

Integration of Universal Design for Learning to Focus on Learner Variability

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Online learning currently reaches millions of K-12 learners and its annual growth has been exponential. Industry has projected that this growth will likely continue and has the potential to lead to dramatic changes in the educational landscape. While online learning appears to hold great promise, civil rights legislation and policies—and their application—in online learning, as they pertain to students with disabilities, have been the subject of much less research than is necessary for appropriate policy planning and decision making. Researchers urgently need to develop shared understandings about how online learning affects students with disabilities as they participate in online learning environments, move through their coursework, and transition back to the brick-and-mortar classrooms (or out of school settings in general). Research that claims to focus on students with disabilities in online learning environments should be designed and carried out with particular attention to educational and social outcomes. The Center on Online Learning and Students with Disabilities (COLSD) conducts research in alignment with these goals.

COLSD, a cooperative agreement among the University of Kansas, the Center for Applied Special Technologies (CAST), and the National Association of State Directors of Special Education (NASDSE), is focused on four main goals:

1. To identify and verify trends and issues related to the participation of students with disabilities in K-12 online learning in a range of forms and contexts, such as full or part time, fully online schools, blended or hybrid instruction consisting of both traditional and online instruction, and single online courses;
2. To identify and describe major potential positive outcomes and barriers to participation in online learning for students with disabilities;
3. To identify and develop promising approaches for increasing the accessibility and positive learning outcomes of online learning for students with disabilities; and
4. To test the feasibility, usability, and potential effectiveness of as many of these approaches as would be practical.

To meet the first two goals, COLSD has conducted a number of activities designed to develop understandings about the general status of students with disabilities in online learning. Exploratory research activities included case studies of two fully online schools; several national surveys of purposefully sampled parents, students, teachers, and district and state

administrators; interviews with members of individualized education program (IEP) teams; and a systematic review of one state's student participation, retention, and completion data. COLSD is making an additional effort to describe the landscape of online learning for students with disabilities through a series of forums with different stakeholder groups to obtain an in-depth view, from different perspectives, of the issues and concerns with students with disabilities in online learning. The first forum was held with state directors (or a designee) of special education to obtain the state policy perspective. The second forum was conducted with virtual school district superintendents and other top-level district administrators to obtain the practitioners' perspective. Findings from these forums indicated that views from industry vendors were important, therefore, the third forum was conducted with vendors who provide platforms or resources for use in online settings, or support fully online or blended environments with courses and instructors. The responses gained from the vendors are the topic of this paper.

Forum Participants

This third forum was held with online instructional vendor providers in a face-to-face gathering August 11-12, 2015. Descriptions of the vendors and participant responsibilities appear below. A list of participants (Appendix A) and the forum agenda (Appendix B) are also included in this report. The participating vendors were chosen because they: (1) have status as an organization with a national presence; (2) have been involved in K-12 teaching and learning support strategies, research, and product development in online learning environments for at least 10 years; (3) represent different segments of online learning (e.g., supplemental instruction, fully online programs, and learner management systems) and; (4) provide a variety of supports and products to states, districts, and schools (public and charter) engaged in fully online and blended learning settings. Although the experiences and information garnered from the participants do not represent all vendors in the industry, they do provide an informed sample.

The first vendor, Agilix Labs, founded in 2000, included two administrator participants, the Vice President (VP) of Innovation and VP for Strategic Partnerships. Agilix provides support for personalized online learning through Buzz, a customizable platform, and offers BrainHoney!, a learning management system (LMS). The VP for Innovation examines innovative industry practices to determine how to support and promote them and how to use existing technology for effective innovations to improve teaching and learning outcomes. The work of the VP for Strategic Partnerships includes helping interpret accessibility requirements with such entities as state technology directors, Council of Chief State School Officers, and other industry vendors.

The Senior Director for Student Services represented the second vendor, Connections Education, which has been supporting online schools since 2002. Connections Education is an accredited provider of virtual education in charter and blended schools to K-12 students. As of the 2015-2016 school year, Connections Education supports charter schools in 26 states and seven blended schools in Indiana, Michigan, and Ohio by offering courses, LMS, and instructors as needed. The Senior Director supports fully online schools in which they serve about 6,000

students with a variety of disabilities such as learning disabilities, emotional and behavioral disabilities, and cognitive, motor, and sensory disabilities.

The third vendor, D2L Corporation, founded in 1999, designated the Product Design Manager as the forum participant. D2L offers Brightspace, a LMS, to its K-12 and higher education clients that represent statewide consortia to individual schools. The Product Design Manager's focus includes improving technological accessibility, resulting in two gold level awards (2010 and 2011) from the National Federation of the Blind Nonvisual Accessibility, a leading advocate for Internet access by blind Americans. The Product Design Manager is now increasing focus on personal and classroom accommodations using the Universal Design for Learning framework.

The Director of Research from Edgenuity Inc., a 16-year vendor, was the fourth participant in the forum. Edgenuity creates content in the form of secondary level core, elective, and Career and Technology Education courses. Edgenuity offers supplemental instruction, courses for credit recovery, and is beginning to offer Tier 2 type interventions. The Director of Research conducts studies with districts partnering with Edgenuity to determine the accessibility and effectiveness of the courses and how to improve the course features to impact student learning.

Knovation, helping districts meet the needs of diverse learners for 15 years, sent their Chief Academic Officer (CAO) to participate in the forum. Knovation offers solutions and services centered on its collection of over 360,000 professionally-evaluated, standards-aligned digital learning resources. Knovation's products include netTrekker (find and share digital resources from its collection) and icurio (use digital resources from its collection to design and deliver digital lessons). The CAO works with industry organizations to research and share ideas supporting online learning and has formed a volunteer workgroup to advance UDL with vendors as they create or curate products to support online learning.

The sixth and final vendor Texthelp, founded in 1996, sent their Vice President of Professional Solutions to participate. Texthelp began by supporting reading and writing for people with communication and physical disability issues and are expanding their work to support all learners—including English language learners—through their literacy software. The VP licenses Texthelp software to publishers and large software developers and ensures their software can be accessed on any device, on any platform, so the software can be integrated into mainstream technology for classroom and home use for all learners. Most of their work supports districts and K-12 schools (90%), but they also support individuals, higher education, and government agencies with youth and adults struggling with reading, writing, and communicating.

Forum Topics

COLSD staff reviewed previous literature, revisited findings from previous research activities (e.g., case studies, surveys, and interviews), and evaluated responses from the first two forums to determine the topics for this third forum. As with the previous forums, the

population under consideration consisted of students with disabilities. Therefore, the responses reported are always in the context of meeting the needs of students with disabilities in online learning environments. The 10 topics covered at this forum included:

1. Enrollment, persistence, progress, and achievement
2. Parents' preparation and involvement in their child's online experience
3. IDEA principles in the online environment (e.g., free and appropriate public education, least restrictive environment, due process protections)
4. Effectiveness of teacher preparation in the blended and online learning environment and promising (or negative) practices that facilitate (or negate) professional development
5. Schools and vendors as data collectors and users; effective and efficient access, sharing, integration, and instructional usage of student usage data (e.g. performance scores, clickstream, pages accessed, etc.)
6. Addressing privacy concerns: Vendor access and use of school and student information
7. Integration of universal design for learning (UDL) into courses (e.g. options for how information is presented, the ways in which students can demonstrate mastery, supports for engagement)
8. Instructional practices: Integration of optimal evidence-based practices
9. Availability of students' strategy instruction in online environments (e.g. selection, monitoring prompts for strategy use that support student learning as in reading comprehension or memory strategies)
10. Supervision for online learning in general education and, in particular, for supervision in special education

Prior to the meeting, participants received a packet of materials including the agenda (see Appendix B) and a list of the topics and questions to be considered. The forum began with introductions and a discussion of the importance of considering students with disabilities in the context of online learning. Each vendor then responded to a set of questions about the selected 10 topics. The format of the meeting was framed as a conversation in which participants were encouraged to elaborate, explain, and engage in uptake with one another's comments. Representatives from COLSD moderated the discussions to provide all participants with comparable opportunities to share insights about each topic. Participants responded to three questions (see below) for all 10 topics, and an additional 2-5 questions relevant to each particular topic:

1. How is your organization currently addressing this topic?
2. What is working well for you on this topic?
3. What is the top challenge you face and the direction you see your organization taking on this topic?

The discussion questions serve as the headings in the following text.

[Integration of Universal Design for Learning to Focus on Learner Variability](#)

This seventh vendor forum topic summarizes vendors' perceptions around how (or if) integrating universal design for learning (UDL) into course curriculum or learning systems helps

them focus on the variability found in learners' needs. Despite the existence of well-established technological standards that facilitate physical and sensory access, and the decades old civil rights and education statutes that require equal access to educational opportunity, elementary and secondary students with disabilities in today's schools are routinely presented with online learning systems and content that are inappropriate for their use (COLSD, 2012).

Universal design for learning (UDL) is a framework to improve and optimize teaching and learning for all learners based on scientific insights into how people learn. The framework includes the (1) *why* of learning (interest and motivation); (2) *what* of learning (present content in various ways); and (3) *how* of learning (differentiate ways students express knowledge). Therefore, UDL principles help educators minimize barriers to curriculum and make the curriculum flexible so every student can access materials and resources, thus maximizing learning for a diverse range of students (<http://www.cast.org>). One tool to determine the accessibility of online products is the Voluntary Product Accessibility Template (VPAT). The purpose of the VPAT is to identify the extent to which product developers or publishers offered readily discoverable and publicly available information about product accessibility. This protocol, based on Section 508 standards, can be used to evaluate the accessibility of an online product. The Center has compiled a list of products with their VPAT accessibility features and implementation (<http://centerononlinelearning.org/resources/vpat/>). (Readers should recognize that as vendors complete product modifications and revisions, a product's accessibility will also change.)

Center research confirms the need for online learning systems to be designed for the widest possible range of users, especially to meet the learning needs of students with disabilities (Deshler, Rice, & Greer, 2014). While many online learning systems do offer support and monitoring mechanisms that go beyond basic physical support and sensory accessibility, students with disabilities continue to face many challenges when online systems are not designed with UDL principles in mind (Hashey & Stahl, 2014).

During the 2013 International Society for Technology in Education (ISTE) annual conference, the Center surveyed participants in attendance at a session that introduced UDL and focused on learner variability (COLSD, 2013). Based on the survey, 48% of the session participants were "very or mostly confident" that online instruction was improving the quality of learning for typically-achieving students, but only 28% felt the same way about improving the quality of learning for students with disabilities. When asked if vendors typically consider learning research when they design their instructional technologies, only 16% of the session participants reported that they "strongly agreed or agreed." Finally, when asked if vendors typically consider the needs of students with disabilities when they design their instructional technologies, only 12% "strongly agreed or agreed." The preliminary research indicates a need to explore the extent to which UDL plays a role in learning systems design that could support all students' learning variability.

How important is this topic to your organization?

All vendors, even the ones involved in only supporting curriculum on their platforms, found UDL very important. The vendors that provide online courses or virtual schooling indicated that they are committed to applying UDL principles to their curriculum. One participant has written white papers about UDL for her organization and another vendor has organized an industry work group around the topic. A vendor that provides learning platforms indicated that UDL is important because the framework helps guide their technical updates and functional characteristics for their systems.

What is working well for your organization?

Vendors involved with creating curriculum stated that they are able to provide students with multiple means of representing their learning through a variety of expressions. These vendors develop curriculum and learning rubrics that include UDL principles. They discussed their desire to continue to expand students' choices in their courses and monitor how well their application of UDL principles is supporting students' learning and performance. Finding multiple avenues to learning is just the beginning; they also want to know how students are actually working with these resources so they can continually revise their curriculum and resources to identify and support students' learning pathways.

These vendors are increasing their efforts to design materials using UDL principles but they acknowledged that they can always do better about applying UDL principles. The vendors involved in providing learning platforms and identifying resources are able to use UDL principles to guide their decision-making. The UDL principles help inform their decisions about which resources to include. One vendor gave an example of a group in Texas that was funded to provide additional tags for resources that were found to be especially supportive to students with disabilities and believe that this sort of distinction of resources is very helpful. Another vendor discussed their attempts to provide readability measures for online text resources and this effort was well received.

What are the top challenges you face?

Several vendors discussed that UDL is not well known in the software industry. One challenge is to familiarize software design teams with UDL so they understand the principles and can make objective determinations about product features as strengths and weaknesses. An online course vendor talked about the struggle to incorporate student choice into the instructional materials and the challenge of incorporating new technology tools given the short product-development cycle. They feel they need to figure out how to measure and demonstrate progress.

For the virtual school vendor, a major challenge is embracing opportunities to make courses fully accessible. The vendor has created an employee course, Accessibility for All, and provides a weekly employee newsletter that includes accessibility topics. The vendor also provides accessibility tutorials for their teachers so they create more effective lessons. But, as

in any school, whether traditional or virtual, teacher time is so limited and one of the drivers for teachers to learn about accessibility is having actual students who need support.

Another vendor discussed the challenge of updating or retrofitting existing products to align to UDL principles. The challenges involve both design and funding. This vendor works closely with publishers to add features that will help them come closer to UDL principles so their product will be useful over longer periods of time. Another challenge is that they must consider the different ways browsers behave to make sure they design their solutions in ways that their product will work anywhere on any device.

The vendors that provide learning platforms discussed the common practice of teachers creating curriculum and teachers' inexperience with incorporating features (e.g. adding audio or closed captioning) that promote multiple pathways to learning. Teachers are also challenged to provide a variety of response modes for students to express their learning in the moment. Teachers often use text-based interactions, but more variety would allow for more access to students with disabilities.

How does your staff recruitment and selection consider experience with students with disabilities?

A range of answers was provided to this question. Several vendors responded that this experience is not a requirement to hiring, but they know that employees with this background knowledge on disabilities are good for their organization. The virtual school vendor indicated that having a special education background is important in particular to keep a balance on the curriculum development team as a way to focus on accessibility. A vendor that provides online courses indicated that their company has special education teachers on staff. Another vendor indicated that, in the past when they focused on students with disabilities exclusively, they hired field staff with special education backgrounds.

How do your research and development activities address the needs of students with disabilities?

One vendor that provides learning platforms indicated that they have a lot of research and development activities engaged in finding new and unique ways to further support students with disabilities. The virtual school vendor discussed including students with disabilities (e.g. blind student) into their curriculum test phase for critical feedback. Two vendors discussed having formal research partnerships. One vendor partners with the Center to research to what extent their courses are accessible. Another vendor works with a variety of research partners to make their data available in the research community.

Implications

Some implications can be drawn from the vendors' forum on integrating UDL to focus on learner variability. While the industry is making efforts to design curriculum and services that offer as much accessibility as possible, they admit room exists for improvement. They think

that the industry as a whole needs a better understanding of UDL to guide their design and research teams. Finally, vendors find it extremely costly to retrofit existing products to meet UDL principles.

Based on the discussion, additional consideration is recommended for topics including:

1. How can vendor design and research teams operationalize UDL principles into their products and activities?
2. What are effective metrics vendors can use to monitor their products and services alignment to UDL principles to determine progress and identify areas for revision (e.g. VPAT; UDL scan tool)?
3. What are productive professional development best practices to promote online teacher understanding of UDL principles and curriculum development?

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Appendix A
Forum Participants

OSEP AND COLSD FORUM

Vendor Related Practices and Challenges in Online Instruction for Students with Disabilities

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Appendix B
Forum Agenda

**OSEP and COLSD Forum
Vendor Related Practices and Challenges
in Online Instruction for Students with Disabilities**

AUGUST 11TH AND 12TH, 2015

AGENDA

NASDSE Conference Room
225 Reinekers Lane, Suite 420
Alexandria, VA 22314
703-519-3576

Tuesday, August 11th

- | | |
|---------------|--|
| 12:00 - 12:45 | Working Lunch <ul style="list-style-type: none">• Welcome: <i>OSEP staff and Bill East</i>• Participant introductions: <i>a description of your organization; the targeted audience for your products; your role in the organization</i>• Overview: <i>Explanation of how we hope this discussion proceeds</i> |
| 12:45 - 1:45 | Discussion Topic #1: Enrollment, persistence, progress and achievement for students with disabilities |
| 1:45 - 2:00 | Break |
| 2:00 – 2:45 | Discussion Topic #2: Parent preparation and involvement in their child’s online experience |
| 2:45 - 3:30 | Discussion Topic #3: IDEA principles in the online environment (e.g., FAPE, least restrictive environment, due process protections) |
| 3:30 - 4:30 | Discussion Topic #4: Effectiveness of teacher preparation in the blended and online learning environment; and promising (or negative) practices that facilitate (or negate) professional development |
| 4:30 | Wrap-up, suggestions for improving our process and preview for day two. Dinner plans? |

Wednesday, August 12th

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|-------------|--|
| 8:15 - 8:30 | Review: Review of yesterday and today’s preview |
| 8:30 - 9:30 | Discussion Topic #5: Schools and vendors as data collectors and users: Effective and efficient access, sharing, integration, and |

instructional usage of student usage data (e.g., performance scores, dwell time, pages accessed)

- 9:30-10:15 Discussion Topic #6: Addressing privacy concerns; Vendor access and use of school and student information
- 10:15-10:30 Break
- 10:30-11:15 Discussion Topic #7: Integration of universal design for learning (UDL) into courses
- 11:30 – 12:00 Discussion Topic #8: Instructional practices: Integration of optimal evidence-based practices
- 12:00 – 1:00 Working Lunch – Discussion Topic #9: Availability of students’ strategy instruction in online environments (e.g., selection, monitoring, prompts for strategy use that support student learning as in reading comprehension or memory strategies)
- 1:00 - 1:45 Discussion Topic #10: Supervision for online learning in general education and in particular for supervision in special education
- 1:45 – 2:00 Wrap up: Our next steps with this information: draft a summary; share the summary with you for accuracy and completeness; draft a report on each topic and share with you for edits regarding accuracy and completeness; and complete revisions and disseminate to you and interested parties.
Your closing comments
Reimbursement issues and our closing comments
Thank you and safe travels