Strategy Instruction in Online Environments

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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, a Vice President (VP) of Innovation and a 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. As of the 2015-2016 school year, Connections Education supports full time virtual 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 focuses on fully online schools that 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 around its collection of over 360,000 professionally-evaluated, standards-aligned digital learning resources. Knovation's solutions 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 scientific-based 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.

Strategy Instruction in Online Environments
This ninth vendor forum topic summarizes vendors' perceptions around strategy instruction in the online environment, the idea of directly teaching students *how* to learn. To be successful, students must assume more active roles when learning in an online environment compared to a traditional classroom setting. However, educators cannot presume that all students engage successfully in self-regulation strategies, especially among students with disabilities. Therefore teaching students to use specific learning strategies or improving their executive functioning to access curriculum would be helpful.

(Boekaerts, Pintrich, & Zeidner, 2005). However, in an attempt to study what is happening with strategy instruction in online and traditional environments, the Center found that a lack of (1) collaboration between online and brick-and-mortar schools and (2) parent involvement hindered online educators' ability to analyze the type and degree of strategy instruction that occurs across the two environments (Deshler, Smith, Greer, & Rice, 2014). Communication about the focus and extent of strategy instruction is important to planning and evaluating effective instruction. Because the online and brick and mortar schools have limited collaborative interactions, this information is lacking. Similarly, communications with parents is important to know how much strategy instruction is incorporated as they work with their children. Without knowing what is happening, determining best practices or next steps in strategy instruction is difficult.

During a forum discussion about strategy instruction, state special education directors had a sense that online learning is more focused on learning content, so teachers generally don't monitor *how* students are learning, only *what* they are learning. These directors also discussed that developing students' executive functioning is still considered part of a special educator's role, so general education teachers may not consider this part of their responsibilities, or be prepared to offer this type of instruction. Finally, the directors thought that teachers may be uncertain about whether they are allowed to change curricular content by adding strategy or executive functioning instruction (Franklin, Burdette, East & Mellard, 2015).

Superintendents of online schools also gathered for a forum. These participants discussed the use of outcome data to evaluate students' successful learning strategies in their curriculum. They use these data when redesigning courses or developing new curriculum. These superintendents also thought that integrating executive strategy instruction into online curriculum was a very new field and recognized the need more research in this area (Franklin, East & Mellard, 2015).

How important is this topic to your organization?

Every vendor expressed the critical importance of this topic to ensure that students are accessing content in meaningful ways. The vendors that offer courses or fully online schooling stated that they are intentional in how they incorporate strategy instruction. They embed strategies by designing prompts and cues and explicitly teach comprehension and metacognitive strategies.

From their perspective, special education teachers implement IEPs that consider strategy instruction and its alignment to students' IEP goals and objectives. Teachers might share screens or use a web camera to interact directly with their students in this instruction.

The vendors that offer learner management system (LMS) platforms and online resources talked about strategy instruction as a central design feature. These vendors consider how students will access their materials and develop features to make learning pathways easier. Features include the ability for students to hear the work translated into their first language, see a pictorial representation of the content, or look up vocabulary in

an embedded dictionary. Vendors also consider the age of students, making their interfaces as user-friendly as possible with student-centered features. These vendors recognize the need to understand how students experience their products through how students apply effort and attention to learn. Therefore, they acknowledge the need to increase personalization to create student engagement and persistence, monitor student pathways to optimize their products, and let students know what features are available for them to use. These vendors said that great room exists for improvement, but using such learning frameworks as Marzano and Kendall's (2006) help them focus product design on students' need for self-regulation.

What is working well for your organization on this topic?

Vendors overwhelmingly discussed features that encourage time management and self-reflection, some of which came about after working with students directly to learn how they keep on top of their work. Built-in reminders for course events or assignments support students' self-monitoring process and highlights the process of thinking strategically. Goal setting features, personalized feedback, and self-reflection activities for students help students determine for themselves if they are ready to move on or need more practice. Another vendor discussed features that allow students to monitor whether their time, effort, and interest on tasks makes a difference in understanding content.

Other features also allow student choice in how they go about learning. Students can create a "to do" list that lays out their learning path (e.g. go to the library or work with team members) to keep them engaged in the learning. Another vendor talked about a management feature that allows students to figure out where they left off, how to continue, and how to prioritize what is important without being directed by the teacher or parent. Finally, one vendor discussed engaging a group of close advisors for information about how students are using the vendor products and the vendor can run new ideas past them for input.

What are the top challenges you face?

Vendors try to strike a balance between learning content based on diverse and rigorous standards and promoting strategy instruction within the confines of the system and the timing of the course. A lot of features already exist to integrate and whenever something new is added to an already complex system a lot of work is required to make the integration successful. Offering unique and personalized strategies to promote metacognition is challenging. Vendors want the material and pathways to be interesting and useful in helping students persist in learning. They want to give students freedom to express higher order thinking, but if this approach requires teachers to individually review each student's responses that might create an obstacle to timely and individualized feedback, which is important for students to self-monitor their own learning curve.

The participating online school vendor in the forum reported that getting students to attend live instructional sessions can be challenging. A small study during the 2014-2015

school year found that students who set realistic goals and engaged in meaningful self-reflection were more successful than students who did not. So, this vendor understands the importance of using strategy instruction but needs to get their students willing and able to use the strategies and attend live sessions when the strategies are being taught.

What works best for you in considering or designing learning strategies or executive functioning for students?

Vendors discussed providing online instructors the capabilities to organize course materials and pathways that make the most sense to them. Instructors can do such things as make important information prominent and hide other items that are not in use at the moment or organize all of the assessments in one place. Vendors think about whether to organize links within lessons or allow students to leave the environment to review the linked material. Vendors are intentional about the design of workflow to be sure that what they ask students to do is tightly aligned with course objectives and materials. Vendors thought that reducing the interruptions that require the students to leave the platform will help students persist. They also consider if the course is self-paced or set within a completion time period when they design ways for students to monitor their own progress. Students respond well to graphic representations of their learning progress so vendors include screens with progress meters to maintain interest and motivate students.

A vendor that designs courses considers ways to help promote executive function among students. Their courses include calendars with course events, a way to highlight important information, a note-taking tool, and "quick check" comprehension questions strategically placed in the content. These tools remind students to think about their learning. These considerations are also incorporated in the recruitment and selection of staff. The online school vendor considers strategy instruction when they hire and train their special educators to ensure their staff teaches and promotes strategies for student independence and persistence.

The vendors believe that an especially important consideration is to embed teacher tools that formatively assess student learning and allows easy access to specific data. This helps teachers identify and address any learning gaps quickly. The online environment allows for feedback to be delivered more quickly than in brick-and-mortar settings so teachers can provide necessary redirection to improve student learning. One vendor found that by using a visual roadmap that displays what the student accomplished on that day prompted students and teachers to initiate conversations between themselves about the learning and the content.

Familiarity with the programs is also an important consideration. Vendors offering resources must assume a level of familiarity with their tools such that students know how and when to use them because they are not directly working with students. They embed instructional videos so students can learn about available tools (e.g. pictorial representations of words, embedded dictionary, note-taking, translation) and how to access them if they don't already know.

Do you view strategy instruction as a general education or special education focused activity?

Every vendor indicated that strategy instruction is effective for every student, although students use the strategies differently. Because of this difference, the tools need to be flexible so they are valuable to everyone yet specific enough to support diverse learning needs. Some discussion revealed the belief that not as many secondary level teachers are proficient in strategy instruction compared to elementary teachers and that reading teachers probably have the most strategy instruction training. This professional development emphasis is important because ultimately online teachers have to promote the use of the tools so students' learning time is not lost and that redirecting them happens quickly and efficiently.

Implications

Some implications can be drawn from the vendors' topic focused on strategy instruction in online environments. Vendors do consider strategy instruction in their research and development, but admit that much more work and research in this area remains to be done. Delivering strategy instruction in the online environment poses some challenges such as ensuring that appropriate strategies are taught and the students are cued to practice the strategies in their curricular activities. They view a delicate balance in curricular emphasis between offering content and multiple ways to access that content. They also want to simultaneously develop students' self-monitoring of their learning progress and direct the students to think about gaps in their own understanding. Finally, a key implication is the importance of teacher professional development around strategy instruction and teacher and student skill development on the available tools in their particular online environment. Without knowledge of the strategy or how and when to use the tools, the design and intent is lost.

Based on the discussion, additional consideration is recommended for topics including:
1. How do successful online students with disabilities access content and self-regulate their learning?
2. What strategy instruction and tools are most effective for supporting student learning across grade/age levels and content domains?
3. What type of professional development is most effective in preparing online instructors to use strategy instruction to promote learning and self-regulation in students with disabilities?
4. What kinds of partnerships or ongoing collaborative meetings are most useful to bring vendors, schools, instructors, and parents together to determine effective uses of strategy instruction for students with disabilities?

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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
- Welcome: *OSEP staff and Bill East*
- Participant introductions: *a description of your organization; the targeted audience for your products; your role in the organization*
- Overview: *Explanation of how we hope this discussion proceeds*

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

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