the LEARNING COUNSEL
Research & Context on the Shift to Digital Curriculum

SPECIAL REPORT

The 71 Characteristics of Digital Curriculum

Get Defined

Since my debate team days at Bemidji High School in Minnesota, I've had an obsession with definitions of terms. When something is defined, you can get multiple people agreeing and building a conversation around it.

There are tens of thousands of options right now with the types of digital "things" of learning – Apps, websites, immersive-environment digital courseware, eBooks, eTextbooks, assessments, projectware, loose content pieces in PDFs or word documents, games, and more are arriving in schools. What's going on inside the things of digital content and curriculum has not been defined, and so we've set out to do that here in this Special Report. We expect that we'll hear arguments, some exclamations of delight, confusions, and to have missed some important items.

Traveling the U.S. with our Digital Curriculum Discussions tour in the last year, what I've noticed is that the national school market typically lands in one of two major camps:

1. "Organic" Schools, where the digital things are let run wild at the teaching and learning level.
2. "Repository" Schools and even States, where a central office builds a master repository, usually with a Learning Management System to hold all the "things" or be a switchboard mechanism into the username/password access of publisher websites.

Both camps are eager to know more about the developments within digital content and curriculum. Why? Because some of the things are flat and fairly uninteresting digitizations of what was once in the analog paper-world of educational resources. Others are very deep into a foreign world of instructional design crossed with code development, user interface/user experience (UI/UX) high design, and the automation of functions like assessments.

This Special Report is not a comment on rigor of the digital things, but a start of a new conversation. It's also not defining the modes of learning like tactile, auditory, motor, and visual; or the skills like memorization, recitation, essaying, typing, and so forth. It's also not a comment on the ideal models of classroom organization or lesson-building like blended, online, virtual, personalized, individualized, station-rotation, screen-time, project-based, or whole-group. It's also not a discussion of the classes of digital content and curriculum like Adaptive, Collections, eTexts, etc. Never fear, though, we are working on putting together new committees on all of these things for a wholistic view of the digital transition.

Welcome to the new debate on definitions of terms, err, I mean, discussion!

LeiLani Cauthen

Download the digital version of this Special Report at *http://thelearningcounsel.com/Special-Report*

LeiLani Cauthen *CEO & Publisher*

Well versed in digital content and curriculum change, the adoption process, successful strategies, and helping schools understand what's available and what will work, LeiLani often writes on the changes and future of the education space. She is a media, research, marketing and sales professional with 26 years of experience in the high tech, government and education sectors.

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2016 Digital Curriculum Tactics Discussion Schedule

Jan 26	Atlanta, GA	Mar 15	Minneapolis, MN	Oct 11	Washington DC
Jan 28	Charlotte, NC	Apr 14	NYC	Oct 13	Boston, MA
Feb 3	TCEA Breakfast	Apr 19	Chicago, IL	Oct 18	Sacramento, CA
Feb 9	Memphis, TN	Apr 21	Houston, TX	Oct 20	Jose, CA
Feb 11	Albuquerque, NM	Apr 28	Salt Lake City, UT	Nov 3	San Diego, CA
Feb 18	Phoenix, AZ	Jun 27	ISTE Breakfast	Nov 13-15	National Gathering
Feb 23	Seattle, WA	Sep 15	Denver, CO		Miami, FL
Feb 25	San Antonio, TX	Sep 20	Indianapolis, IN	Dec 1	Dallas, TX
Mar 1	Fresno, CA	Sep 22	Newark, NJ	Dec 6	Tampa, FL
Mar 3	Los Angeles, CA	Sep 27	Portland, OR		
Mar 10	Richmond, VA	Oct 6	Kansas City, MO		

(Dates Subject to Change)

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71 Characteristics of Digital Curriculum

User Interface, User Experience Comes to Learning

Printed material (books, workbooks, worksheets, etc.) has served as the primary delivery mechanism for knowledge to students for well over a century. Mass-produced at cost-burdens educational institutions could bear, textbooks also streamlined with "scope and sequence" the learning delivery, serving to prescribe a learning path broken into reading, lessons and projects. Enter digital computing and the evolution of print content into text, video, interactivity, and multiple communication scenarios, we are now in what's been frequently called the "Wild West" period with learning content.

Let's face it, printed content is printed content. It is static. It changes only when reprinted. It cannot talk, convert to a different language on the fly, become interactive, be searched on keywords or phrases, assess the ability of the user, or remember where you were when you quit interacting with the content like the age-old bookmark. Yet, this is only the beginning of a list of capabilities that can go on and on depending on the content, where it resides, how you access it, if it is a singular piece of content or part of a bigger collection, if interaction of the system causes an intelligent learning engine to adapt the digital environment to deliver a more personal experience, or if you can know how your skills rank alongside others interacting with the same content.

Is it important to understand what is happening with the change in content? Resoundingly, yes. Not only is the form of the "content" changing, but the delivery, presentation, interaction, scope, sequence and adaptability, too. Also the results of use can be significantly different. The new capabilities really do make the days of textbooks look obsolete. Both traditional and innovative new publishers are racing to put digital curriculum and content in the hands of students. All students can be accommodated through various mechanisms.

Education leaders faced with making decisions about what to buy as they shed printed material are finding the transition a daunting one. Where do they start and with what digital content? This Special Report is about the challenge of investigating and implementing digital content. This challenge is partly due to an incomplete understanding of the capabilities and characteristics of digital curriculum. Over the last year, the Learning Counsel has been compiling its list of "Digital Curriculum Characteristics" to help describe

the capabilities and options. That experience and research has now given us these 71 defined characteristics.

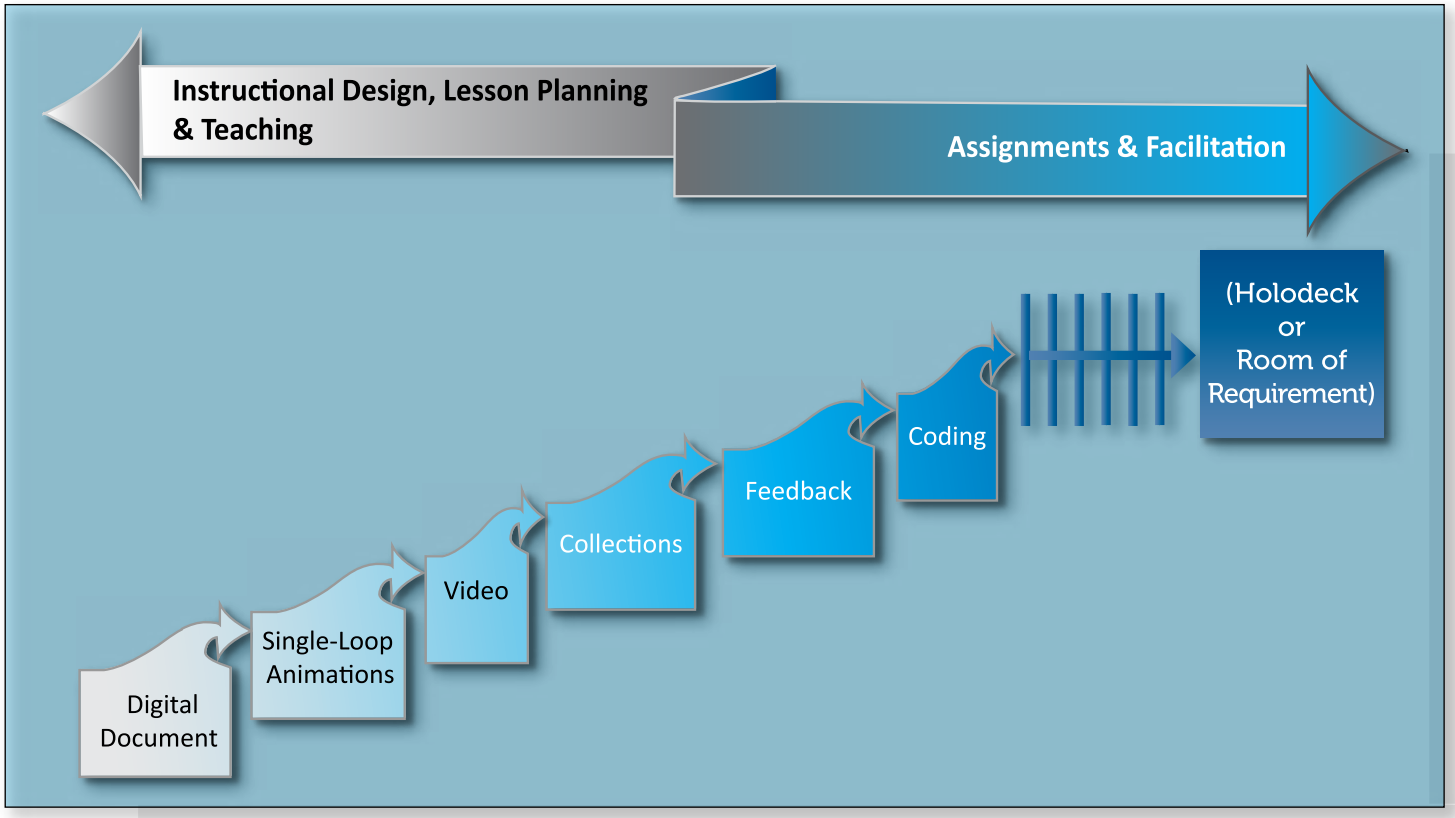
As you read the 71 Characteristics definitions, it's important to understand and distinguish between what the Learning Counsel considers the "low-value" and "high-value digital curriculum on a continuum scale based on technical engagement capability, or user-interface/ user experience (UI/UX) considerations."

At the top of the scale is what we consider the "fully-adaptive-immersive-environment-curriculum-courseware" or shorted to Immersive Courseware. We could euphemistically call this the "Room of Requirement" (as in Harry Potter-famed magic room that does anything for you,) or the Holodeck (as in StarTrek which is also a science-fiction-imagined holographic room that creates any environment for you.) While not rooms, but virtual environments, the reality of Immersive Courseware is real today. This is not the same as Adaptive curriculum or learning, which may or may not be a full course with scope and sequence along subject or topic lines but for sure uses Intelligent Learning Engines to "adapt" using pattern recognition and logic to give the right questions to the user but perhaps not entirely new content.

What's important is that many of the new commercially available, and some free open education resources (OER), offer these leaps ahead with automation. We hope that now with these definitions you can distinguish between things of probable high value and development, and those of lower engagement value – and fit the right learning elements to the right subject and use pedagogically.

Again, this Special Report does not address rigor, only the character of the digital learning object's development or programming.

Digital Curriulum Technical Sophistication Scale



The 71 Characteristics are just that – how the software itself manifests utility. These are not types of software, but what is going on inside much of the software available. Of course, all digital curriculum and content is assumed to also have actual instructional value, something to learn, a lesson, a bit, chunk or wide amount of knowledge. That's the "given" in the entire list.

The Learning Counsel has placed these 71 definitions of digital curriculum into six major categories for better understanding and differentiation.

1. Actions:
   Functions of the code that do things, generally singularly and discretely with out involvement with other processes.
2. Aesthetics:
   Design or dressing or engagement-oriented elements.
3. Controls:
   Administrative capabilities or reporting.
4. Individualizations:
   Means of making unique, keeping in mind that "individualization" is some thing you do for someone else, and "personalization" when it is something one does for oneself.
5. Instructs:
   Lesson-giving qualities.
6. Mechanisms:
   Processes or techniques, generally longer than actions.

Actions

Functions of the code that do things, generally singularly and discretely with out involvement with other processes.

1 Audio Enhancement

Interaction with the content or even the delivery system includes sounds to provide audio cueing to help direct the student respond. Buttons, click, appropriate and inappropriate responses, and music are just a few examples. Specifically, downbeats might signify an incorrect attempt or trial while upbeats signify a win, and music tracks provide drama and more.

2 Live Chat

Live-Chat is the ability to synchronously chat with another person via a text-based communication tool(s). This type of tool can be a stand-alone app, or a built-in ability of a larger platform. This tool can allow two or more persons to communication at one time.

3 Live Video

Live-Video is the ability to synchronously communicate with another via video with audio. This type of tool can be a stand-alone app, or a built-in ability of a larger platform. This tool can allow two or more persons to communicate at one time via video with audio.

4 Annotating

With a cursor, mouse or digital stylus, students have the ability to place notation, highlights, comments, etc. into the body of the content presented. These annotations can be stored, and even possibly organized and manipulated, for later use by the student.

MyNotebook by Houghton Mifflin Harcourt makes annotation easy

5 Accessibility

On or Off Access. On and offline access to strong digital content is a must. For example, the requirement for constant internet access to read and work on assignments as well as in-school internet bandwidth pressure is still a struggle in many places. Apps like *HMH Player ™* allow students to upload and download materials, including interactive features such as videos, when online, enabling off-line access to digital content.

Disabilities Access. In 1996, the U.S. Department of Justice clarified that the Americans with Disabilities Act (ADA) requirements apply to all programs offered on the Internet, which include all educational digital materials for students, as well as all digital professional conference materials. This means that web page materials, and formalized online courses and programs, must be made available to qualified individuals with disabilities and apply the Universal Design for Learning (UDL) framework to the degree possible. **Understanding this in its entirety is starting to be addressed nationally for all areas of disabilities**.
See: http://aem.cast.org/creating/national-instructional-materials-accessibility-standard-nimas.html#.VhcqhWvVuqI, http://www.setda.org/wp-content/uploads/2014/03/SETDA_PolicyBrief_Accessibility_FNL.5.29.pdf, and Point of View: http://teachinghistory.org/issues-and-research/roundtable-response/25092.

FactMonster from Information Please, a Pearson Company.

6 Social Gaming

Social gaming includes online games that may or may not be educational. These games can be for students of any age. These games can be played individually or with others in groups ranging from small to large. Results of the individual player can be possibly be posted and viewed in comparison to others playing the game.

7 Spell Checkers

The ability to check the spelling of words, definitions, derivations, live-pronunciations, and parts of speech.

9 Dynamic Definitions

The ability to access the definition of a word or phrase instantly from the immediate screen. This allows the student to go back to an earlier chunk of content to better understand that foundational definition.
Definitions can be open for modification by students or curriculum leaders wanting to change them because of some new development. For example, if the content is about a science concept, and if there is a new discovery made commercially, the definition can be shifted. Additionally, if there is a reason for the leadership to shift a definition because of beliefs, advanced digital curriculum allows for an administrator-level user to do so.

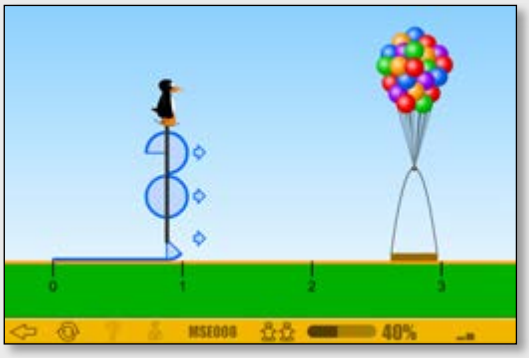
10 Probeware Viewing

The software interfaces with and graphs incoming activity from scientific probeware instruments such as digital microscopes, sound sensors, motion encoders, spectrometers and more. This is not the same as device input which includes the incoming data within a lesson plan or project. Probeware viewing is an action. ie: Microscopes displaying their magnification right onto laptop screens.

Bodelin USB Digital Microscope offered by Vernier Software & Technology

8 Spatial Temporal-Reasoning

Intentional non-use of language or lecture-based instruction in favor of interactive, symbol-manipulation animations that visually represent mathematical concepts to improve conceptual understanding and problem-solving skills.



ST Math game from Mind Research.

11 Social Interaction

The embedded capability for students to synchronously communicate while learning. For example, students might share what they are getting out of materials with others in their classes. This makes use of the texting and social media so familiar to students.

Edmodo is one example of a social tool for use between students, teachers and parents.

Sketching with the Microsoft Surface.

12 Sketching

The ability to write, draw or illustrate within an application as part of the practice or response process.

14 Gambling

Gambling is something that can be done inside many commercially-available games and on many sites, banned in some areas of the U.S. There are some groups who would contend that the use of "coins" is representative of "gambling" within learning tools where the student is "spending" to purchase some device in the hopes of winning some end. Even if the learning tool is not using actual money but merely showing something symbolic-of-money like gold coins, such a device could be construed to be teaching the student to gamble and should be avoided based on potential conflicts with religious preferences.

13 Touch Enabled

The experience of interacting with a digital device through touch. The interaction modality has become second nature to most students. Their interactive preference for mobile phones and tablets is definitely touch-enablement. The expectation is that the software experience takes advantage of touch regardless of form.

Aesthetics

Design or dressing or engagement-oriented elements.

15 Character(s)

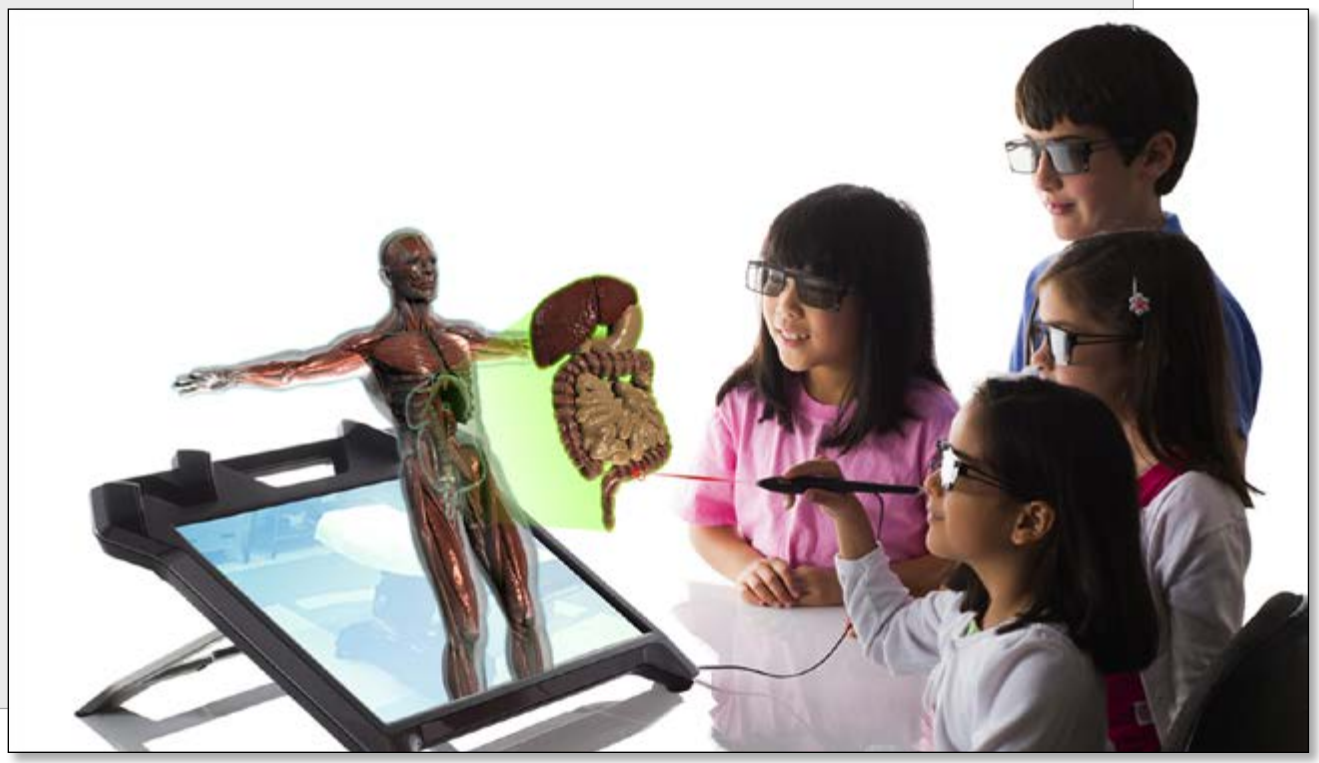
The use of animated or actor-characters within the content. The character could be someone of significance to the topic covered in the lesson or unit, for example Abraham Lincoln, and actually dress up in period costume or be rendered in period outfits. Period costume or authentic dress would be utilized to make the character appropriate for the information being conveyed.

16 Voice

The use of recorded reading of text for playback on-demand. For example, an audio book.

17 Virtual Reality

An artificial 3D environment such as a maker lab or "world" that consists of images and sounds created by a computer and that is affected by the actions of a person who is experiencing it, including editing it or using manipulative interactive gloves, stylus, glasses, extra monitor or other specialized holographic image creators.



zSpace Virtual Reality technology

Career & Elective Courses from E-Dynamic Learning.

18 Animations

From single-looped (like those anyone can do in a simple presentation) to full-motion cartoon animation, the use of animation today is unlimited. Higher value digital content and curriculum necessarily will have high-value animation embedded. The value of animation is that it can be played and replayed as needed for mastery-learning.

20 Visual Advantages

The use of non-animated infographics such as a backdrop photo of a landscape being discussed in the unit or an image that shows a concept or person being discussed in a lesson, similar to books, and may be interactively linked.

21 Video Embedding

The inclusion of video as part of the content. An example of this is HMH's HISTORY®. HMH core social studies curriculum infuses HISTORY® assets, bringing history to life with anytime, anywhere mobile access to videos and biographies that can be used to enhance classroom instruction and add a visual element to the teaching and learning of history and politics.

Avatars used in the Penda Learning Software.

19 Avatars

In computing and digital learning, an avatar is the embodiment of a person or idea. In the computer world, an avatar specifically refers to a character that represents a user online. Avatars are commonly used in multiplayer gaming and online communities. When combined with intelligent learning engines, the avatar could take on a greater level of importance to the student in their learning.

Controls

Administrative capabilities or reporting.

22 Dynamic Curation

Dynamic curation is the ability to take individual "pieces" or chunks of content and place them into a repository for use. The closest thing to this vision is a Learning Management System, which is more of a repository for building out an inventory. That inventory may be full digital curriculum courses or it may be a lot of content pieces and lesson plans. We see the future as adaptability for dynamic curation by administrative users for subscription systems much like current customer relationship management systems such as Salesforce.com do. Industry standard setting organization such as IMS Global are aiding in making digital curriculum and content "curate-able" by promoting interoperability standards for content. Dynamic curation may also apply to individual digital courseware wherein a function allows students to drag-and-drop in elements or chunks to their own collections to create portfolios or reports.

23 Plagiarism Checking

The ability to check the originality and authenticity of a students work is the purpose of advanced plagiarism-checking sites and services.

24 Interoperable

The capability of a product or system to interact and function with others. Open and interoperable learning management systems, longitudinal data solutions, and digital content is becoming increasingly important in the education sector. Common cartridge compliant solutions and programs that align with IMS Global Standards can be used in open environments and provide educators with greater choice and flexibility.

25 Project-Based

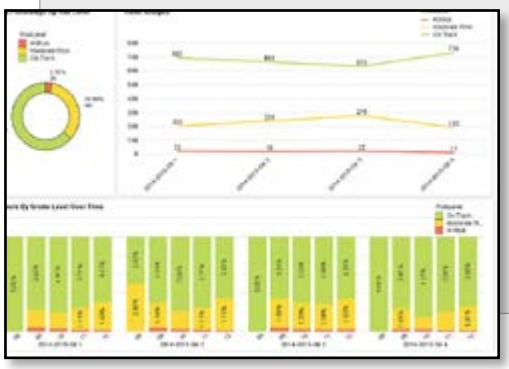
Digital curriculum is built or can be linked in a manner to allow for projects to be assigned and tracked by teachers as they are being done by individual students or groups of students.

26 Gating

Gating is the ability of a teacher or adaptive learning engines incorporated into the curriculum platform to determine the progress of a student through learning. The gating controls would allow a student to move ahead or be redirected into remedial material based on their performance. Gating makes digital curriculum much easier to individualize for each student.

27 Analytics

Analytics based on student achievement for lessons takes old-style grading to a whole new level. With embedded analytics capabilities and screen-learning, teachers can see exactly how students are doing with each lesson. Multiple data points such as time spent, accuracy of response, or number of solutions can be collected, measured, and reported without paper. The efficiencies of digital analytics are great, and the enablement of individualization and personalization even better. Feedback can be as timely as needed to inform instruction.



Sample of a Scantron Analytics Dashboard

Edgenuity delivers a rich learning system for students and teachers to collaborate on one platform.

28 Self-Contained Learning System

Digital curriculum and content, and all its associated tools for access, management and reporting, contained within one learning system.

29 Metrics

Metrics are calculations performed on data from the data collection infrastructure to describe what is occurring (depending on what data you are collecting). These can be rendered with or without analysis, allowing the end user the ability to choose when making judgements about what the data mean."

30 Grouping

Grouping students according to levels or by interests, helps students grow in ways that maintain their enthusiasm for what they are learning. This may occur at the direction of the teacher or through the recommendation of intelligent or adaptive learning engines based on the analysis of student data.

31 Data Collection Infrastructure

A system for warehousing data generated by interaction with a delivery system of the curriculum and content. Digital curriculum publishers and learning management system providers are collecting information in order to make inferences, provide suggestion, or draw inferences. With the application of learning from statistics, intelligence learning engines, machine learning, and neuroscience, publishers are working to mine the databases and infrastructure to provide useful feedback for teachers and students that never existed with textbooks.

32 Enveloping/ Pull Mechanisms

Enveloping and pull technologies address the need to protect intellectual property rights of specific content. In order to maintain control of the content, mechanisms for delivering a "protected" version to users are being developed that let the administrator of that system control how that content is then consumed. The end-user device can use the content only as prescribed, and the system administrator has the ability to remove, or pull, the content from end-user devices on demand.

KnowStory is a new social media and intelligent directory hub for everyone in the education space, including "favoriting" and "feedback" capabilities.

33 Favoriting

The concept of "favoriting" something has become commonplace in online commerce sites and social media thanks to feedback mechanisms designed into these platforms. Favoriting serves as the method for promoting items or topics that are useful or of interest. This ability within dynamic curation repositories, discussion boards, etc., provide a way to crowd-source what is potentially better or most useful in the teaching and learning process.

34 Administrative Personalization

Teacher ability to manage student access to and progress through the curriculum in order to maintain motivation and attention, and ensure mastery learning. For example, student progress through learning activities can be manipulated by the teacher in the best interest of the students demonstrated learning or need for extra support.

35 Second Screen

Second screen learning refers to the "syncing" of the content to be viewed. Rather than students independently viewing material, second screen refers to content that is asynchronously viewed from teacher to student. The teacher controls the pace of the material viewed by all students on their individual screens or one shared by a small group.

36 Projection

The ability to share content on one or more screens. This can be asynchronous or synchronous projection, depending on the need. New device management also allows teachers to control all screens in their class at once, a form of projection that keeps everyone on the same task. In addition, the "projection" within the software has options to show part but perhaps not all of what is on the teacher's or student's screen at that moment within that app, system or site.

37 Portability

The ability to access and interact with content across multiple hardware devices of different screen size, input method, and operating system platform. Standards institutions such as IMS Global work to ensure digital curriculum meets standards and can be delivered over any device.

38 Feedback

Feedback opportunities allow the end user, in this case educators and/or students, the ability to provide written comments to the publisher or creator. Feedback may also include a rating scale that the end user may complete to share their level of satisfaction, from which can be calculated an average rating for display.

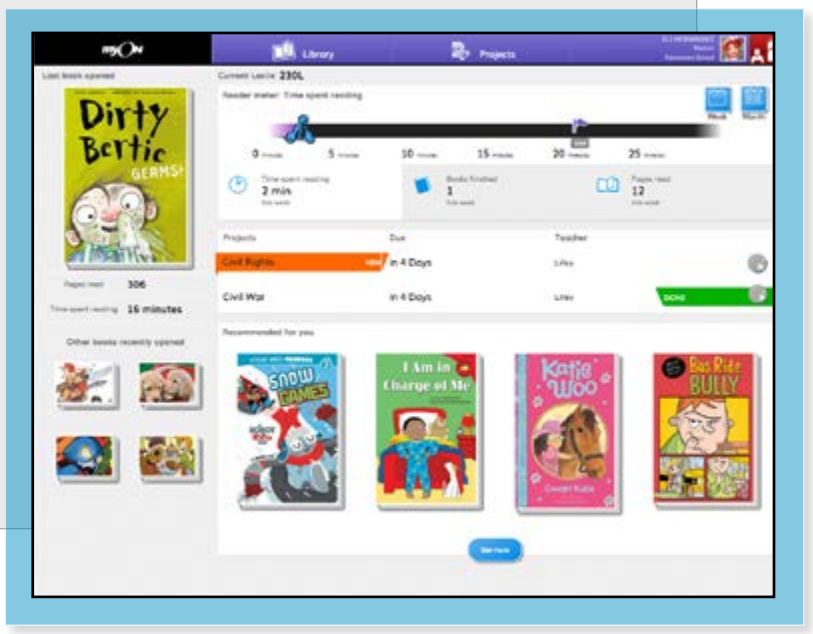
39 Student Personalization

The personalization of student learning allows the student to adapt the software to the preference of topics, outcomes, and pace. Digital curriculum by many publishers is built in this adaptive way. Students can be unleashed and gated forward to complete more than one grade-level equivalent of material in a single year. Others can chose more remediation that bolsters their mastery of the material before going ahead. Preference can be determined in consultation with a teacher, who in turn makes the necessary settings within the learning system (which is Teacher Individualization.)

The Personal Math Trainer®, powered by Knewton™ is the ultimate online, adaptive assessment and personalized learning system for students, with an automatic reporting and intervention system for the teacher.

Individualizations

Means of making unique, keeping in mind that "individualization" is something you do for someone else, and "personalization" when it is something one does for oneself.



myON provides anytime, anywhere access to a collection of more than 10,000 enhanced digital books.

40 Multiple Languages

The capability of digital content to be quickly converted from one language to another, with both print and audio.

41 Collections

Software "libraries" of multiple assets like books, videos, and other learning objects usually wrapped with gradations such that a student is placed at his or her "level" by pre-assessment and continues from there.

42 Work Product Curation

The ability to store student work product for retrieval and review over a period of time within a digital learning system.

Instructs

Lesson-giving qualities.

43 Chunking

The process of presenting the curriculum and content that 1.) takes smaller pieces of information/benchmarks and combining them to make a unit of material for learning unified by a common theme or big idea and 2.) then presenting the "chunk" to fit the screen size of the device of choice. Paper textbooks have always "chunked" material into chapters, but new digital materials are doing this in a different way – chunking even smaller and then using other new characteristics like clip or video embedding to demonstrate a concept. Students can follow directional arrows and pictures to interesting tidbits and quizzes. The benefits of providing less, as in curated-down minimalist text, and more digital characteristics give audio learners, text learners, visual learners, and explorers-of-tangents a different experience.

Read 180® is an HMH intervention solution

44 Intervention

Intervention programs are built to meet the needs of students performing below grade level. Tools that utilize adaptive technology can support teachers working with struggling students by providing tailored assistance that helps raise their achievement and abilities.

45 Training

Professional Development by Redbird Learning

Embedded "How-To" or professional learning in order to maximize teacher productivity and student achievement using the device, system, or content. This can be embedded training modules that help teachers be able to incorporate and deliver content effectively, or that train students on how the system will work for them.

46 Project Mastery

Through a project as an individual or as a small group, the student(s) has a computer based project that culminates with the demonstration of mastery of one or more skills or knowledge sets. For example, a complex coding problem, illustrative challenge, writing exam project or a combination of skill elements that are selected and then demonstrably mastered.

47 Distance Live-Lab

When physical distance or geography prevent the use of laboratory settings in order to perform exercises required for a class, a "virtual" lab can be used to facilitate the learning. In this scenario, the environment used by the student mimics as closely as possible all steps and manipulations that need to occur in order to perform a lab exercise. Recent advances in holographic and virtual reality computing will greatly enhance this type of environment simulation in the near future.

AwesomeStories provides the ability to teachers to author their own interactive content and curricula.

48 Content or Course Authoring

The software provides a framework for building an eBook or Lesson or Lesson Plan.

49 Terminology

The better digital curriculum and content keeps a terminology reference list as part of the program that is reachable as a tab or link, and all newly-introduced words in the material are linked with either a pop-up or drop-down definition.

50 Interactive Queries

Student or admin originated multi-layered queries are embedded or enabled through the system. Unlike flat texts or jaunts to the library, students can reach resources instantly and also do interactive queries of major data repositories to know the state of things in real-time.

Dash and Dot are fun robots that use a picture-based coding language built for kids.

51 Programming Practice

The ability for students to practice programming for things like manipulating robots. Through their own programming input, they are achieving the objectives of specific digital curriculum targeted at teaching math or scientific concepts.

52 Inference

Guided by the data collection performed as students interact with the digital curriculum system, inference can be made about the progress of the student. It is the job of the inference engine to apply knowledge based on the knowledge base of the current situation. These inferences can be based on unbiased analysis of the data to help the teacher better understand the needs of a student. These inferences generated by pattern recogition could possibly be a superior method to evaluate students. Common biases such as race, sex, socio-economic status, personality and ambition (attributes that might consciously or sub-consciously) can be left out of the interpretation of student performance.

53 Clip Embedding

A clip is a short animation of a single, simple concept. Clip embedding is a multi-media addition to the material of a very short duration. It may be an animated cycle or graph. It could also be an excerpt from a historical address with a picture of the speaker. A clip is not full-motion video.

54 Standards Alignment/Attainment

With the advent of the Common Core State Standards, many schools have scrambled to try to find and organize appropriate content, and adapt their pedagogy to fit the demands of mastery. New digital curriculum has been built specifically to address standards and remove a lot of the work of hunting through older materials. In addition, as mentioned prior with mastery, new digital curriculum provides practice for students with embedded capabilities.

Mechanisms

Processes or techniques, generally longer than actions.

55 Machine Learning

The following definition of machine learning comes from Wikipedia: Machine learning is a subfield of computer science that evolved from the study of pattern recognition and computational learning theory in Artificial Intelligence. Machine learning explores the construction and study of algorithms that can learn from and make predictions on data. Such algorithms operate by building a model from example inputs in order to make data-driven predictions or decisions, rather than following strictly static program instructions. What does this mean for education? Think of learning platforms for knowledge learning that require scaffolded skill sets to keep advancing in knowledge attainment and understanding. The application platform could continuously monitor and adjust to the needs of the student, accelerating them, refreshing them, or remediating them as necessary based on the performance of the student. The key differentiator here is that this level of software *builds its own adaptations.*

57 Social Experimentation

Safety alert! These are games that can be found online that are really collecting data in a social experiment as to how humans react to things and could be tracking computer IDs of a students' that is not disclosed to them. Even if the site or game is not asking for identity, it could possibly obtain the identity of the individual whose machine is being used through a triangulation of other available commercial data.

Safety Alert!

58 Formative Assessment

Assessment conducted during the instructional process designed to monitor learning as it occurs. Conducted in a variety of ways depending on the type of learning, formative assessment provides just-in-time feedback to make adjustments to the pace of learning via either teacher monitoring or adaptive learning engines.

56 Practice Microgames

Short, single skill or object learning games of short duration. For example, a link to a puzzle to show some concept rather than merely adding a note or source, allowing kids to play to learn.

"Hungry Birds" was created by digitalglass.biz to teach kids about pollution.

Dig-it Games' Mayan Mysteries game-based learning program includes gaming rewards.

59 Pre-Assessment

The evaluation of what a student knows or can do prior to learning occurring.

60 Coding

Computer language code or an order of logical operations are created as part of the learning.

YellowCircle.net is a non-profit focused on making coding knowledge available to anyone.

61 Game-Based Learning

The practice of and demonstration of learning through the use of a game or game-like environment. The elements of a full game (one with purpose(s), freedoms and barriers) can culminate in real challenges and recognition for accomplishment for students who can play simulations utilizing learning related to one or more areas of study. Performing well by demonstration of mastery of abilities within the game can be rewarded with systematic recognition (for example, leader boards or rankings) as well as social recognition.

62 Gaming Rewards

Games are often engaged in because of the competition or rivalry between one or more persons. This competition is the motivation to play well in order to achieve a positive outcome. Rewards for successful game play do not need to be an outright "win," but can be performance at various levels. The ability to replay and receive higher value rewards is the motivation of students to continue in the game play until a more satisfactory outcome is achieved. In digital curriculum, the concept of gaming rewards can be applied in many different ways in order to maintain student motivation to complete the desired course of learning over time.

63 Real-Time Attention Data/ Neuro-determinism

(uses keyboard or eye-tracking to adjust lesson developments or evaluate comprehension)

By monitoring combinations of various physical response and/or brainwave data, digital curriculum software can monitor for such variables as time-to-answer, and more. This input is analyzed in real-time to make the curriculum adapt in even more precise ways to that student, depending on the need for such adaptation.

64 Device Input

Probes, sensors, or other single-purpose devices can enhance learning by collecting data being used within experimentation or a project. Sensors than can measure acceleration, three-dimensional movement, and temperature are plugged into computing devices to interface with software for data capture during student assignments, providing an element to an overall lesson or project. For example, advanced calculators providing added value alongside math software. Video capture allows for teachers to see students demonstrate understanding of an idea or concept, or curate the completion or outcome of a task.

65 Intelligent Learning Engines

(pattern recognition & adaptation)

This is a capability in what is known as the "Adaptive" sorts of curriculum software in that, in a certain lesson with certain objective, if the student keeps getting something "wrong" in a certain pattern, the learning engine adapts with a new track of questions or alerts the teacher to intervene.

66 Gesture Controlled Data

Advances in the detection of physical movement and gestures by devices created to sense these activities have become highly reliable. The gaming industry is already commercializing this industry as part of the game playing experience. But, when gesture control is combined with information systems that allow the manipulation and display of data in original ways, the ability to explore the relationship of the information takes on new capabilities.

67 Collaboration-Ware

Those software tools and platforms that enable multi-student authoring of content (documents, spreadsheets, presentations, etc.). Communication between individuals or groups may also be an integral part of the tool or platform. Versioning, reviewing tools, change-management can also be functionality included to further enhance the ability to collaborate.

68 Assembly

Think puzzles, pictures, diagrams, or operations that when assembled would show a sequence, visual elements are required to be assembled in a specific manner. The components of each could be manipulated with a cursor, pointer, finger or stylus by the student in order to complete the proper order of the assembly.

Tiggly develops learning systems, combining toys with specially developed apps which interact with the toys. Tiggly products build on 70 years of academic research highlighting that manipulating physical objects is essential to early childhood development.

69 Manipulative-Object Interplay

The use of a separate physical object in conjunction with a digital device that causes interaction between the physical object and the application on the digital device.

70 Summative Assessment

An assessment given at the conclusion of a period of learning to determine the mastery of knowledge and/or skill by a student.

71 Artifical Intelligence

According to Wikipedia, Artificial Intelligence is the intelligence exhibited by machines or software. It is also the name of the academic field of study which studies how to create computers and computer software that are capable of intelligent behavior. Major A.I. researchers and textbooks define this field as "the study and design of intelligent agents",[1] in which an intelligent agent is a system that perceives its environment and takes actions that maximize its chances of success.[2] Real A.I. is above machine-based learning by definition in its perceptivity, Machine-based learning is greater than Intelligent Learning Engines, which are pre-determined pattern recognition which then shunts the learner down a pre-built additional path or alert loop. It is important to know and understand this definition in order to know what are and are not accurate claims by digital education content providers as to the true capabilities of their learning delivery systems. Artificial Intelligence as has been commonly agreed-upon by preeminent mathematicians, is not something that has been found in learning software by the Learning Counsel – yet.

So, there you have it.

Seventy-one Digital Curriculum Characteristics for digital curriculum and content. As our ability to develop better methodologies for content and interaction with it, the list will continue to grow.

When looking to introduce new curriculum and content into the teaching and learning process, especially if it is the first time digital curriculum and content will be implemented, a holistic inventory and audit is not only advisable, but imperative. Look at what is available commercially or even free and also look at your pedagogy – ask "Why?" The new software available may change the dynamics at the classroom level and consideration must be given to the teacher's time – time to plan, time to teach, and time to take care of the logistics of both.

Digital curriculum and content that would be the core curriculum should be inspected closely against your class or school goals. Why? Because if there is a goal to individualize student learning it will require the teacher to spend time planning for each student a multitude of individual digital learning objects, not just make a single plan for the whole class or small-group -- unless a full curriculum software is chosen to do much of the personalization itself. Planning for each student in the digital realm will typically take more time than writing the "whole-class" lesson plans of old. Even supplemental curriculum will require a greater level of attending-to from the teacher to be meaningful it is not fully-adaptive-immersive-environment-type software with tons of the above characteristics embedded in it, but bits of video, Apps and pieces.

The road to building your digital curriculum and content story as a school, a district, or a teacher is a wide open one – but know before you go.

by LeiLani Cauthen, Publisher, the Learning Counsel
leilanic@learningcounsel.com
@LeiLaniCauthen
LeiLani Cauthen
LeiLani Cauthen

Bringing Digital Curriculum To Life …for Every School and Student

The Learning Counsel Looked "Under the Hood" of Digital Curriculum Design to See What Publishers and Technology Vendors are Doing to Create Fun, Rigorous, Personalized Learning

According to the *Consortium for School Networking*'s 2015 IT Leadership Survey, 84% of school technology officials expect that at least half of their instructional materials will be digitally based within three years. There's no doubt that a massive digital transformation is underway in schools around the country, and with big changes come big questions.

For example, in a world where a humble PDF can play a starring role in teaching and learning, how should educators build their digital curriculum? Should teachers create their own materials? Should they take it upon themselves to gather what they need from a vast sea of open educational resources? Should districts contract with companies to get what they need all in one place? Or, is some combination of these options the best way to go?

To make informed decisions about these issues, it helps to have an idea of what goes into creating and updating digital curriculum—and what educators can expect from the companies supplying that curriculum. To get an insider's look, the Learning Counsel spoke to edtech leaders. Here's what they had to say.

Content Comes First

In conversations about digital content, words like "rigorous" and "aligned" get thrown around a lot. But how do curriculum providers actually create educational materials that live up to this billing? Companies typically find subject matter experts with classroom experience first. These content specialists then team with instructional designers to research standards and build aligned course plans and outlines.

These course plans and outlines are then reviewed and either approved or sent back for

another round of revisions based on how well they adhere to both academic standards and rigorous, engaging—and fun—course design specifications. Teaching materials often go through multiple rounds of review before they are ready to deliver to schools and districts.

To give an outside perspective, a company called *Academic Benchmarks* works with a number of ed tech providers to verify that their completed materials are, in fact, aligned to the standards that they set out to cover. If the answer is yes, then Academic Benchmarks provides its seal of approval in the shape of formal alignment documentation for each course.

Creating Engagement

Another word that comes up repeatedly in conversations about digital content is "engaging." But what does it take to make that abstraction concrete?

We asked Lucien Vattel, the CEO and Founder of the tech-based education non-profit *GameDesk* about this. "It's our mission every day we come to work to create next-generation learning games and virtual learning tools and maker programs that give kids experiences that result in learning." He continued by explaining the question he and his team ask themselves about everything they build, "What is it about this game design, this approach that lends itself best to certain types and ways of learning or engaging or actually connecting to the concept for the individual child?"

He went on to say that he and his crew of "designers of learning" have an extensive checklist of things they've established (over time and lots of testing) that they look for and consider while building a product that is experience based and heavily immersive.

Kevin Viau, founder and CEO of online career and elective course provider *eDynamic Learning*, said that he starts every course design by considering what will connect with today's students. So "the old school of studying with flash cards" is out, replaced by a gamified atmosphere because, as Viau put it, "Studying in a game format is a fun and interactive way to practice with a lot of tiers or a deep level of self-discipline."

Offering "a lot of tiers" means creating content in a variety of forms, the better to accommodate a variety of learning styles and levels. Viau said that adding downloadable podcasts that follow along with text to support reading comprehension was important to him because he wanted "to help struggling readers or mobile learners without internet access." The choice was also personal, he said. "My love for audio books inspired the need to have options: read, listen, or do both. Our voice artists provide an engaging narration of the content that can be streamed or downloaded to the student's phone or music player."

Todd Brekhus, president of personalized learning environment myON, said that student who have been raised on social media and online games can also be engaged by real-time data. Each student who uses *myON* gets an individual dashboard, and Brekhus said, "Students are excited to see their reading progress and if they can meet the reading goals that are shown."

And just like in a video game, as students meet reading goals or complete "reading checkups," they unlock new pieces of the platform. "For example," Brekhus said, "completing a benchmark unlocks a new special avatar that students could use to represent their account."

Above: Lighthouse Schools within Baltimore County Public Schools are piloting innovation and technology with HP computers based on Intel 2-in-one systems. Because the kids are so cognitively engaged in their schoolwork there has been an 84% decrease in behavior referrals.

Making It Personal

Every educator in the country is striving to offer students "personalized education." How do digital curriculum providers build lessons that aren't one-size-fits-all? According to Jen Salta, vice president of curriculum at e-learning provider *Odysseyware*, "Customization cannot be an afterthought. It is the foundation of the digital curriculum design process." And the goal of all those design-review-redesign cycles is to put power in the hands of teachers. "The design of the curriculum is intentionally built to be fully customizable and empower teachers to individualize learning," she said, "be it with our teacher authoring tool or custom and prescriptive learning paths."

The approach with all good digital learning content is to create an atmosphere that feels like Choose Your Own Adventure. Viau's inspiration to create eDynamic Learning came from a colleague who wanted to be an anthropologist after watching Raiders of the Lost Ark. It took him until college to realize that anthropology "did not involve poisonous spiders or lost treasure. "Today," Viau said, "it is so important to connect student's perceived passion into a real career option. Do I like health science? If so, what part of health science should I be involved in? If I do not like blood, maybe a radiology technician or a sonographer might be a better fit."

For Brekhus, personalization starts with giving students the freedom to mark up their digital books in a way they never could a paper textbook. So all 10,000 myON texts work with a Literacy Toolkit that lets students highlight, add sticky notes, create citations, or add their own writing in a personal reading journal.

Truly personalized learning, though, is not just about letting students do what they want. It's about giving students what they need. To track those needs, myON built a reporting system that can be used by students, teachers, and administrators. The goal was not just breadth but depth, said Brekhus. "Our reports are divided into core details around reading ability (as measured in Lexiles), reading activity (as measured in books opened, books completed, time spent reading, pages read, and words read), and title popularity."

Always Updating

Like all software, digital curriculum is always evolving. There is just no comparison to the textbooks of yesteryear that were years out of date the first time they are opened by a student. Today with technology its virtually real-time knowledge. Quality software, from any vendor or publisher must deliver routine updates (which can include new features, bug fixes, and new content). Most will make these updates available and quickly downloadable every month without effecting the learning path of the students in the classroom.

On top of planned additions to their platform, most companies survey customer suggestions. Improvements are perpetual. Some of these improvements include workflow enhancements, development of infrastructure and security requirements, or changes to supported browsers and operating systems.

During our interview with the myON design team we found they use an Agile Programming methodology to prioritize tasks in what Brekhus calls a "planned sprint." Most important for educators is that updates do not require server downtime and the digital content remains available to all users. Depending on the type of update, the process can take anywhere from five minutes to several hours to implement and test before it is released to schools, teachers and students.

The eDynamic Learning technical team, make changes to lessons and graphics as needed. For example, their Introduction to Social Media

A student learns about the principles of aerodynamics by playing AERO. In this image, the game is controlled with the SMALLab System. Simply by moving their hands players have full control of rotation and flapping of the bird's wings.

Course, which follows a subject that obviously has a greater pace of progress, gets vigorously monitored as new technologies and platforms emerge. But courses of a broader or more general training nature may get updated annually. Viau explained some particular aspects as to how their courses are reviewed and kept relevant. He stated, "We strategically designed a floating element within the courses to keep the practicality of a course relevant. This element is known as a 'lab assignment.' The lab assignments are changed from time to time to bring current news content into the course. This allows students to connect real-word examples to the main ideas in the course."

Odysseyware also combines planned and on-the-fly changes to its content. Salta said, "While we can technically update content nightly (and, in the case of discoveries and other changes, we do just that) we plan our major course and supplemental material releases to align with summer school use or for start of the school year in the fall—or sometimes, mid-year at semester time." For updates that happen during the school, year, she added, "We are very conscious that students are working and do our best to avoid updates that would be detrimental to students as they are completing their course work."

One over-arching fact about digital curriculum—something the Learning Counsel found in our research with companies and in talks with educators around the country—is that the creation process never ends. Every one of the companies and designers we spoke with mentioned that they rely heavily on teachers and administrators in the field and the schools and districts they work in. There is always a close feedback loop.

The philosophy and theory we saw with leading digital curriculum designers was that they are not building it to be used to teach. No, this new view on curriculum and learning tools is that it is made to create an environment where learners are put into a position to have experiences and make decisions within scenarios that allow them to learn.

Teachers are now in the position of being great facilitators of learning. As Albert Einstein once said, "I never teach my pupils. I only attempt to provide the conditions in which they can learn."

Below: GeiScience_ Continental_Drift-6 - Students play PanGean, a didactic puzzle game that introduces the geological concept of continental drift, with the leap motion controller. As a galactic member of the United Colonies, players will travel the universe in their own scouting ship, using their hologram interface to piece together continents and demonstrate the shift that occurs over a hundred million years.

by Christopher Piehler
Guest Writer
former Editor-in-Chief THEJournal
Christopher Piehler

Another Resource in Your Digital Toolkit: Analytics

How We Can Be More Effective as Administrators by Using Analytics to Understand Student Data and Apply it to Improve Outcomes

"The ultimate goal of gathering all this data is to figure out why something is happening. When you get down to the root cause, then you can go and address that root cause."

—Anthony Cross
VP of Analytics and Marketing
Scantron

Analytics is a subject that confuses many, but the simple definition is easy enough to understand. It's a way of analyzing data to create better outcomes. For a school district, this means collecting data from students, teachers, and schools and putting it into a centralized place. Then, as long as you have the tools to make sense of that data, you can make correlations and get the insights you need to spot problems and work toward closing achievement gaps.

As more districts move toward digital systems, the role of analytics becomes much more important. The idea is to explore your data rather than just looking at it—something that's much easier to achieve with quality analytics programs.

What to Do With All That Data?

The ever-increasing demand for data has resulted in floods of information, often in the form of spreadsheets and coming from many different sources. The time and effort required to analyze this and turn it into any kind of useful conclusion is often prohibitive, even if your district has a dedicated director of research or director of data.

The solution is comprehensive data analysis programs designed specifically for education. These programs take your raw data and give you an overall, comprehensive view. This allows for examination of the big picture—say, trends over a period of years—as well as reports that are far more broken down and specific.

Empowering Administrators

The whole idea behind using analysis tools in your school district is to improve your focus. When you're staring at a mass of data from a whole host of sources, it's very difficult to know where to begin. If you're able to correlate that data quickly and pull up reports that cross-reference subsets, that can be a huge help. Improved focus leads to faster and more precise targeting of problem areas within your district—and that leads to better support of teachers and greater outcomes for students.

Another situation that many executives are finding themselves in is that they are becoming trapped behind their desks and not able to get out into the hallways and classrooms. New analytics tools take what has demanded tens or hundreds of hours of calculations and made actionable data available at the click of a few buttons.

Analysis tools are especially useful when your district is implementing digital curriculum. In seconds, you can pull up reports that tell you whether you're on the right track. Because digital curriculum is so flexible, having easy access to this data allows you to tweak your plan to achieve better results.

These programs are also very useful for disaggregating data to use for accountability reports needed for state and federal requirements. Reports are quickly generated and easily broken down by parameters such as ethnicity, gender, and students receiving free or reduced lunch.

The New Generation of Analytics

Technology has moved analytics programs far beyond simple dashboards with colored charts. Using an advanced program, you can explore and drill down into your data like never before. Need a specific academic or assessment report on a subset of your student population? You can get the information you need in just a few clicks. If you find something that doesn't add up—say, a school with grades far higher than average or insufficient progress against standards—you can use these modern analytics tools to get to the bottom of it quickly.

That doesn't mean that colored charts aren't helpful, however. Modern programs integrate graphics that give visual representations of your data so it's quick and easy to understand. The applications are dynamic rather than static. This means you can click into a report for a closer look or with a different set of parameters, enabling you to search and compare data like never before.

Another advantage of modern programs is that they can give you data in real time. If you're collecting that data from spreadsheets, it may be weeks or even months old, which often won't give you an accurate picture of the current situation.

Data Storage Options

Storing data doesn't have to mean maintaining your own servers with your own IT staff. Schools and Districts handle this infrastructure factor in many different ways. The Learning Counsel usually finds it an internal matter, for right now. But more and more executives are finding that it may be simpler to go outside and let a company keep their data available and secure. Keeping it on servers within a school building may seem safer at first, but that's not always the case. Many vendors have the established resources to place a district's student and administrative data on redundant servers "in the cloud" to make sure the data can't be lost because of power failure, hard-drive burnout or natural disaster in any one place.

The Learning Counsel recently spoke with Anthony Cross, Scantron's VP of Analytics and Marketing on the subject of data storage and protection. He said they've seen a trend away from self-hosting in recent years. "Districts are starting to realize the long-term cost benefits of having someone else handle the software, technology, digital security, networking, and the constant system maintenance and updates," he said.

Either way, Cross had this to say about the purpose behind analytics at Scantron: "What is the end result we're trying to get to from all these analytics? Deeper insights into understanding what's happening and why it's happening so it can be fixed. The ultimate goal of gathering all this data is to figure out why something is happening. When you get down to the root cause, then you can go and address that root cause."

by Cebron Walker, Editor-in-Chief,
the Learning Counsel
cebron@learningcounsel.com
@Cebron Walker
Cebron Walker
Cebron Walker

From Coast-to-Coast — Dynamic Education Change

On Tour with the Digital Curriculum Strategy Discussions, A Nationwide Overview of District and School Transformation

Cebron Walker, Editor-in-Chief for the Learning Counsel, on the ground during the Digital Curriculum Strategy Discussions

After visiting 48 cities in the last year and a half, and talking with thousands of education executives from over 400 districts with schools representing millions of students, the Learning Counsel has gained an uncommon understanding of where we are as a nation right now.

Dr. David Kafitz, Vice President for School Relations at the Learning Counsel, a former Superintendent and a transition specialist, stated, "We are truly in the eye-of-the-storm. Unfortunately, many schools and districts are implementing 1:1 initiatives with no, or at least an underdeveloped, strategy to truly make the shift." He continued, "This is a billion dollar market and every district has huge responsibilities and massive pressures from parents and communities-at-large to deliver the best possible education. Equity in education is a very important consideration, and the expectation by most parents and students today is digital. If a school isn't using devices and delivering digital curriculum for individualized learning, it's generally considered that the leaders are holding children back."

As any leader in the education arena can see, one of the biggest industry changes is on the business side—the industry has grown from an old-school cadre of major publishers to thousands of start-ups in a few short years. By survey, teachers are spending upwards of five hours a week sifting through all the different content available to fit the demands and changes in standards and testing. In fact there are now over 7,000 companies and publishers competing for a part of the digital curriculum and content market. This explosion of companies and what is available to deliver individualized education has reached realms that individual teachers can't hope to keep up with.

"Having spoken with hundreds of education executives over the past several months, from every corner of the country, I've been able to filter through the 'noise' and confusion," stated Dr. Kafitz. "I've made a point to summarize the underlying problems—or areas—that I see everyone in education having to solve in order to modernize their districts and schools. In fact, the Learning Counsel has mapped out the Characteristics of digital curriculum and is creating a community to address what is considered 'high-value' and 'low-value' with content out there."

Dr. Kafitz also explained that there are five primary areas where executives need help and direction. These became the focus of digital curriculum strategy discussions and planning:

1. Teacher Professional Development: Necessary and critical on an ongoing basis, why? Given that publishers of curriculum and content, and developers of the various systems used in delivering the curriculum and content to students is iterative, gone are the stable cycles of 5 years of more of unchanging content. Now, typically, on an annual basis, new change is introduced into materials and systems that require ongoing professional development and support to remain knowledgeable of, and productive with, these materials and systems.

2. Equity of resources and access among students: This is commonly referred to as the "digital divide" and it must be bridged. Many districts are considering this variable when planning for providing devices to all students. There are some very creative and effective solutions put in place by districts and schools around the country. In partnership with communities, companies and carriers, providing access to the Internet is taking place on buses and in-and-around communities. More must be done by all to make sure everyone has connectivity and devices in their hands in urban, suburban and rural areas alike.

3. Developing real strategy for making the transition to digital curriculum and content based on instructional need and purposes:

Learning needs should drive the introduction of digital curriculum and content into the learning process, not the provision of a device that may or may not add value to student learning. Examples of the "device first" approach are plentiful in the media. The outcome(s) of such an approach are negligible at best or disastrous at the worst. Part of a district's or school's strategy developing process must include inventory and audit work around pedagogical practice and curriculum resources available. Alignment of pedagogy to curriculum and content resources allows for more meaningful and impactful professional development – it is all intertwined.

4. Understanding the new cycles of procurement in education curriculum and content: Gone are the days of one subject per year adopted for 5 or more years. With the transition to digital curriculum and content, the cycles of acquisition are now annual and all subjects can be in play at once. This means workloads of those education leaders charged with researching and vetting these resources have seen their to-do lists explode. Vetting digital curriculum and content is even more time intensive than print material because of the myriad of variables.

"[The Discussion event] was an excellent opportunity to ensure I understand the great ways you can bring educators together and then infuse vendors who could assist them in their charge in implementing effective innovative practices."

—Takecia Saylor
Director, Office of School Innovation, New Jersey Dept of Education

Above: Kurt Madden, Chief Technology Officer, Fresno Unified School District, Fresno, CA

Right: Keith Bockwoldt, Director of Technology Services, Township High School District 214, Arlington Heights, IL

Left: Richmond, VA panel experts from R to L: Bill Johnson, Director of Instructional Technology from Virginia Beach City Public Schools, Dr. Stanley Jones, Superintendent from King and Queen County School District and Eric DeBoer Instructional Technology Specialist from St. Bridget School/ Richmond Catholic Diocese.

Eric Godfrey (center), Superintendent of Buckeye Union High School District and his executive team review their strategy for digital curriculum implementation using the Learning Counsel proprietary district transition workbook, developed based on what was found as most needed and wanted by educators during their shift to digital.

"The Learning Counsel event today made it so we as a district can be proactive in the future steps we will be taking."

—Henry Dunkerson
Director of Instructional Services
Safford Unified School District, AZ

5. The perceived lessening value of the teacher, him or herself, in the classroom: The classroom will change, and educators perceive their services as less valuable in an environment where digital curriculum and content are delivered through sophisticated learning platforms. However, entrepreneurial school innovation models are actually pointing to the need for as many or more teachers in this brave new learning world. Why? Planning for instruction that is highly individualized and highly personalized takes greater planning than developing one lesson plan targeted to the middle 60 to 80 percent of students. The teachers' new role as mentor, guide, facilitator, interventionist, etc., will require more time spent engaged in ingesting and utilizing the typhoon of data—for even greater student outcomes.

"Budget may seem like a key issue," Dr. Kafitz added at the end of our talk, "and of course it is a fundamental consideration at executive level, but it isn't really a problem when you can take a step back and look at your long term transition strategy. When you start down this transformation road, your budget model changes as well. This is one thing we delve into and work through at each city discussion meeting."

The Learning Counsel's Digital Curriculum Strategy Discussion event is a day-long meeting of local Superintendents, Chief Academic Officers, CIOs, Instructional Technologists, Principals, and others of general interest in the transition to digital curriculum, from regional districts and schools. The meeting entails actual curriculum as a central concern - the games, software, eBooks, subscriptions, apps, LMSs, SISs, testing/assessment and more.

The day of discussion also covers technology issues and important preferences like what device districts will use. Developing and establishing policies and strategies around how to really move to digital content and curriculum is a complex issue and has many points of possible failure. It is a central subject of the day through each presentation and the panel discussion at the end.

Every district and school is somewhere on the digital transformation continuum. The journey, while sometimes feeling treacherous and confusing, means greater individualized learning for all - and that's good news for the future.

David Kafitz, Ed. D.
Vice-President
School Relationships
& Consulting

An expert and charismatic change-agent, David helps schools move forward with a well-reasoned strategy for digital content and curriculum, professional development and IT strategy. He is a former Superintendent, Director of Technology Services, Principal, and Teacher in North Carolina Public Schools.

by Cebron Walker,Editor-in-Chief,
the Learning Counsel
cebron@learningcounsel.com
@Cebron Walker
Cebron Walker
Cebron Walker

Above: Daniel Watts, CEO of eChalk speaks before the panel in Dallas, TX. Panel from L to R: Superintendent Mike Kuhrt of Wichita Falls ISD, CTO Joe Griffin and CAO Charles Carol of Keller ISD, Superintendent Kevin Worthy of Royse City ISD.

Left: Lorraine Lambert, Director of Instructional Technology from Anahuac ISD speaks at the Houston Digital Curriculum Strategy Discussion Meeting

Left: Joe Casarez, Asst. Superintendent of Coalinga-Huron Unified School District in Central California talks on his district's transition to digital curriculum.

Above: LeiLani Cauthen, CEO of the Learning Counsel speaks on Strategy for digital transition in Richmond, VA.

Left: Phoenix, AZ Digital Curriculum Strategy Discussion Meeting

Below: Education Executives in Fresno, CA meet on tactics for their shift to digital curriculum.

Above: Michael Dorsey, Director of Secondary Curriculum and Beatriz Arnillas, Director-IT, Education Technology of Houston ISD.

KnowStory is a FREE new social media platform for everyone. Here is where you discover the wide-range of learning things and create your life-long learning story.

Knowstory is the place to make your company's or school's story known. If you have a place to learn or something to know, create a profile and list every product, piece of curriculum, or course or place. It's built for that.

If you're a group of educators, here is where you individually build a library list of what you have, or that you made, and share it so your school has one inventory to analyze. We call it "Invenstory."

Knowstory is both a marketplace with analytics for users of digital curriculum and a social media hub, with an education purpose.

It's not a school or a course or an App, but a place for personal learning to find its path inside or outside of schools, with anyone putting in any knowledge they have crafted so we all can find it, and build on it.

Go ahead and put in your school, your team, your Apps, websites, ebooks, games, lesson plans. And YOU.

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Ruckus Wireless, Inc. (NYSE: RKUS)

Digital learning happens with resilient WiFi. With the many types of mobile devices integrated into a student's learning process, schools need a WiFi network that can handle a high density of devices with speed and reliability. Ruckus outperforms the rest of the industry even in demanding environments. Future-proof. For more, visit www.ruckuswireless.com.

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Tiggly, a New York-based learning company, develops truly interactive learning systems that pair manipualtives with apps that enables educators to bring physical play, a critical component to early learning, to digital content. Tiggly was founded in 2012 by Harvard Business School graduates Phyl Georgiou and Bart Clareman, and Dr. Azi Jamalian, an Adjunct Assistant Professor in Cognitive Studies in Education at Columbia University. For more information, go to www.tiggly.com.