using Open Educational Resources (OER) and other readily available low-cost content, developers can reduce costs significantly.

These steps vary considerably in length, and some organizations may require additional approval steps. Not all programs choose to pilot courses with students prior to launch, but instead, consider the first time the course is offered to be the course pilot. Eliminating the pilot phase can save time, but may provide students with a sub-par experience. Of course, the quantity of content, complexity of multimedia, and level of quality all impact the pace of development. Increasing the number of team members can help speed up the process, but would generally require a larger budget (This section was adapted from iNACOL 2008).

7.3.3 Companies

When online and blended learning first started in the mid-1990s, teachers, schools, and districts had to develop their own digital content if they wanted to use it with their students. There were no companies selling content at that time and it was expensive and difficult to find professional development to prepare teachers and teams to do it on their own. Now, a wide variety of publishers and content providers develop individual courses as well as full K-12 curriculums.

These companies use the team approach and have to invest hundreds of thousands of dollars into research and development as well into the development of each semester course. A wide range of options exists for licensing courses, from per semester tuition programs to perpetual licenses to comprehensive service providers. Often programs mix and match license types to maximize cost effectiveness for high-enrollment and low-enrollment courses. This information does not replace the need to shop carefully and be sure you understand the models that your vendors present.

7.3.4 To Build or Buy Digital Content

There are excellent reasons why you might want to create your own courses, and equally excellent reasons for purchasing or licensing them from a provider. In some cases, programs choose to purchase or license core courses but develop their own particular electives to meet unique needs. The following table shows the pluses (+) and minuses (–) of both approaches (Table 7.1):

Finally, the courses you license must be able to function smoothly in the school's or district's LMS. The selection of courses and the learning management

Table 7.1 Pros and cons of building versus buying online courses

Issue	Build	Buy
Initial cost	– Large upfront investment prior to enrolling students	+ Multiple license models can allow for low initial costs
Ongoing cost	+ Ongoing costs limited to course maintenance and updating	– Depending on the licensing model (s) selected, ongoing costs can be nearly as much as initial costs
Content and design flexibility	+ School has total flexibility over content, instructional design	+ Some licensing models allow for course customization
	– Ongoing course maintenance and revisions required at local level – High cost of multimedia development may limit design options	– Ability to customize courses in content or design is inherently limited
Decision making	– Every component of the course needs to be thoughtfully designed	+ Decisions about most details are already made. Decision-making process is limited primarily to which courses will be licensed using which licensing models
Timeline	– Roughly 12–18 months to develop a course	+ A large number of courses readily available
Skill development	+ Develops district skills in content writing, online instructional design, technology and other skills	– May develop online instruction skills. Does not generally develop writing or design skills
Risk	– Higher risk in that the larger initial investment does not guarantee a successful course will be produced	+ Lower risk due to lower initial costs, the ability to start with just a few enrollments, and ability to switch course vendors if necessary
Curriculum uniqueness	+ Any imaginable course can be developed	– Courses available are those designed for large, nationwide consumption. Options in some elective areas can be quite limited
Copyright ownership	+ District/school owns the course, can resell it and market it as a unique offering	– District/school does not own the copyright and generally cannot redistribute or resell
Professional development	– Requires wide-ranging professional development on content, design, technology, and instruction, including W3 design standards	+ Professional development is focused on instruction and the nuances of the particular course

iNACOL (2008)

system in which they are housed is a critical step in the decision on whether to build or buy digital content. Deciding on a platform and the content can sometimes be a *chicken or the egg* question. Some schools and districts choose the platform first and then only select content that will run on that platform, while other programs

choose the content first and then limit their selection of platforms that will host the selected content. Yet, other programs attempt to make these decisions simultaneously. Regardless of the strategy used, there are issues related to several aspects of both the courses and the LMS, including questions about technical details, content, and cost.

The compatibility of the content with the LMS includes both technological and educational aspects. The tools available for interaction, the content file structure, and the function of the content's assessments are all critical to a system that works well for students and teachers. Major content providers will have a list of LMSs that work well with their content, and they should be able to identify any known issues related to compatibility between their content and the LMSs that you are considering (This section was adapted from iNACOL 2008).

7.4 Quality Assurance

Not all digital content and fully online courses are created equally. As is true with any other type of product or publication, there are high-quality and low-quality examples. Different types of content serve different purposes and take different instructional approaches. In ways similar to how a school's curriculum team reviews textbooks, a team should review online course selections to ensure that the course will meet the program's needs. Both the criteria used and the processes employed are important for ensuring a quality product that serves students and teachers well.

iNACOL has published National Standards of Quality for Online Courses. This document consists of five standards, each with multiple criteria. Although some of the criteria may not apply to all situations, this document provides the best available starting point for digital curriculum review.

National Standards for Online Course Quality is designed to provide states, districts, online programs, and other organizations with a set of quality guidelines for online course content, instructional design, technology, student assessment, and course management. The initiative began with a thorough literature review of existing online course quality standards followed by a survey offered to representatives of the NACOL network to ensure the efficacy of the standards adopted. These guidelines were meant to be implemented and monitored by schools, districts, and/or organizations, as they reserve the right to apply the guidelines according to the best interest of the population for which they serve.

Quality and accreditation are key issues for K-12 online learning and digital content. iNACOL has established National Standards of Quality for online courses, in addition to national standards for quality online teaching, online programs, and blended teaching. iNACOL is working with states, districts, and regional

accreditation agencies to ensure that high-quality online programs are recognized and accredited appropriately. Universities are also working with the regional accrediting agencies to ensure quality and accreditation of their programs.

The committee of experts who developed the online course standards has also developed a diagram of the Defining Dimensions of Blended Learning to assist in the understanding of how quality online content and digital resources and tools can be implemented within a blended school or program. This diagram specifically focuses on the unique characteristics across blended learning programs. From minimally using online content and digital tools and resources in a face-to-face classroom to a cohesively designed blended learning model, blended learning is emerging in a variety of forms. Blended learning trends show that implementations of new models look less like older models of distance learning and are emerging toward personalizing digital learning for each individual student at scale.

The focus of this diagram is on illustrating the variety of instructional models for blended learning. Blended learning can and does happen in a school model and there are specific operational issues an administrator must be aware of such as various policy issues, how funding follows the student, and technical issues of how administrative tools connect and work together; however, in this graphic we chose to focus on the course/instructional level.

The graphic of the Defining Dimensions of Blended Learning Models tries to draw out what the possibilities are in terms of the continuum of blended instructional approaches. iNACOL is not making a value judgment on what is appropriate and what should or should not be used in a blended learning model within this graphic. The goal of this graphic is to show how blended models are being implemented from the early stages to mature, fully developed blended programs. In the original version of the iNACOL National Standards for Quality Online Courses (2006), iNACOL identified key criteria for course quality standards and since then has revised these standards based on surveys of best practice in the field. iNACOL's goal is to provide a working framework of the characteristics of emerging blended learning and a multistage process of defining high-quality blended learning in the future.

Each of the dimensions impacts the role of the teacher across a variety of implementations. iNACOL divided the dimensions into categories to show characteristics of the instructional model, student-centered approaches, and operational dimensions.

THE DEFINING DIMENSIONS OF BLENDED LEARNING MODELS

		LEVEL OF BLENDED LEARNING				
		Less Online Instruction	More Online Instruction	Mostly Online Instruction		
Characteristics Driving the Changing Roles of Educators	Characteristics of Instructional Models	INSTRUCTIONAL MATERIAL LEVEL	Learning Object	Unit/Lesson	Single Course	Entire Curriculum
	INSTRUCTIONAL RESOURCES	Course minimally uses digital content , resources, and tools to supplement instruction	Digital content, resources, and tools expand and enhance the curriculum and content	Use of digital resources and tools are integral to content, curriculum and instruction		
	ASSESSMENT	Whole-class assessments, used primarily in the classroom, during the school day as the primary means of feedback	A combination of traditional and online assessments are used inside and outside the classroom	Greater amount of digital, real-time data and feedback allow for individualized instruction		
	COMMUNICATION (Student / Teacher & Student / Student)	Occurs primarily synchronously and in the physical classroom	Is a mixture of synchronous & asynchronous and may be in the physical classroom or online	Occurs primarily asynchronously and online or from a distance		
	Student-Centered Instruction	ATTENDANCE REQUIREMENTS	Students are required to attend a physical classroom 5 days a week	Students attend a physical classroom less than 5 days a week and work online at other times	Students have flexible physical classroom and/or location attendance requirements.	
		STUDENT LEARNER'S ROLE	Student is primarily the recipient of teacher provided instruction. Teacher sets day-to-day pace.		Student takes active role in learning with reliance on digital content, resources and tools. Student has more control of own pace.	
		INDIVIDUALIZATION OF INSTRUCTION	All students expected to complete same instructional pathway	Students engage with digital content to customize their instructional pathway	Students engage with digital content and have multiple pathways that are competency-based and not tied to a fixed school calendar.	
	School Considerations	INSTRUCTIONAL SUPPORT MODELS	"Direct student learning" through traditional teacher roles and staffing models	"Facilitate student learning" through a team approach with a significant reliance on technology-based tools and content	"Coordinate student learning" through the expanded use of technology-based tools and content, as well as the effective use of outside experts and/or community resources	
		INSTRUCTION SCHEDULE AND LOCATION	Fixed daily schedule, instruction primarily in physical classroom	Mixed schedule of online and physical instruction	Highly flexible schedule, with instruction is possible 24x7. Learning centers support instruction.	
		ACCESS TO ACADEMIC STUDENT SUPPORT	Support is school-based, and provided primarily by the teacher during the class period.	Support structures (e.g. online tutoring, home mentors, and technical support services) in place 24x7, in addition to teacher support.		
		TECHNOLOGICAL INFRASTRUCTURE	School or classroom based with students using shared classroom computer resources. Access to infrastructure ends with class period.	Available across school campus with students checking out computers from a lab or bringing their own. Access to infrastructure is during school hours.	Available on and off campus with students using their own device. Access to infrastructure is 24x7.	

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The Defining Dimensions of Blended Learning. iNACOL (2011). Creative Commons License

iNACOL hopes that this diagram will serve as a tool for educators, administrators, and policymakers to understand the essential elements of blended learning in order to make informed decisions about implementing blended programs. These leaders and innovations in online and blended learning continue to build a pathway to change the landscape of how we think about learning while increasing student opportunities for a new community of learners.

iNACOL included this graphic within the National Standards for Quality Online Courses to provide those new to the field with a better understanding of how online content and digital tools and resources can be implemented in both face-to-face classrooms as part of a blended learning environment as well as within a fully online course. As the committee was refreshing the course standards, the topic of developing a separate set of standards for blended courses was discussed.

The committee and iNACOL believe that all online content, however, it may be implemented, should meet the standards in this document, and hope that the graphic above will serve as a guide to implementing quality blended learning models for our students [This section was adapted from iNACOL (2011)].

7.5 Conclusion

Education is critical for empowering youth to gain the knowledge, skills, and dispositions to be successful in college careers and in a new global economy. The United States is falling behind other countries around the globe in preparing students to compete. UNESCO reports “Students in the United States made scant headway on recent global achievement exams and slipped deeper in the international rankings amid fast-growing competition abroad. (PISA 2014) American teens scored below the international average in math and roughly average in science and reading, compared against dozens of other countries that participated in the 2012 Program for International Student Assessment (PISA), which was administered last fall. U.S. Education Secretary Arne Duncan characterized the flat scores as a ‘picture of educational stagnation.’”

A recent publication by the World Economic Forum titled, *Education and Skills 2.0: New Targets and Innovative Approaches*, underscores “the critical importance of education” and highlights “what can be done to ensure that all people around the world can benefit... [the real] value-add is on conceptualizing and describing innovative, plausible, scalable, compelling and high-impact solutions that will improve access to education,” and strengthens educational outcomes and close achievement gaps.

The world is rapidly changing, and we must ensure that our education system prepares students to be successful in a future that continues to foster innovation and change quickly. Empowered and emboldened by the changes underway, we must take a serious step to hold students to high academic standards, rigor, reframe quality, accountability, and improve educational opportunity and increase access to educational opportunities to ensure that each and every student is prepared for their future with a student-centered, world-class education.

The field of online and blended learning holds tremendous potential for improving the learning and achievement of all students. Digital learning helps to address many critical challenges facing today’s education system –identifying gaps in student proficiency, providing personalized content and tools for teachers to rapidly intervene with individualized instruction, offering new pathways for

preparing every student to be college-ready and career-ready, providing new distribution models through online courses to enable teaching anytime, any place, expanding content resources and providing more relevant and engaging curriculum, and bridging the geographic and economic barriers limiting many students' access to high-quality instruction.

Blended, digitally enabled learning has the ability to support personalized learning to meet each student's individual needs and interests through competency-based pathways and new learning models. Technology should not be layered or integrated over old models, but rather approached from a systems redesign perspective for creating new instructional models that are student-centered, mastery-based, offer greater flexibility and personalization for students, provide new staffing models and roles for educators, and can dramatically improve student outcomes. It is very difficult for one teacher in a classroom of twenty-five students and a single textbook to personalize instruction for each student's needs. With technology and digital content, teachers are empowered to personalize learning and address each student's individual needs. The systemic shift toward personalized learning was enabled by new blended model leverages technology to allow greater personalization, while targeting each individual student's needs for learning more rapidly, providing immediate responses to intervention, offering targeted support when needed, and allowing students to demonstrate deeper learning competencies, advance based on competency and accelerate. These new models will allow student learning to be more flexible to address each student's needs for differentiation, and support to both address gaps and accelerate learning—holding all students to high college and career-ready standards to prepare them for success.

Digital learning, in the form of blended and online education, is fundamentally changing what is means to “go to school” for millions of students in North America and around the world. No longer is “school” defined solely by a physical space, or classrooms with desks and a teacher at the center. Nor does the curriculum that the student is required to navigate have to be a one size that fits all students model, where assessments and data are used more as an autopsy of a student's performance rather than a tool for making immediate modifications to meet students' needs and abilities. Through advancements in technologies, improved administrative and teacher preparation programs, and greater access to curriculum resources that are engaging, interactive, and rooted in capturing student performance data, American schools have the ability to personalize learning and focus on each student's learning gains and competencies like no other time before now.

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