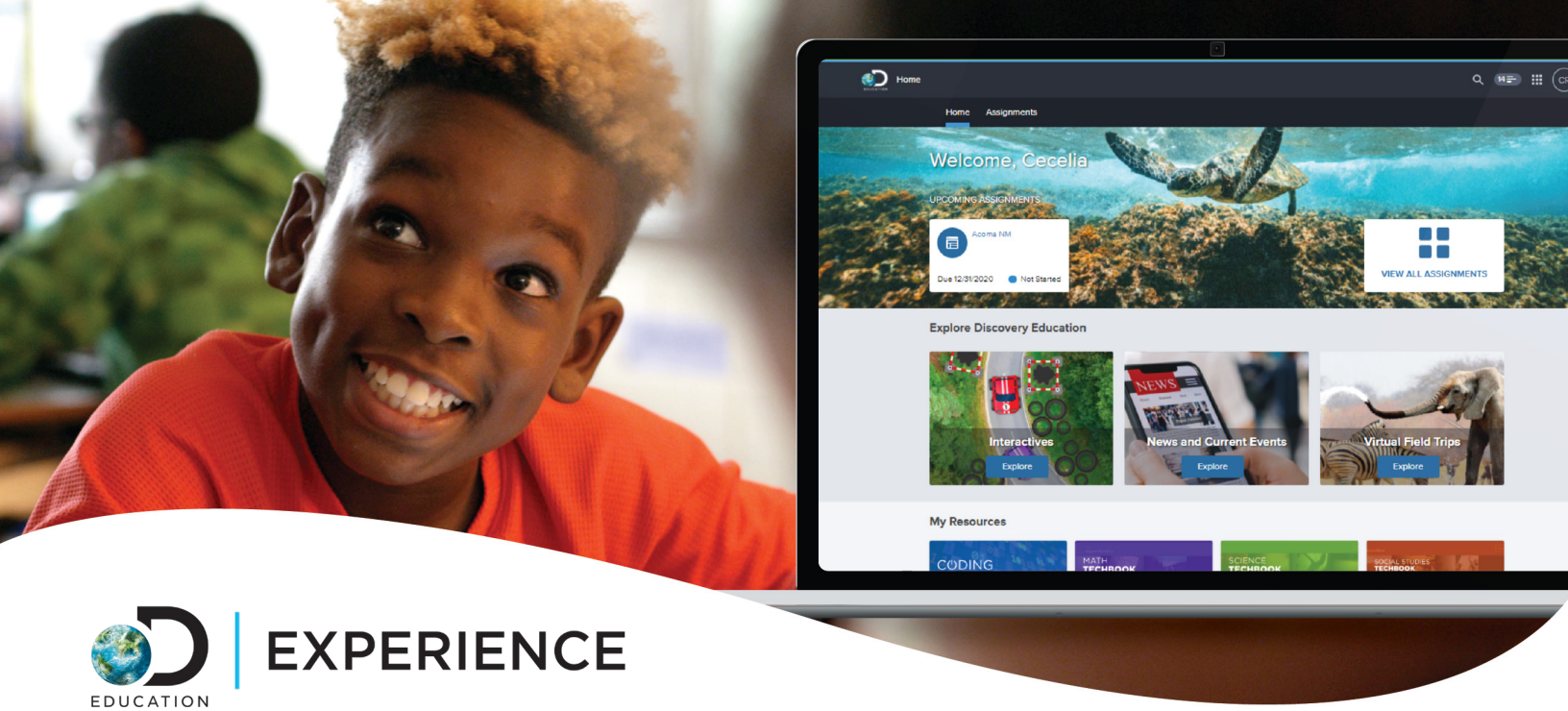

EDUCATION | EXPERIENCE

Leveraging Digital Content to Create Equitable Pathways for Learning

The Case for Differentiated Instruction and Personalized Learning

Introduction

For teachers, the demand to "go digital" comes from many directions: school district initiatives, self-interest or perceived ease of use, and increasingly, student expectations. Yet there is little guidance on how to choose or effectively use digital resources. In today's K-12 environment, the majority of schools have expectations around the use of technology as well as increased access to digital resources.

Recent study findings show that the percentage of teachers using technology in their classroom ranges from 63 percent (Cortez, 2017) to as high as 95 percent (Vega & Robb, 2019). As technology has become more accessible, so too have digital resources intended to enhance teaching and learning. Videos, apps, social media, games, and research websites abound (Vega & Robb, 2019; Deloitte, 2016). Students access these resources via laptops, desktops, tablets, interactive boards, phones, Chromebooks, and e-readers, both in the classroom and at home (Deloitte, 2016).

Educators are often on their own, sifting through a growing mountain of digital resources, hopefully tossing aside those of varying degrees of quality and relevance to find the occasional nugget that meets their instructional goals. However, there is no added value to the learning process when digital resources are used just because they're available or expected.

At Discovery Education, we believe the value of digital resources is not just in their alignment to standards and readiness for instruction—this is a minimal expectation for all of our resources—but also in how they can be used to provide equitable access to the learning process. Gone are the days of the one-size-fits-all classroom in which every student was taught the same content in the same way at the same pace, at the same time; and it was common to expect that some students would thrive, and others would not.

Today's educators are charged with helping every student meet or exceed high expectations, regardless of what they know or are able to do when they walk through the classroom door.

Differentiated instruction seeks to address the unique needs of learners by providing multiple options to process information and demonstrate learning.

In this paper, the case for differentiating instruction and personalizing learning is reviewed before exploring how the Universal Design for Learning framework can be applied to choosing digital content. We further define how High-Quality Digital Content can support teachers in meeting the demand for differentiation and personalization and thereby help narrow opportunity gaps in education.

The Case for Differentiated Instruction and Personalized Learning

If the goal of K-12 education is to help every student meet rigorous learning expectations, the classroom experience should support each child's learning process, not just the normative middle. Every child enters the classroom with a unique set of experiences, interests, thought processes, and knowledge.

In a classroom that is not differentiated, a singular approach to teaching and learning is applied to the normative middle in which every student in the classroom receives the same instruction, assignments, and assessments. History has shown that this approach helps many students but misses the mark on helping all students engage, learn, and achieve.

Students who have been left out of this normative middle group are disproportionately African American and Hispanic, are English language learners, gifted, or those receiving special education services. "The historical origins of standardised testing in the social efficiency movement, which sought to educate students according to perceived future social roles, IQ testing, and the eugenics movement…" (Au, 2013) has contributed to a legacy of persistent structural inequities along socioeconomic and racial lines—a legacy that the modern education reform movement and instructional practices that focus on the individual needs of each child are intended to break through.

Differentiated instruction seeks to address the unique needs of learners by providing multiple options to process information and demonstrate learning. Differentiated classrooms provide "…different avenues to acquiring content, to processing or making sense of ideas, and to developing products so that each student can learn effectively." These classrooms foster student-centered learning opportunities in which students work with peers in flexible groupings that draw on individual student strengths and remain fluid throughout the year based on ongoing formative assessment (Tomlinson, 2017).

Personalized learning goes beyond differentiation to provide an individualized pathway for each student. While personalized learning has different meanings depending on the context, for the purpose of this paper, it is defined as "…a diverse variety of educational programs, learning experiences, instructional approaches, and academicsupport strategies that are intended to address the distinct learning needs, interests, aspirations, or cultural backgrounds of individual students" (Great Schools Partnership, 2015).

Both differentiated instruction and personalized learning are promising means to help individual students thrive academically and narrow the gap among different groups in educational outcomes.

A Research-Based Framework for Equitable Access to Learning

Universal Design for Learning (UDL) is a research-based framework for meeting the needs of every student through differentiated or personalized learning. This framework was developed to improve teaching and learning based on scientific insights about how humans learn (Rappolt Schlichtmann, Daley, & Rose, 2012).

The three principles of UDL are engagement, representation, and action / expression. These principles are grounded in brain research, technology advancements, and experiences in classrooms.

UDL provides

- flexibility in the ways in which information is presented, in the ways students respond or demonstrate knowleddge and skills, and in the ways students are engaged.
- a structure to reduce barriers to learning; and
- appropriate supports and challenges for students.

We know from brain research that to provide "… equitable opportunities to reach high standards across variable audiences, we must provide: multiple means of representation, multiple means of action and expression, and multiple means of engagement" (Meyer, Rose, & Gordon 2014). When educators are aware of the UDL principles and learn how to address systematic learning variability, students become more engaged with content, making connections between emotion and cognition.

Table 1 includes more information about how these principles are connected to learning in the brain and the delivery of instruction.

TABLE 1

UDL Principle	Brain Networks	Description of Brain Networks	Applications to Instruction
Multiple Means of Engagement	Affective THE **WHY** OF LEARNING 	Affective networks influence how learners get engaged and stay motivated - how they are challenged, excited and interested.	Instruction should stimulate interest and motivation for learning by tapping into student strengths, interests and motivations.
Multiple Means of Representation	Recognition THE **WHAT** OF LEARNING 	Recognition networks influence how we gather facts and categorize what we see, hear and read (e.g., identifying words, concepts, or writing style).	Instruction should present information and content in different ways.
Multiple Means of Action and Expression	Strategic THE **HOW** OF LEARNING 	Strategic networks influence planning and performance – how we organize and express ideas (e.g., writing an essay, solving a problem).	Instruction and assessment should include differentiated ways for students to demonstrate knowledge acquisition.

Source: Meyer, Rose, & Gordon, 2014
Photo credits: http://www.cast.org/our-work/about-udl.html#.V3UUdpMrLqw

Carefully chosen digital content, when utilized within this framework, can provide powerful customized learning experiences for students.

Supporting Equitable Access with High Quality Digital Content

The UDL framework can be used to design flexible and adaptive instructional environments that foster deeper student learning and achievement. Carefully chosen digital content, when utilized within this framework, can provide powerful customized learning experiences for students.

However, not all digital content is equal. Finding free digital content on the Internet that's purported to be appropriate for classroom use is simple. But we believe standards-aligned High Quality Digital Content (HQDC) specifically developed for diverse student audiences and curated by experts for ease of access is among the most powerful resources available to school systems seeking to improve equitable access to learning for all students.

Combining the UDL framework with our research and experience in sharing millions of digital experiences over 15 years, we have found three key characteristics that define HQDC.

Beyond the minimal expectations that digital content should be standards aligned and ready for instruction, HQDC must: 1) break down barriers to learning for all students; 2) provide all students multiple ways to shine; and 3) engage all students in high-level thinking.

Breaking Down Barriers to Learning for All Students

One of the primary goals of UDL is to give students as many pathways as possible to learn, so that barriers to understanding can be broken through. HQDC is unique in that there is almost always another pathway to learning immediately available.

When introduced to the material through a graphically attractive visual design, students are naturally drawn in. Instead of stumbling when they encounter an unfamiliar word, a well-designed HQDC provides alternative explanations. Instead of leaving students to struggle with reading fluency, HQDC provides readaloud options. If the text is presented as too complex or rich, HQDC steps the text down to a lower level of complexity. If reading the text is a barrier to learning, and teaching reading is not an immediate objective of the lesson, there is a video alternative—or better yet—an interactive tool to help students understand the concept. HQDC also provides multiple language options for students learning a second language, allowing a student to easily switch from one language to another to build all levels of academic vocabulary quickly.

Finally, HQDC provides physical print alternatives for students, as a growing body of research shows that many students focus better with print media. Across three studies that compared reading comprehension on print vs. digital, researchers found that students preferred to read digital text, read faster on screens, and believed they were comprehending better online; when, in fact, comprehension was better overall with print, and significantly better when responding to specific questions (Alexander & Singer Trakhman, 2017).

Providing All Students Multiple Ways to Shine

A goal of UDL is to give students many ways to demonstrate their learning. Rather than sticking to one assignment for all students, UDL encourages educators to let students show what they have learned in a wide spectrum of mediums, from traditional written responses to complex video productions.

Differentiated assessment is "…an ongoing process through which teachers gather data before, during and after instruction from multiple sources to identify learners' needs and strengths (Levy, 2008)." Differentiated assessment is not just a way for students to demonstrate what they have learned, but also a vehicle for continuous learning, accelerating "… the student's ability to learn new information, facts, skills, or concepts. (Levy, 2008)."

HQDC has opened up new possibilities for how students demonstrate learning through differentiated assessments in learning environments. "The shift to digital content has had a profound impact on the

With access to HQDC, the creative ways in which students can demonstrate what they have learned are endless.

way we assess student performance...Now assessments are a more formative process, providing teachers with just-in-time data that can inform day-to-day instruction for individual students. Digital tools provide options for assessment in multiple media formats that can better measure problem solving and reasoning (Center for Digital Education, 2016)".

Within this context, HQDC resources should include simple opportunities for written responses, as well as rubrics and exemplary responses that give students examples and goals. In addition, HQDC must have structures in place that encourage the feedback loops between teachers and students and between students and their peers.

For example, differentiated assessment for a single set of learning standards in a class of 30 students may involve multiple formative assessment measures and feedback loops throughout the learning process. These measures are as varied as instructional techniques—from writing and creative expression with peer review, to individual and group game-based exercises, to online learning tasks, to class exit strategies. The commonality is that the teacher is gathering and analyzing data throughout the learning process; providing open opportunities for feedback and student ownership over their learning progress; and adjusting instruction iteratively to meet the needs of individual students.

Summative assessment in the differentiated classroom may be varied in terms of student deliverables. Students may demonstrate that they have met a single set of learning standards through videos, digital presentations, research papers, infographics, visual arts, comic strips, video game development, newsletters, etc.

With access to HQDC, the creative ways in which students can demonstrate what they have learned are endless.

When students are given freedom of choice to express what they have learned, coupled with clear expectations for what their work product must demonstrate, they have opportunities to shine.

Engaging All Students in High-Level Thinking

Student engagement results not merely from content that students find "relevant" or entertaining but more often from content that requires "cognitive work that poses moderate challenge"; that is, frequent opportunities for students to solve problems that present them with an appropriate level of challenge (Willingham, 2009).

The UDL principle, multiple means of engagement, allows students not only to use different modalities when interacting with content but also to make decisions about how to do so, cultivating "executive functions such as goal setting, monitoring one's progress and adjusting approaches as needed, strategy development, and managing information and resources" (Meyer, Rose & Gordon, 2014).

Digital content alone does not help students transition to experiencing higher level thinking, but HQDC that is curated by experts ensures a higher level of student engagement, which results in richer thought. Whether it is a virtual reality experience, an information graphic, or an immersive video clip, HQDC deploys assets that make students want to read a passage, analyze data, solve a problem, or discuss a topic to learn more.

Creating this type of learning ecosystem requires instructional architects who know the materials available to them and understand the pathways that help students reach high-level standards. The architects of HQDC design educational content that works together, which ultimately saves teachers the considerable amount of time it takes to plan instruction that engages all students in higher level thinking and learning.



The promise of this new era rests in the power of digital resources to provide aquitable access to learning.

Conclusion

Our society has shifted from a one-size-fits-all instructional model in which many students did not thrive to an evolved model that aspires to cultivate a supportive, engaging, and rigorous educational experience for every student. In this evolved model, educators regularly employ differentiated instructional strategies and implement personalized learning plans to move the needle on academic outcomes for each individual student. While differentiated and personalized instructional strategies are not new to K-12 education, the accessibility of High Quality Digital Content to support these efforts has brought about a promising era.

The promise of this new era rests in the power of digital resources to provide equitable access to learning. Digital content in isolation is just that—digital content—and it offers little to no added value to the instructional process. However, when High Quality Digital Content is leveraged in the instructional process, the opportunity for equitable access to multiple means of engagement, representation, and action/expression is increased.

High Quality Digital Content built on the principles of Universal Design for Learning breaks down barriers to learning for all students, provides multiple ways for students to shine, and engages them in high-level thinking. When armed with such content and a firm understanding of the principles of UDL, teachers have the tools at their fingertips to effectively differentiate and personalize learning so that students in their charge are more likely to engage, learn and achieve.

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