How Digital Learning Platforms Can Drive Competency-Based Education

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Introduction

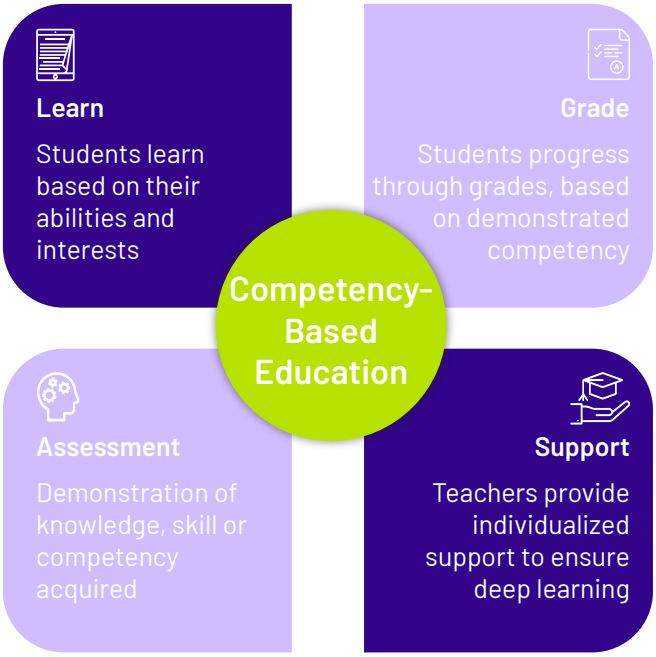
K-12 education has been designed for generations now to prepare students for either further education or to enter the job market. However, the world today presents challenges in terms of rapidly advancing technology, globalization, and diverse students in terms of both background and learning needs. So, while there is a drive to increase what children learn and know by the time they graduate high school, there is also a need to prepare them to compete in a global economy. This means not just deeper learning but also much more complex problem-solving skills than ever before.

Unfortunately, the traditional education system does not prepare students adequately to face and overcome these challenges. This is because it is still based on a one-size-fits-all program that neither motivates nor engages all students equally. The need to transform the education system is being increasingly recognized, with schools across the United States exploring new approaches to education. These approaches are focused on providing more personalized learning experiences, while ensuring that every student has a strong foundation in the skills and competencies required to succeed in the 21st century. A key approach in this regard is competency-based education (CBE).

What is Competency-Based Education?

The fundamental goal of CBE is to allow each student to advance academically, based on their specific ability or competency to master a particular skill. The approach allows students to progress at their own pace, with the education delivery being tailored to different learning abilities. So, the basic idea is to design the curriculum based on the student's mastery of a topic, rather than the time taken to master it.

The definition of CBE was updated in 2019 as: "Students are empowered daily to make important decisions about their learning experiences, how they will create and apply knowledge, and how they will demonstrate their learning." This means that through the competency-based approach, students receive personalized support, based on their individual learning needs and their progress is judged on "evidence of mastery," rather than time spent. (Levine & Patrick, 2019) This means that student assessment also needs to be aligned to relevant and actionable evidence, providing an empowering and positive learning experience for students.

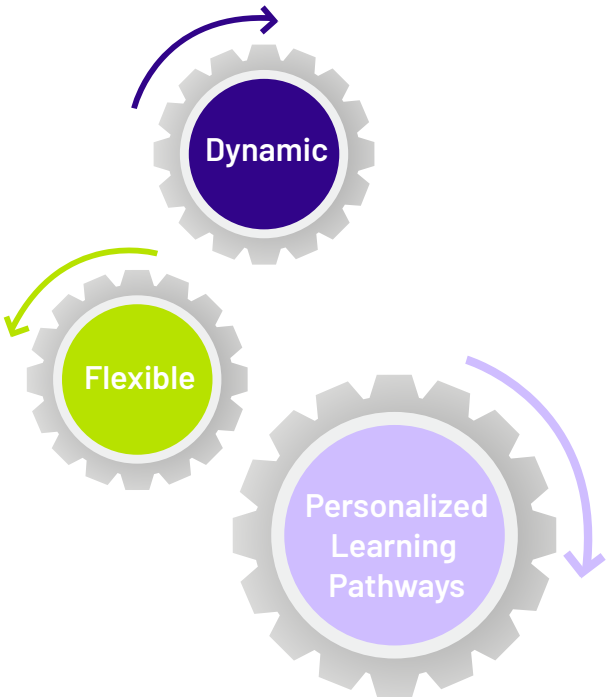


In short, competency-based learning is objectives-based, self-paced learning. However, transitioning to such an educational model can be challenging for educational institutions, since it means the adoption of the best-fit technologies to support such learning, analytics, reporting and management. Other approaches that are also being tested by schools are personalized learning and blended learning.

Differences and Commonalities between Personalized Learning, Competency-Based Education and Blended Learning

To be able to choose the educational approach that will best serve students, we first need to understand how the various approaches differ. Here's a look.

Personalized Learning



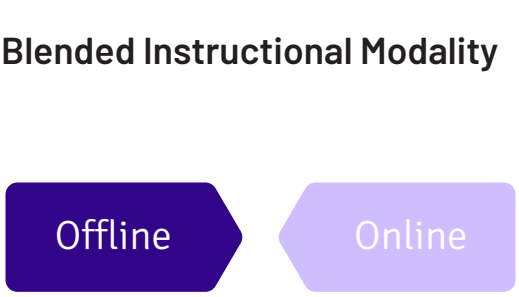
Through this approach students are offered the flexibility to learn according to their preferred style, at their preferred time and on their favorite device. They have the freedom of self-directed learning, setting their own pace and decide on the direction in which they wish to take their learning. Students also have the flexibility to choose to learn a concept through a textbook, videos, audio or even online chats. This approach then is very dynamic but requires robust assessment by teachers to provide personalized learning pathways for students, based on their specific needs strengths, and weaknesses.

With great analytics at their disposal, teachers would find it difficult to track which students are on track, which ones need greater support and intervention and which ones are ahead of the class. It also means that students can choose to learn on the device of their choice, whether a smartphone, tablet or laptop.

Blended Instructional Modality

According to the Clayton Christensen Institute, blended learning is a "formal education program in which a student learns (Fisher, 2019):

- At least in part through online learning, with some element of student control over time, place, path, and/or pace.
- At least in part in a supervised brick-and-mortar location away from home.
- The modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience."



Blended learning is an instruction modality that includes both offline and online elements. These elements are "blended" to meet the diverse needs of various students within a class, with the flexibility to keep education as uniform as the traditional educational approach. This brings various types of learning experiences under the gamut of blended learning, right from the traditional drilling of information to inquiry-based learning. What establishes a class or school as "blended" is not the subjects being taught, but the method of learning and teaching, and how students can access content.

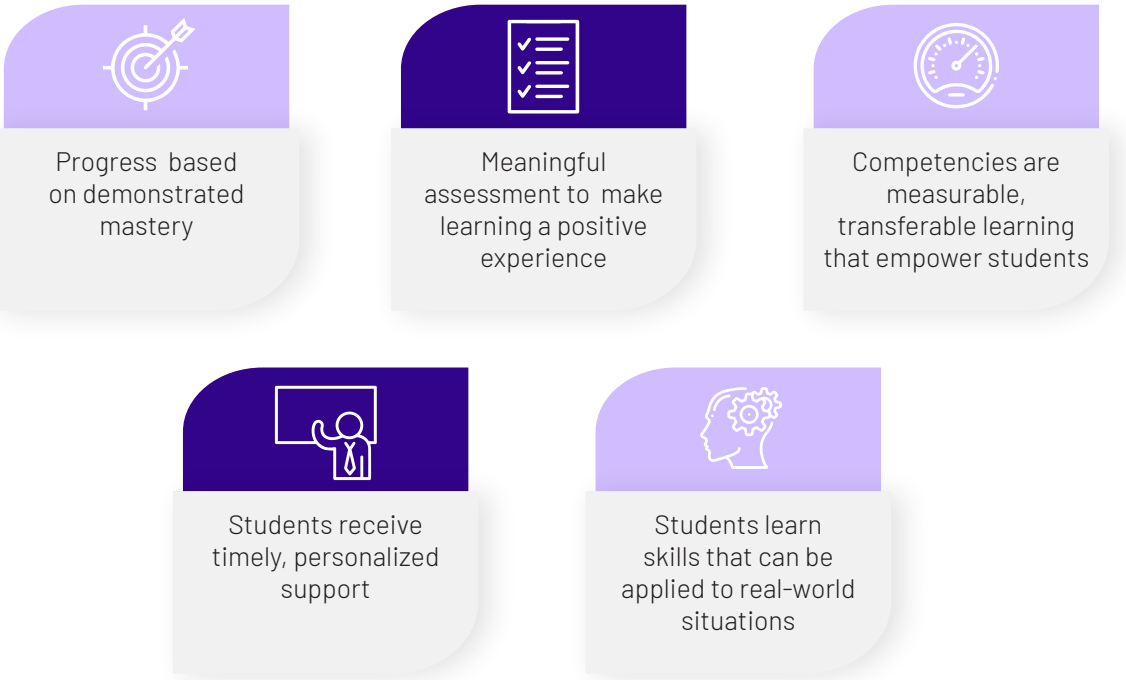
The advantage of blended learning is that it offers digital components to enable deeper learning, using competency-based approaches. This allows teaching to be customized to the needs of individual students. This allows for a greater level of engagement and motivation, as well as support, than traditional teaching. Again, with students being allowed to progress at their own pace, academic outcomes are improved.

Competency-Based Education

Although CBE offers flexibility to students to learn according to their preferred style, the education system still requires all students to be able to demonstrate proficiency or mastery of the subject through a performance-based assessment. So, to advance to the next level or grade, they need to prove their mastery over the concepts learned.

In CBE, assessment is not based on the usual A through F grading system. So, there is a need to set clear targets or standards for assessments. CBE is different from traditional educational approaches, as well as personalized and blended learning in that the amount of time spent on a subject per day is not fixed and neither is the amount of learning. Basically, it takes the strengths of personalized and blended approaches and adds elements of flexible time and set standards for achievement.

Five Components of Competency



Why Do We Need to Transform Our System of Education?

The problem with traditional education is that there could be large learning gaps, since students are passed on to the next grade regardless of their proficiency in each subject. However, today, it is no longer sufficient to garner knowledge. For an individual to achieve their full potential, students should be able to apply their learning, transferring knowledge to new contexts and real-life situations. This requires a much deeper understanding of concepts, along with strong critical thinking, problem solving and self-management skills. (WCET, n.d.)

Why CBE?

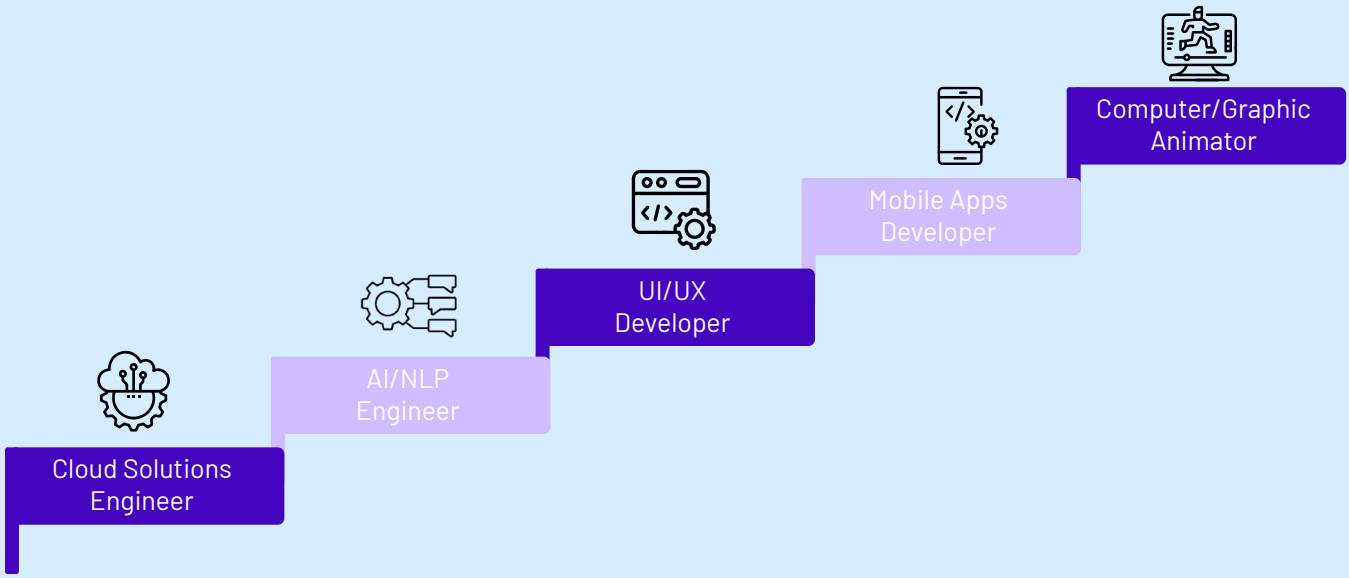
Employability	Accountability	Affordability	Accessibility
Competencies clear to employers	Value clear to learners	Lower Costs for learners	Accessible learner options
Ensuring learners, possess competencies, knowledge & skills needed to advance in the workplace	Replacing grades with demonstrated mastery of a defined set of competencies.	Decoupling from a time- bracketed system.	Using technology to address challenges attending synchronous or face-to-face classes,

Source: Identifying & Breaking the Competency-based Education Barriers: A WCET In-Depth Session

In fact, it is this skill to transfer knowledge through deep understanding that reaps long-term rewards. So, it isn't enough to just know, the information needs to be internalized, so that it can be applied to new situations. This ability to transfer learning real-world is of vital importance in today's rapidly evolving world.

The effective implementation of competency-based learning ensures such outcomes for all students, nurturing the unique talents of each individual. This is highly useful for professional life today, where employers focus on demonstrated skill and competence. K-12 education needs to be responsive to this change work environment to focus on skill development and job readiness. For instance, there are many professions where licensing is mandatory, such as law, medicine, accounting and engineering. To be certified or obtain a license, the individual needs to appear for competency-based tests that assess mastery of the subject. (Pate, 2020)

Top 5 In-Demand Skills for 2022 & Beyond



"The research on how students learn examines how important it is to meet a student within their zone of proximal development, allow for productive struggle and design progressions effectively — where learning hinges on successful prior learning," according to iNACOL. (Smart, 2018) However, the problem is that the transition to this type of education is easier said than done.

Barriers to Competency-Based Education

Studies have revealed two major barriers to the implementation of effective competency-based education – defining competencies and transition challenges.

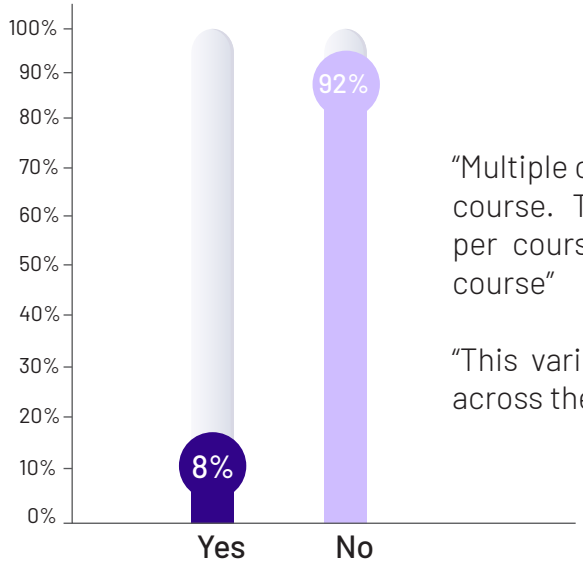
1 Defining Competencies

Defining competencies in a clear and standard way, while establishing important priorities, has been a key challenge. Of course, the development of the Common Core State Standards has been a step in the right direction. (iNACOL, n.d.) These are standards that are consistent across the US states, providing, teachers, students and parents clear expectations of the skills and knowledge required to succeed in higher education, career and life after graduation from high school. It offers clear learning goals for each of the core subjects taught as part of K-12 education.

However, even these standards leave much to be desired, while there still is a lack of clear definition regarding "work-ready skills." This includes both hard and soft skills, including communication skills, emotional intelligence, leadership skills, etc. The Aspen Institute's National Commission on Social, Emotional and Academic Development released the final report on how schools can effectively integrate social-emotional learning and academic development on January 15, 2019. (Hope, n.d.) The document offers recommendations on how competency-based initiatives can be implemented in the future.

Course design also needs to be looked into, such that education can be imparted in terms of competencies that are discrete, measurable and demonstrable learnings. The current K-12 curriculum does not follow this construct of competency-based education, except for a few exceptional cases. There is a need to understand how competencies relate to program and institutional objectives, as well as to specific courses and modules.

Do your competencies & courses have a 1:1 relationship? e.g. one competency is one course?



"Multiple competencies are assessed per course. The number of competencies per course will vary depending on the course"

"This varies by program and institution across the System"

Source: Competency-Based Education: Technology Challenges and Opportunities (Leuba, 2015)

2 Transition Challenges

There is a huge divide to be crossed for schools to be able to track demonstrable learning rather than time spent. The transition to a standards-based grading system that requires mastery will be difficult, given that legacy systems are marked by their inertia. To make this possible the education system needs to move away from a culture of "success vs. failure" to one that focuses on revision to ensure effective skill acquisition.

To do so will need time and huge support, not only for students but also for teachers. This is because teachers will need to develop new capabilities and adapt to new roles. So, a key need is to build teacher competency first among those who have themselves grown up and been trained via the traditional model. Both teaching and learning strategies will require innovation.

Then there is the entire challenge of educational content that is aligned to competency-based learning. Courses will need to be structured to accommodate various learning styles, pace, preference and more, in order to provide personalized learning paths for students. In addition, the entire assessment system will also need to be revamped to measure demonstrated mastery of specific skills and knowledge.

Benefits of an LXP

Synchronous to asynchronous education delivery

A-F grades and credits to mastery of competencies

Uniform instruction to customized student guidance

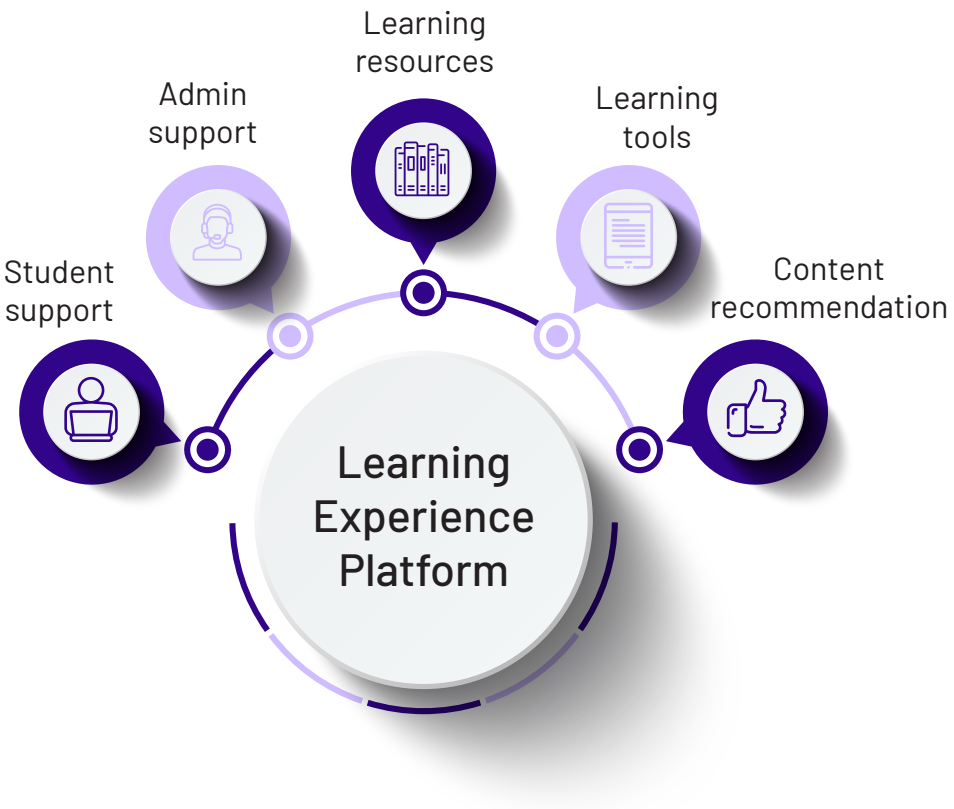
Many of the challenges being currently faced by educational institutions can be overcome with the right technology tools, among which, a robust learning experience platform could be the most useful.

Digital Learning Platforms Offer the Most Effective Competency Learning Tools

Image Source: World Economic Forum (Whiting, 2020)

EdTech tools are emerging as the most effective means to deliver competency-based education. These tools not only help define learning objectives & document learning outcomes, they also help map competencies to the curriculum, allowing convenient tracking of student progress. EdTech tools are also evolving at a rapid pace. The standard learning management system (LMS) has not transformed into a learning experience platform (LXP), offering many more functionalities and features than its older counterpart. In fact, the more recently designed LXPs are aligned to the needs of competency-based, personalized learning, rather than the traditional style of providing uniform instructions for theentire class.

In fact, a robust LXP can offer comprehensive support for the school, teachers and students.



Most importantly, LXPs allow schools to offer various ways to provide education, such as teacher-led, collaborative, small-group instruction, individual face-to-face. Students can choose to access learning material in their most preferred format, including text, images, videos, audio clips, interactive elements and so on. In addition, it allows access to the platform for multiple devices, such as smartphones, tablets or laptops.

For schools, LXPs help with:

- Content customization
- Provide instructional support
- Smooth integration
- Assessment and reporting
- Compliance with Web Content Accessibility Guidelines (WCAG) 2.0 and other standards

Such platforms allow teachers to:

- Create their own lessons projects, tests & quizzes
- Personalize lessons based on content mastery assessments
- Assign content or course based on data analytics Integrate existing rostering and other tools, such as Google Classrooms, OneRoster, etc.

For educational publishers, digital learning platforms are powerful tools to:

- Create of standard-aligned content
- Manage digital rights
- Quickly and easily convert static content to digital format
- Manage licensing and subscription models

It is the on-demand nature of competency-based education that presents challenges for education providers. Such content usually requires huge investments in IT infrastructure. However, here too, a cloud-based SaaS solution, in the form of a white-labeled LXP can come to the rescue. It allows for the storage of vast quantities of content and data, while allowing students to stream high-quality online content formats and even participate in collaborative learning situations, such as online discussion forums.

Some of the most effective tools that digital platforms offer to support CBE are:

Personalized, Self-Paced Learning

With a powerful digital learning platform, students are empowered to take control of their own learning progress. They feel in control of how they apply their knowledge and demonstrate their skills. They also learn actively when they have access to learning anytime, anywhere, at their own pace. With this, competency-based learning can help students progress as and when they master a skill, rather than being based on time spent in a class. A learning platform that is compatible across multiple devices & powered by an AI chatbot can offer 24/7 learning support to foster such self-paced learning & progress.

Further personalization can be enabled with a calendar feature to support schools, teachers, and students. Teachers can set up events and invite students to attend virtual classes and even conduct video conferencing classes through this tool..

To enable personalized interactions between students and teachers, the "Send Notification" tool is a powerful feature. Students often report feeling isolated with remote learning. This tool offers a way to feel connected while ensuring quick and easy communications. Students or guardians can receive reminders, feedback, alerts, & other course-related information on their smartphone or any other preferred device.

Performance Assessment

For CBE, educators cannot just rely on end-of-the-year summative assessments. Such assessments do not offer students support to understand their learning progress and make modifications to maximize academic outcomes. However, with an online platform that supports formative, adaptive & personalized assessments, students can monitor their own progress and move forward in the right direction. For instance, with video assessments, students can demonstrate skill mastery in real-life situations. They can complete assignments and assessments asynchronously and receive personalized feedback from their teacher.

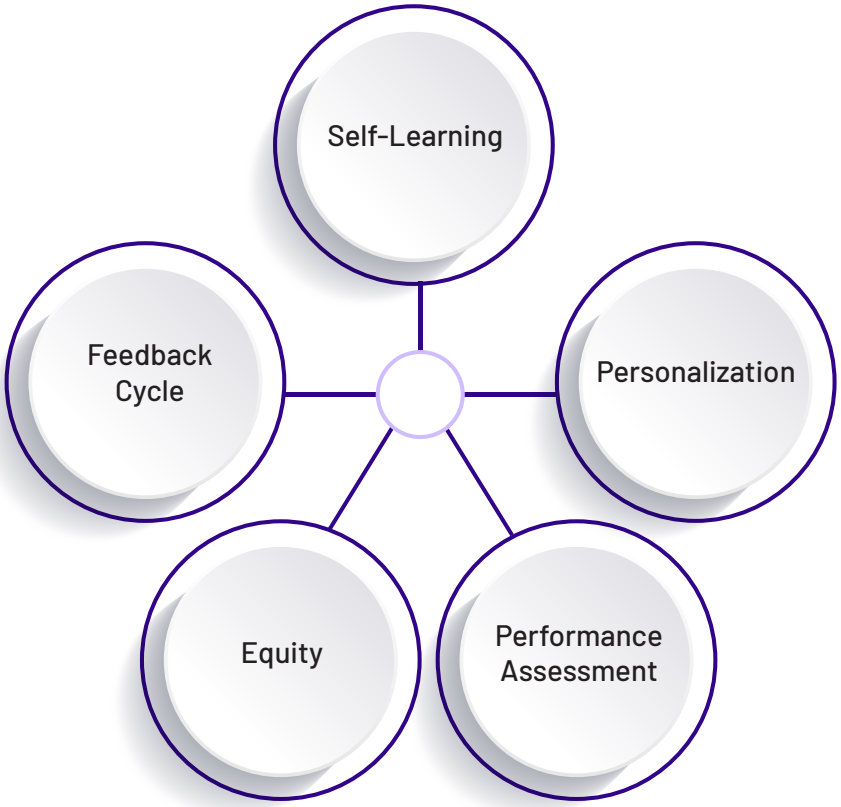
With the right assessment tools, publishers and teachers can create different types of essential questions (also known as EQ) and build formative and summative assessments to guide student learning and develop foundational knowledge. These EQs can be tagged with any free-flowing and meaningful information (skill/ability) on which the teacher wants to assess mastery of learning. A powerful tag management system at the backend allows teachers to evaluate students on specific measures of performance and a clear set of standards.

Assessment analytics provide detailed and useful feedback on student performance of specific skills tagged with the EQs. Assessment analytics helps stimulate thought, provoke inquiry & transform teacher instruction as a whole. This provides an opportunity for teachers to identify learning gaps and understand requirements so they can further provide content and assessments, based on each student's performance and skill acquisition.

Teachers can form groups where students in the same classes can be grouped based on mastery of skills. This can help teachers impart personalized instruction and design learning projects for each group.

Feedback Cycle

As mentioned above, regular feedback can be a huge support for competency-based education. Digital assessments can help with immediate feedback, which has been proven to improve learning outcomes, compared to delayed or no feedback. (Qi, Rajab, Haladin, Wang, & Fu, 2020). Students can complete assessments assigned to them at their own pace and receive immediate results to understand which areas they need to work more on to improve outcomes. Teachers can also use machine learning-based scoring tools for both objective and long-form, essay-type answers. This saves time and effort, providing personalized feedback to students. In fact, with video tools, teachers can create video feedback for students for more effective support.



Digital Equity

This is perhaps the most important aspect to ensure effective competency-based learning across socio-economic and ethnic groups. The COVID-19 pandemic revealed huge discrepancies in access to digital learning for students of lower income households and specific ethnic groups. This was in large part due to the lack of access to digital devices and reliable internet connectivity for students. The latest UNICEF-ITU report revealed that two-thirds of school-age children across the world do not have internet access at home. (UNICEF, 2020)

With a digital learning platform that offers both online and offline access to educational materials, students can download all materials assigned to them when they have access to a device and the internet and then learn at their own time and pace.

Course Authoring Tools

Course authoring tools offer publishers and educators a powerful yet cost-effective way to ensure that learning materials remain updated and relevant over time. Such tools enable quick and convenient additions and modifications to existing content, while saving on time and resources through thousands of in-built templates and themes. Publishers no longer need to work with a team of designers to create branded learning experiences, with such features. It streamlines and speeds up the entire content creation and distribution process.

With a robust course authoring tool, publishers to enrich and revamp content and curriculum and make it more interactive using smart hotspots, where they can simply embed supplemental resources and interactive elements, including audio, video, simulation, external resource links, lesson plans, references, activities, and much more. This way, students can access learning materials in their most preferred format.

The course authoring feature also provides the opportunity to create course content and assign it to students and teachers. A course has a detailed structure, table of content, referencing activities, and assessments. Course authoring also allows publishers to add new content in the course about a specific skill and also publish existing content already available in the library in a structured hierarchical view.

For example, if a high school student wants to focus on engineering in college, the teachers in the STEM classes can embed resources to direct her to the content that most benefits her, like physics and calculus. Another student might want to study medicine. So, the same teachers can create a course including chemistry and biology examples from the real world. With teachers' guidance, these students can then explore foundational concepts of their respective fields, each focusing on those elements most relevant to them and constructing their program of study as they go.

AI-Powered Learning Assistant

The most important element of successful remote learning is student engagement. A digital platform that includes an AI-driven learning assistant can ensure just this. It can guide students and teachers regarding the available course materials and assessments. It can also boost engagement and ease learning and teaching by reminding students of assignments or assessments that need to be completed, recommending relevant content, and helping the search for content, based on content types and course metadata. It also provides answers to questions asked by students/teachers.

Conclusion

In its book, Schooling Redesigned: Towards Innovative Learning Systems, the OECD concludes, "In the past, education was about teaching people something. Now it is about making sure that individuals develop a reliable compass and the navigation skills to find their own way through an increasingly uncertain, volatile and ambiguous world."(OECD, 2015)

However, how effective competency-based education ultimately depends on the ecosystem created by the school for such education. This includes the tools, resources and support available for both educators and students to make the most of this approach to learning.

Of course, it is difficult to change a system that is so well ensconced in our ethos for generations. But times change and unless we prepare future generations with skills relevant for their contemporary times, we will fail to help them achieve their true potential and create a better world.

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