Chapter Three

Special Education in Online Learning Environments

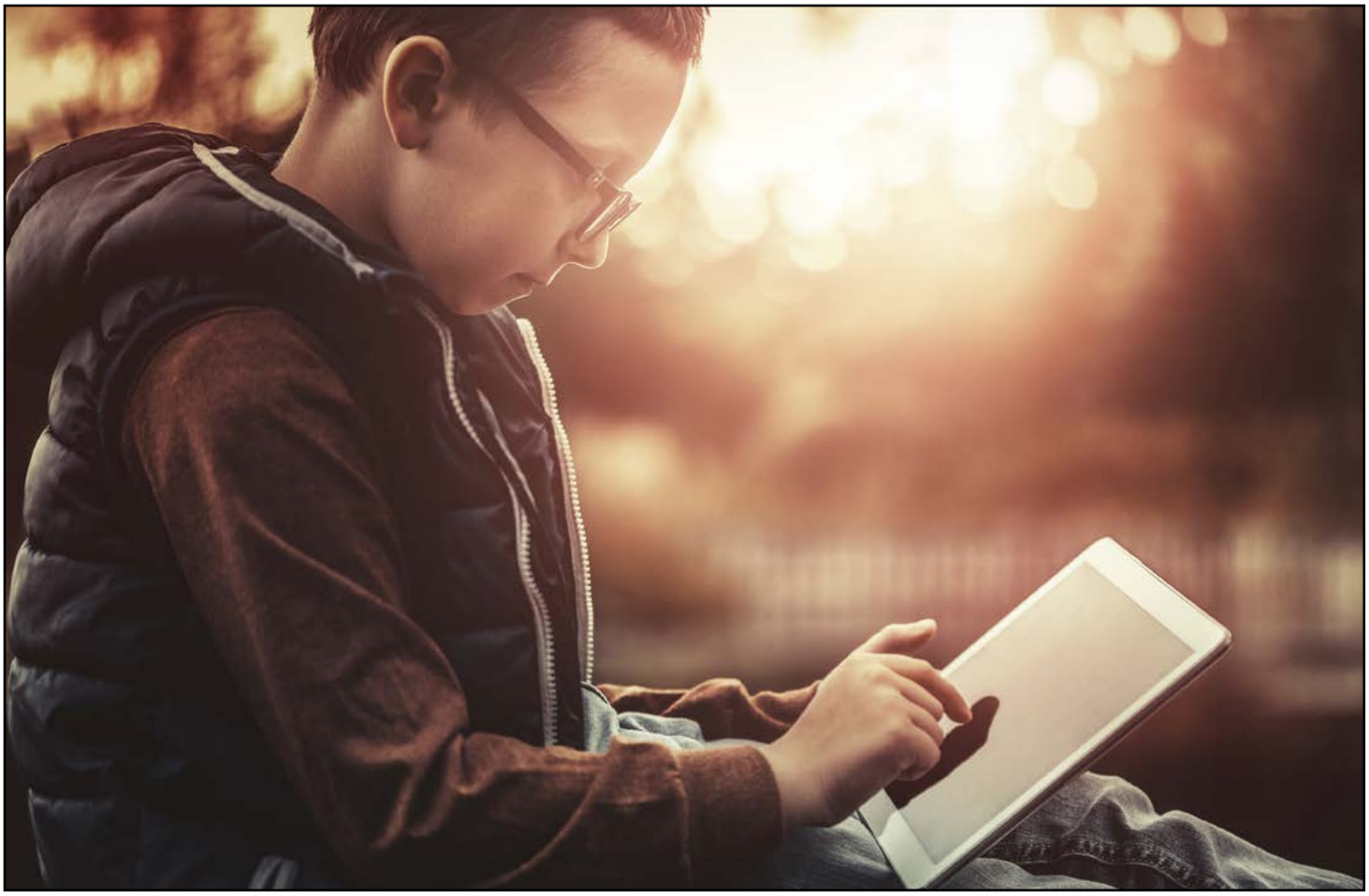
In the United States, students with disabilities are served and protected under the Individuals with Disabilities Education Act (IDEA). Within IDEA, six core principles serve as the backdrop for the framework that governs policies, procedures, and practice.

These principles are:

1. Free and Appropriate Education
2. Least Restrictive Environment
3. Zero Reject
4. Protection in Evaluation
5. Due Process
6. Parent Participation

Since the passage of Public Law 94-142 in 1975, districts across the country have been focused on adhering to the six principles. The recent emergence of digital technologies and online learning environments have forged a landscape unimagined when the principles were developed. In these new learning environments, the challenge for educators is to address the principles in ways that support and protect students in a manner that is, at a minimum, equivalent to what students receive in brick and mortar settings. For example, when a student is identified as having a disability, educators, parents, and other relevant stakeholders have traditionally drafted an Individualized Education Program (IEP) that defines present levels of achievement and establishes goals for academic and social growth. A student's IEP would follow the student if the student changed schools or even moved to another state. When students come into digital educational environments, however, questions arise regarding who is responsible for implementing this plan, or even if a plan developed in a "traditional" setting is appropriate in a digital one. Historically, responsibility for addressing these details lay with the traditional school that the student attended. But now, digital learning options may be delivered locally by national vendors or online schools developed in other states, raising significant questions about who is responsible for designing, delivering, and documenting special education services. Entities that engage students in online learning are presumed to share the responsibility for IEP oversight or manage it entirely, and even parents (who may serve as "learning coaches") now have more responsibility for IEP implementation. Addressing IEP mandates is one of many questions that arise as students with disabilities participate in online learning.

This chapter presents findings from research projects from the Center and its various partners. The first part of this chapter will present findings from a number on studies associated with the IEP and placement of students with disabilities in online settings. The second part



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of this chapter will present studies that were associated with supporting students in online environments. Understanding the intersection of educating students with disabilities and online learning is an ongoing process for the field and the Center. The research summaries in this chapter are not presented as a comprehensive view of practice, but rather as a preliminary examination and consideration from the Center's work to date. This chapter will support collaboration among educational leaders, practitioners, policy makers, researchers, and other stakeholders as they support students with disabilities in online learning.

The IEP and Placement of Students with Disabilities in Online Learning Environments

Since the passage of PL 94-142 in 1975, special education practice in the United States has been guided by the principles of Zero Reject, Protection in Evaluation, Free and Appropriate Public Education (FAPE), Least Restrictive Environment (LRE), Procedural Due Process, and Parent Participation—six legally guaranteed "pillars of practice" in special education. These pillars have guided practice and transformed the lives of millions of students with disabilities and their families. The adoption of online learning in the K-12 education system has redefined the boundaries of practice and the Center's research has sought to examine these principles in this newly emergent environment.

The provisions of FAPE, LRE (and the continuum of placement) as defined by the Individuals with Disabilities Education Act (IDEA) and implemented via a student's Individualized Education Program (IEP) have guided educational practice for millions of students with disabilities for 40 years. However, the Center's work and experiences have indicated that each of these safeguards has been impacted by the integration of full-time virtual, blended, and supplemental online learning into the nation's elementary and secondary education practices. That is, if an online school is recognized by the state, the school is required to comply with all federal and state

laws, rules, and regulations, including IDEA. In the best of circumstances, the digital learning environment provides an equitable environment for meeting the needs of all learners. Alternatively, the digital learning environment can add an additional layer of complexity to an already complicated system.

With the integration of online learning into the education environment, questions emerge, such as whether a fully online placement is considered a separate placement option within the LRE continuum services, or whether an IEP written for a traditional brick-and-mortar setting is suitable for a fully online setting. Several scholars have questioned whether accommodations and other services developed for brick-and-mortar placements are appropriate as a student migrates to online learning, particularly when that migration is to a fully online school where face-to-face instruction is limited or non-existent.[1]

The Center has conducted a series of inquiries and research reviews to investigate the development, implementation, and monitoring of IEPs in online learning environments. Online learning in K-12 settings generally falls into three categories: full-time virtual schooling, blended environments (where students receive some considerable percentage of their instruction online), and supplemental online courses that offer credit recovery or a content area focus not locally available. As previously defined in this publication, full-time online or virtual schooling is when a student attends school through a virtual interface and does not attend classes at a brick-and-mortar building. The Center's work (see research summaries below) has found that IEPs for these virtual settings commonly follow the same established considerations and procedures for IEPs in traditional brick-and-mortar settings. However, IEP services in online settings often require a clearer delineation of the roles and responsibilities of special and general educators, and IEP development and implementation often requires the creation of an IEP specific to that context.[2]

To identify the variables associated with IDEA, the IEP, and the placement of students with disabilities in online settings in particular, the Center has drawn inferences from a number of sources and presents brief summaries of findings.

- As highlighted in the Center's state policy scan (see Chapter 2), very few states or territories have regulations or guidance for supporting students with disabilities in fully online or blended digital settings. Specifically, of the 55 states and territories surveyed, fewer than 25% have any guidance for supporting IEP development and student placement options in online or blended environments.

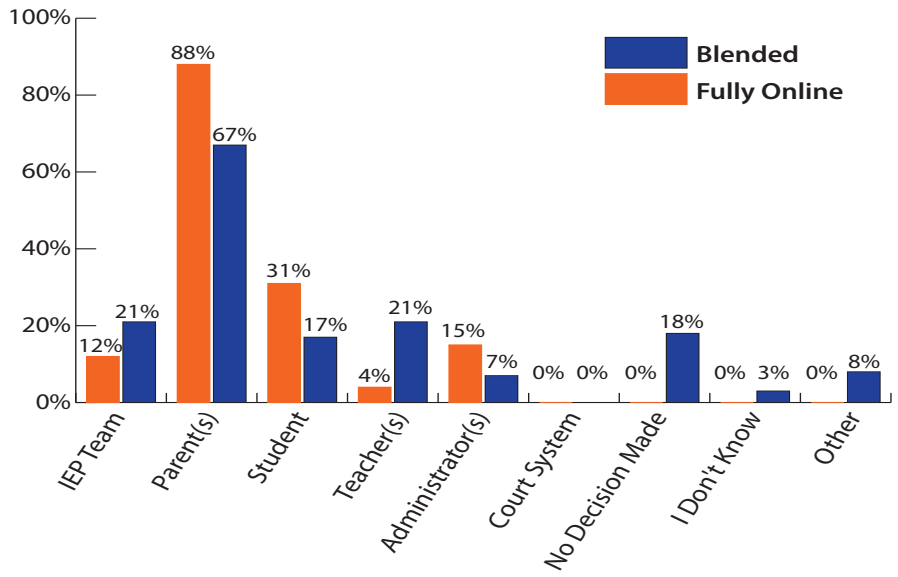
- In a recent study of IEP accommodations, Center researchers obtained a dataset that contained IEP information (including accommodations) on 225 students with disabilities in a supplemental program at a fully online state virtual school. The dataset included primary and secondary disabilities (if applicable), accommodations and other services, enrollment data, and demographic data about the students' brick-and-mortar assigned school and district, racial/ethnic background, and age/grade. A total of 152 unique accommodations and services were being provided to students who represented every major type of disability. Researchers then performed a content analysis of accommodations and services provided to students and grouped them according to district, race/ethnicity, and age/grade, in order to see potential patterns that might require statistical analysis to verify correlation. No discernable patterns were found.

  Next, a team of researchers evaluated the accommodations and services to determine whether they were applicable to the online environment and to classify them into major categories. Researchers found most accommodations and services provided implementation challenges. For example, the accommodation of preferential seating has no bearing in fully online learning because students are not sitting in a classroom. The largest category of accommodations (n=40) dealt with specialized instruction with a trained teacher. Even though face-to-face instruction was possible, no structure existed for providing it within this online course structure. Alternatively, students were able to select when they attended a small group session or make an appointment with the teacher to make sure that the promise made to families of "anytime, anyplace" learning was kept. Accommodations and services that were most applicable to online

learning centered on technology use, (e.g. use of a computer to compose instead of a pencil,) and audio-supported reading. However, these accommodations were not uniquely offered to students with disabilities, as all students enrolled online had access to them. This finding indicated that parents and students may struggle to discern ways in which specialized instruction, as mandated by an IEP, is truly taking place.[3]

- A Center-led survey conducted in a Southeastern state in the U.S. yielded information from 66 respondents: LEA representatives, general and special education teachers, psychologists, and other service providers. Responses indicated that the most prevalent disability categories of students with disabilities engaged in online learning were: specific learning disability (62.1%), emotional/behavioral disability (57.6%), autism spectrum disorder (56.1%), and speech and language impairment (53%). When asked to identify the top three student characteristics most relevant to placement decisions for students with disabilities in online settings, the most frequently-selected option was "learning needs that require support in reading" (42.40%). Following in frequency were "learning needs that require supports in information processing and conceptual skills" (40.90%) and "lack of engagement in traditional brick-and-mortar settings" (30.30%). [4]

Figure 3.1 Who Makes Placement Decisions in Online Learning



- Two separate nationwide surveys of parents of students with disabilities enrolled in online settings were administered in 2012 and 2013. In the 2013 survey, responses from 119 parents of students with disabilities enrolled in online learning (46 students in K-8 grades and 73 students in 9-12th grades) were recorded. Half of the respondents reported having students in full-time virtual schools and half in blended settings. Parents reported the most prevalent disability categories as: specific learning disabilities (29%), autism (13%), other health impaired (13%), speech and language (9%), intellectual and multiple disabilities (8%), and emotional disabilities (7%). In the 2012 survey, most parents had students enrolled in secondary, blended learning environments. These parents identified themselves as the most influential decision makers regarding placement of their students into online environments: In 2012, 88% of parents with students in full-time virtual schools reported making that placement decision, while 74% of parents reported this in 2013. Although parents of students in blended settings reported themselves as slightly lower placement decision-makers at 67% in 2012, these surveys consistently reflect the predominant role parents play in deciding to place their students in online learning settings. Figure 3.1 depicts parent responses to the question, "Who makes the decision to place students in online learning?" [5]

- An initial 2012 survey of state directors of special education indicated that they did not have the data to determine which students with disabilities received instruction through online environments in their states, with nearly half of the respondents being unaware of which categories of disabilities were being served. Those state directors who were aware named emotional disturbance, specific learning disabilities, and autism as the most prevalent disabilities participating in online environments.

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- In a 2012 survey of district-level special education administrators with 94 respondents representing all 50 states, 71% indicated that their understanding was that IEP teams made placement decisions, with 8.2% indicating that parents made those decisions. In a 2013 re-deployment of the same survey, administrators (N=37) indicated that IEP teams made placement decisions had dropped to 49% and 22% reported parents as decision makers. In a 2014 Center-hosted forum, six state special education directors (AZ, FL, GA, MA, OH, VA) reported that no uniform method existed for monitoring placement, persistence, progress, and achievement in online learning settings. State directors indicated that very few, if any, local education agencies (LEAs) had developed ways to collect and assess these types of data. Additionally, they did not have the capacity to evaluate the information based on student disability categories. All administrators agreed that parents, special education staff, and education staff responsible for the enrollment processes for online school environments play a role in deciding what environment is appropriate for students with disabilities, yet no effective plan for monitoring or assessing the appropriateness of these placements exists. [6]

General Impressions

Online education is emerging across the K-12 system and parents of students with disabilities have a large influence on selecting full-time virtual placement as well as other digital learning placement options. Not surprisingly, a student's lack of engagement and progress in a traditional school setting is often identified as a variable in considering online placement potentials. Unfortunately, initial research indicates that what should be a primary driver of services—the IEP—often does not reflect the expanded context within which learning may occur: the affordances and concerns of placing the student in a fully online or blended digital environment. Moreover, while education personnel at the local district level have some understanding of the reasons that parents may choose to place students in online learning settings, the oversight, monitoring,

and reporting of these placement decisions are nearly non-existent, resulting in a lack of information available to the field. Overall, further research is needed to understand the complexities associated with placing students with disabilities in online, blended, or even supplemental online services.

Initial Considerations for Policy, Practice, and Research

Policy: Initial research on policy related to IEP development and placement of students with disabilities indicates that more transparency is needed in how these services are impacted by online, blended, and supplemental placements. Specifically, the Center's experiences and work in the field indicate that very little data from IEPs and online placement decisions are being shared between local education agencies (districts) and states. Beyond basic surveys and leadership forums, obtaining necessary agreements to conduct even initial research has been labor and time intensive for the Center. Because of the complexity in online education, these agreements and projects generally require negotiation with multiple service providers including districts, online schools, and private vendors with whom districts may contract for digital materials and delivery. In addition, contracted online service providers may have multiple sub-contracting vendors (often for online support services such as ASR, glossaries and multi-media dictionaries, survey and assessment utilities, etc.), each of which may require a separate negotiation in order to acquire student-specific information. Establishing guidance policies and associated procedures for assessing, implementing, and monitoring the placement of students with disabilities in online settings could provide those responsible for ensuring that placements are appropriate with the information they now lack.

Practice: State directors indicate that both they and local education agencies lack the necessary data to support active decision making relative to what is working and what could be improved regarding the placement of students with disabilities in online learning. Participants in both the school superintendents' and the vendors' forums reported establishing practices that mandated an IEP review or revision once a student became enrolled in full-time virtual or blended schooling in order to address the contextual differences between brick-and-mortar and online learning. Procedures such as these, that have emerged from day-to-day practice, need to be acknowledged and considered when students with disabilities are enrolled in online learning, especially full-time virtual settings. [7]

Other Center research projects have found that the lack of educator preparation and understanding of online and blended learning

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is a primary concern of all participants in the field of practice. Unfortunately, no simple solution exists for supporting the education of students with disabilities in full-time virtual or blended settings. The initial work within the Center suggests that districts might consider what data exists or how to gather the data necessary for actively making data-based programming decisions about online services. Generally, IEP teams should consider the context, including the benefits and potential deficiencies of online learning environments, prior to placement decisions and programming options around FAPE. Districts and IEP team members might also consider how to obtain the knowledge and skills needed to make placement and programming decisions for students with disabilities in online settings.

Research: From descriptive studies, stakeholder forums, surveys, and other inquiries, additional research questions have emerged. For example, is it possible to interpret a local education agency's lack of an online learning environment among its placement options as a possible denial of FAPE for some students? Would an online environment be considered the LRE for students with health issues? For those students at risk of dropping out? Those students served under the juvenile justice system? Are decision makers — parents, school personnel, IEP team members and others — well enough informed about what the online environment entails to make placement decisions? These and other research questions persist. [8]

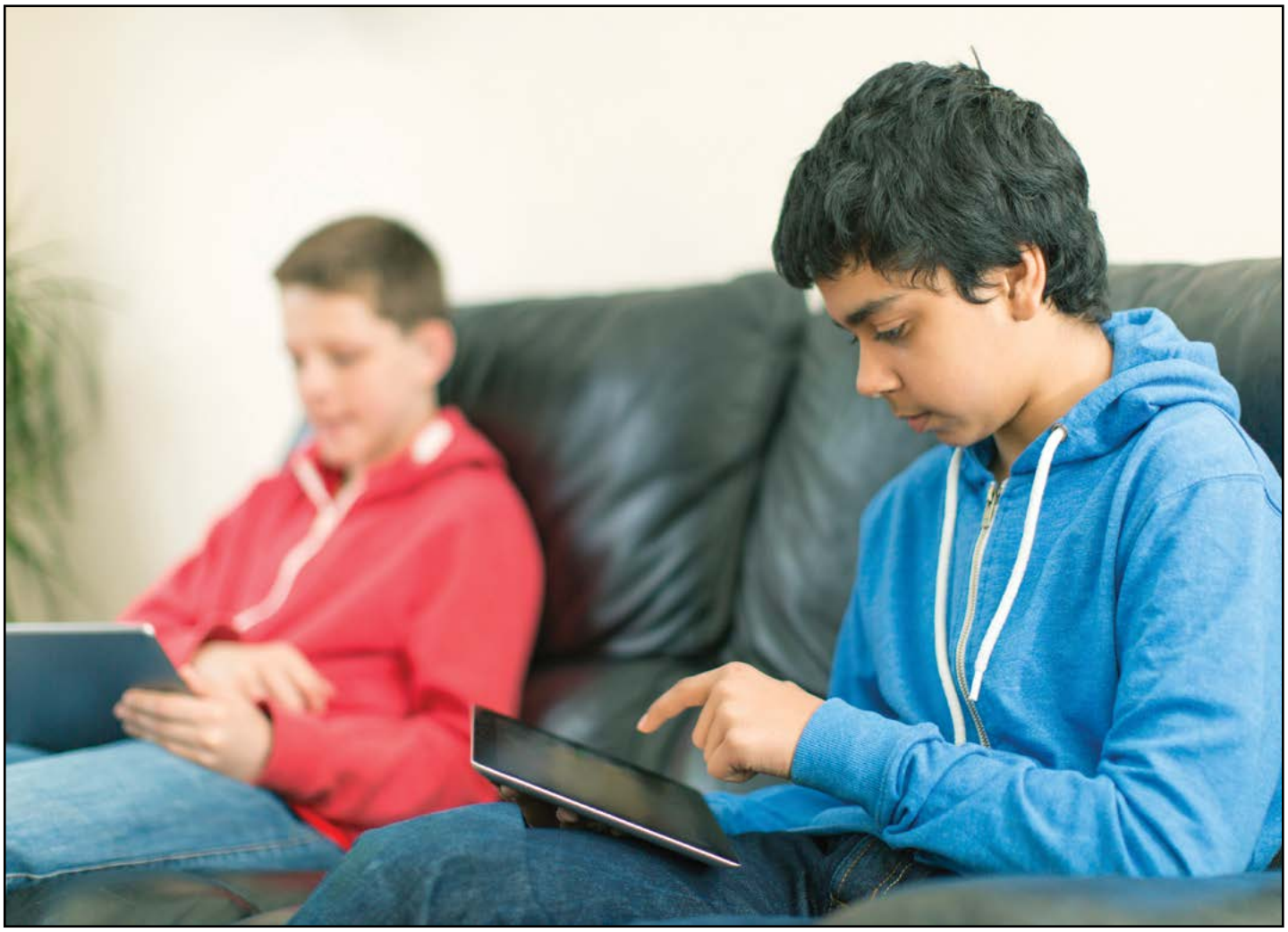
Conducting large-scale research projects in online and blended learning is challenging. The complexities associated with the lack of required data collection/reporting, multiple public and private service providers, and a rapidly evolving field of practice make such research difficult to initiate, conduct, and maintain. That being said, a profound need persists to understand the newly emerging relationships among the IEP, placement of students, and online settings. From a research perspective, developing agreements that provide access to the necessary data for answering critical questions and encouraging greater understanding across the field of practice is a time consuming, yet necessary, undertaking. The Center has identified that research collaboratives involving the LEA, the online school, and the online vendor (if different) is the recommended approach to gain access to all the necessary data and decision-making pathways impacting students with disabilities. Without understanding the students (demographics), their academic outcomes (achievement), and the resources and activities in which they engage in (system usage), only partial determinants emerge. Researchers are encouraged to pursue explorations that involve all of these components.

Importantly, the next section of the chapter will review findings that provide insight on supporting students with disabilities in these online environments.

Supporting Students with Disabilities in Online Learning

Introduction

All teachers need pedagogical and instructional design skills. With the rapidly evolving use of computers and other devices in their instruction, teachers should be able to integrate technology into their practice. Teachers using the Internet as either the primary or sole medium of interaction with students are additionally charged with implementing new pedagogical strategies as part of a reconceptualization of teaching and learning. As students perform digital learning tasks—absent the immediate supervision of teachers, parents, or other supervisors—students, too, must assume more active roles in their own learning. This transformational learning environment requires students to assume greater self-regulation of their own learning. For all students—but for students with disabilities in particular—self-regulation strategies cannot be presumed to exist and can be encouraged by the effective use of online-specific instructional strategies and learning supports embedded in online systems. [9]



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Research indicates that students with disabilities face a variety of challenges as they attempt to participate in and engage with curriculum via the supplemental, blended, or full-time virtual contexts of online learning. In particular, teachers whose experience and expertise is primarily with brick-and-mortar practices are often unprepared to transition to using online offerings. Effective transitioning requires attention to the context of the learning environment and, for students with disabilities, ensuring that proper support practices and technologies are in place. The Center's work confirms that full-time, virtual online environments are vastly different from traditional brick-and-mortar or blended learning settings. When these contextual distinctions are effectively addressed, many students with disabilities can experience considerable success in online learning. For example, the online environment provides teachers with an opportunity to collect extensive information about students' approaches and responses to instructional tasks. This information can be monitored in real time to allow targeted, timely feedback, and adapt the learning tasks to improve learning and performance. [10]

Center and other research confirms the need for online learning systems to be designed with the widest possible range of potential users in mind. This design involves focusing on technical aspects to ensure that instructional content and navigation elements can be rendered or acted on in multiple ways—auditory, visual, tactile, etc.—either natively via embedded options or cooperatively by supporting third-party assistive technologies. Further, many online learning systems offer mechanisms for supporting and/or monitoring student engagement, moving support beyond basic physical and sensory accessibility and into the realm of Universal Design for Learning (UDL). [11]

To begin to identify the challenges faced by students with disabilities in online settings and the factors that help address those challenges, the Center has explored a number of findings.

- During a Center-hosted forum of six state special education directors, participants indicated that they uniformly perceived online education as differing substantially from face-to-face practice, and that the integration of evidence-based practices in online teaching was doubly challenging. First, the directors indicated an impression that evidence based practices from traditional instructional settings are not assumed to be effective in the online environment. Because the online learning environment is a different instructional and learning experience from the brick-and-mortar classroom, a generalization of efficacy or effectiveness should not be assumed. For example, in the online environment, the concern is that the instructors implementing lessons are not always responsible for creating the lesson plans, and, as a consequence, more room exists for erroneous interpretation and lower implementation fidelity. Second, the most salient question that arose was whether empirically tested, evidence-based practices previously used in traditional classrooms are sound when transferred to the online environment. The shared perception was that the existing research is insufficient to support any virtual instructional practices as evidence-based.

  Participants also noted that changes in teacher evaluation procedures are necessary in order to hold instructors accountable both for teaching and developing students' learning abilities and skills (i.e., helping them become more strategic learners). They observed an increased emphasis on ensuring students are learning what they need to learn, but less emphasis on assuring that students have access to information and an understanding of how to acquire necessary information. As a result, some SEAs are beginning to address how teachers are delivering content in order to help them challenge the deficit of instruction on executive functioning.

  Collectively, forum participants expressed three important issues in addressing the topic of evidence-based instructional practices and the availability of strategy instruction in the online environment: 1) teaching of content, 2) teaching of executive functioning, and 3) trust needed between educators and the state and local education agencies in order to make the shift toward more learning strategy instruction. Integration of evidence-based instruction in the online environment was viewed by several participants as the most important of all of the forum's topics. They noted that integrating such instructional practices was not an issue discrete to special education, nor solely applicable to online or technology-enhanced education. The teaching of course content was discussed in terms of how the implementation of evidence-based instructional practices applies to instruction across students' grade and ability levels, content areas, and settings. Teachers feel pressured to teach to the content requirements and approved curriculum, which does not always include teaching specific learning strategies or executive functioning skills. Teachers also feel pressure to focus on curricular content as instructional time is limited and students' content knowledge is assessed by local, state, and national assessments (students' performance is viewed as an evaluation of their teacher). [12]

- Center researchers obtained data from 921 students in a large, urban, Midwestern school district in the U.S. These data were collected from students in grades 9-12 who were taking supplemental online courses as a means of credit recovery. English/language arts was selected as the course for analysis because this subject is one that all students study and is required for multiple years (often three or more) during high school. Selecting English/language arts for the data collection ensured that data came from a course in which students were generally familiar with the subject matter and the types of tasks that might be assigned in the course.

  Researchers analyzed the moderating effects of several variables on learning outcomes: 1) gender, 2) race/ethnicity, 3) free/reduced lunch status (as a proxy for socioeconomic status), 4) disability status (with a disability or without), and 5) status as an English language learner. In order to eliminate the chance of obtaining findings that might be based simply on reading ability, researchers controlled for this variable against a standardized reading score. Finally, researchers included the age of students in the analysis in order to ensure

that higher grades were not simply earned by older or younger students. Researchers found that males, on average, earned slightly higher final grade percentages than females. In addition, students from African-American and mixed racial backgrounds in this data set scored a higher grade percentage than students with other racial/ethnic backgrounds tested. Status as an English language learner and free/reduced lunch eligibility did not predict low course grades. However, students with disabilities—of all genders, racial/ethnic, and socioeconomic backgrounds—were more likely to earn low course grades than did students without disabilities. In fact, disability status was the only major predictor of having a low course grade percentage in the class.[13]

- Center researchers studied the accommodation actions of four teachers in three content areas (English, math, and physical education) and three special education administrators. These educators worked together as a team at a large, state-sponsored, online program offering full and part-time classes. Each educator participated in 4-6 research interviews during a three month period. In addition, researchers were given access to artifacts that teachers shared directly, or to which their school permitted access. Major types of artifacts included interaction records with parents, students, and teachers, as well as data from IEPs. After data collection was completed, educators gave additional perspectives.

  In this study, researchers examined the process by which accommodations were provided to students as they progressed through their coursework. They determined that the exercise of authority emerged as an important factor. State and local administrators and teachers all emerged as decision-makers, and each could use this authority to impact educational practice. However, further analysis indicated that teachers had few options for exercising authoritative decision-making. They were beholden to parents to engage with them (return phone calls/texts, etc.), and tasked with adhering to pre-packaged lessons in the course content. Teachers did report efforts to modify the curriculum and noted support from special education administrators who leveraged their knowledge of special education law to mediate between teachers, students, and their families. Ultimately, teachers came to rely heavily on the strength of relationships (with parents, students, and administrators) to support students with disabilities. Through these relationships accommodation decisions were made, often above and beyond what IEP plans required. Teachers made significant efforts to establish cooperative relationships so that students would be forthcoming about their educational needs.[14]

- Researchers investigated the impacts of traditional evidenced-based reading supports on digital texts. This study included 14 middle school students, each with an identified learning disability specific to reading comprehension. Students were asked to read two passages, both at the 6th grade reading level. Both passages were online and featured digital text, a text-to-speech function, and digital images to help expand the students' reading comprehension. Between the first and second passage, students completed an online lesson that introduced the basics of a visual support in the form of a graphic organizer that could be used to assist reading comprehension. The second passage embedded this visual support into the passage. Students were asked to complete a pre- and post-test for both passages.

  As the passages and items of similar reading levels were placed on the test forms at random, the two tests were geared to have equal difficulty. The pretest contained 10 items and 10 possible points, while the post-test had nine items and nine possible points. Consequently, the totals for both tests were computed as proportion correct. Results from this inquiry indicated significant benefits to reading comprehension with the introduction of embedded visual supports into the process of instruction.[15]

General Impressions

In many instances, educators are having difficulty conceptualizing and enacting their new roles in online environments. Responsibilities may include:

- Designing digitally enhanced instruction.

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- Integrating evidence-based practices in the digital environments.
- Quickly interpreting larger sets of student data.
- Managing and recommending tools for learning, designing curriculum that truly leverages the capabilities of the technologies.
- Relinquishing some classroom control to the learners.
- Encouraging and designing systems to support student self-regulation.
- Explaining their roles and responsibilities to other stakeholders, particularly parents.

Powerful partnerships can emerge as teachers and districts integrate these new approaches. Districts, teacher preparation institutions, researchers, and vendors can learn from these partnerships by reviewing how the design of technology-enhanced, evidence-based environments can improve systems and practices focused on all learners, including those students with disabilities. [16]

Initial Considerations for Policy, Practice, and Research

Policy. Research-based policy guidance designed to inform stakeholders about the selection and use of online materials, their appropriateness for use by all students, and their educational efficacy, is needed (see section on Practice). As these systems become more proliferate, maintaining an accurate catalog or listing of advantages, disadvantages, and high quality educational materials is a lofty goal, one that might be addressed via crowdsourcing or an expansion of resources such as the Learning Registry (http://learningregistry.org/), an

initiative supported by the United States Department of Education. Additionally, providing educators and parents with decision-making tools is likely to foster and increase positive experiences with online learning.

Beyond gaining facility and skill in selecting and using digital materials and delivery systems, teachers need specific guidance and mentoring to address the demands and responsibilities inherent in full-time virtual teaching. In blended environments, the expectations on teachers shift yet again as they are asked to incorporate online skills into face-to-face settings. As referenced in the state and territory scans, some states are beginning to offer (or require) endorsements and/or certificates in online teaching, and these initiatives should be closely observed for their impact on teacher practice and their applicability to a more broadly-embraced teacher certification policy.

Practice. Districts embracing supplemental, blended, or full-time virtual opportunities should thoroughly review the systems and materials they intend to integrate prior to investing large resources in the process. These reviews should consider various stakeholders and the systems and practices needed for supporting all learners, including students with disabilities and those students with other diverse learning needs, and the teachers who support them. Specifically important is investigating the usability and feasibility of different tools from the perspectives of learners, teachers, and, as warranted, parents or caregivers. Considerations should include how a system or tool will be used by a student with diverse learning needs (e.g., a student with comprehension issues, low reading ability, English-language learner, difficulty in socializing online with others, limited technology skills), in the context of the normal class or case-load of a teacher, and in consideration of a parent who has his/her own variability (e.g., might not understand the content, speak English, or have a good understanding of technology skills). Because educational policy is often far removed from daily interactions with children within the confines of a family or household, much of the responsibility will fall on the schools. Within the school—in blended and supplemental online settings in particular—teachers have the most contact with students, therefore, supporting and sustaining teachers in the process of teaching and learning in digital environments is critically important.[17]

Research. The Center perceives a need to explore how technology can play a role in helping teachers and related-services staffs build and maintain relationships with (and for) students with disabilities and their support system (e.g., parents) in online learning environments. Existing research also suggests the need for further exploration of pedagogical skills in the online environment. Additional research should also examine how the perspectives of culturally, linguistically, and ethnically diverse parents may impact student engagement and outcomes in online learning. Fostering online collaboration skills offline might involve having teachers and parents meet formally, and, aside from communication around specific students, to learn with and from one another using technological tools.

In full-time virtual (and many blended) settings, if teachers and parents share roles to ensure student success, additional research is needed: What prompts, sustains, or threatens the stability of role sharing? How can teachers and parents prepare to engage in interactions with students (and one another) that are different from what occurs in brick-and-mortar settings? What characterizes the home setting and parental involvement for students achieving high success in online learning? Additional research is also needed regarding university and college schools of education and how they prepare teachers for designing and delivering instruction in digital learning environments.

Endnotes

1. Repetto, et al. 2010, Rhim & Kowai, 2008 and Cavanaugh & Clark, (2007). All raise concerns about the wisdom of adopting, in online settings, special education or service plans designed for brick and mortar settings. Greenway & Vanoureck (2006) re-articulate the significant distinction that exists between traditional classroom instruction and individualized support available in brick and mortar settings and the extent to which these are, or can be, implemented in online schools.

2. These differences in IEP development and delivery were articulated by the leaders of online schools spanning each of the three structural categories (full-time virtual, blended, and supplemental) in a School Superintendent's Forum hosted by the Center in March, 2015. (http://centerononlinelearning.org/publications/center-research/). A similar perspective was offered by a participant in the COLSD Vendors Forum in August, 2015 by a representative of a full-time virtual service provider who indicated that their operations involved direct responsibility for IEP implementation. The need to approach IEP development from a contextualized perspective was also referenced by Wicks, M. (2010) and Rose, R. M. (2007).

3. Independently, researchers rated accommodations and services, and then inter-rater reliability was calculated using Cohen's Kappa (k=.81), which is a very strong agreement (McHough, 2012).

4. IEPsurveyreport.pdf; COLSD.

5. Burdette, P. J., & Greer, D. L. (2014). Online Learning and Students with Disabilities: Parent Perspectives. *Journal of Interactive Online Learning,* 13(2).], Retrieved from http://www.ncolr.org/jiol/issues/pdf/13.2.4.pdf.

6. The District Administrator Survey Results indicate a shift in perspective from 2012 to 2013 with an increased reporting of parents as placement deciders. In a Center-hosted forum, state directors reported that placement decisions were far from uniform, that little eguidance existed for that process, and that local level practices varied site to site. Practices and Challenges in Online Instruction for Students with Disabilities: State Education Agency Forum Proceedings Series (Report No. 1).

7. East, B., Burdette, P. , Greer. D (2103), Perspective from State Special Education Directors on Online Learning, COLSD White Paper Series, retrieved from http://centerononlinelearning.org/wp-content/uploads/Perspectives_from_State_Special_Education_Directors_on_Online_Learning_2013.pdf
School superintendents forum; vendors forum; COLSD, http://centerononlinelearning.org/publications/center-research/.

8. http://centerononlinelearning.org/what-state-directors-of-special-education-need-to-support-students-with-disabilities-in-online-education/#more-1835.

9. Self-regulation challenges for all learners, and the extended challenges faced by students with disabilities are cited by Boekaerts, Pintrich, & Zeidner (2005). Coppa, (2004) and Patrick, Kennedy, & Powell (2013) also address the distinctions raised for students and teachers between online and face-to-face learning. Borup, West, Graham, & Davis, (2014) discuss the importance of adolescent self-direction in online settings and Curtis (2013) reviews the key role of parents as learning preceptors for students in full-time virtual settings.

10. Serianni & Coy (2014) found that students with disabilities taking math classes online were afforded a far greater opportunity for adjusting the pace of their work to their individual learning styles. Simultaneously, they also experienced increased demands related to time management and planning. Currie-Rubin & Smith (2014) found that in full time virtual settings the parents of students with disabilities were needed to commit extended time to support their learners. The context of online learning – where, when and how it occurred – was addressed by Smith & Basham (2014) and further validated by the Center's School Superintendents Forum discussions. Retrieved from http://centerononlinelearning.org/publications/center-research/.

11. Hashey & Stahl (2014) summarize the challenge faced by students with disabilities when faced with online systems not designed with these learner needs in mind. Bakia, et al (2013) emphasize the importance of addressing all of the Universal Design for Learning principles (beyond just physical and sensory access) in their review of a variety of online algebra courses.

12. Retrieved from http://centerononlinelearning.org/?s=forum.

13. Deshler, D., Rice, M., Greer, D. (2014, April). *Which demographic variables predict final grades for high school students enrolled in online English/ELA courses? Results from a regression analysis.* Presentation at the annual meeting of the American Educational Research Association. Philadelphia, PA.

14. Greer, D., Rice, M. & Carter, R. A., Jr. (2015, April). *"Like they're the only ones": Online educators providing special education services.* Presentation at the annual meeting of the American Educational Research Association. Chicago, IL.

15. A paired samples t test was conducted with proportion correct as the dependent variable. Students performed significantly better when reading the passage with embedded visual supports, t (13) = 2.90, p = .013. The effect size was large, d = 1.02. Rice & Greer (2014).

16. Greer, Smith, & Basham (2014) found professional development and teacher training opportunities related to online learning to vary widely site to site. Greer, Rowland, & Smith (2014) reiterated the importance of viewing the process of online instruction as distinctly different from traditional face-to-face practice.

17. School Superintendents Forum, March, 2015; Vendor Forum, August, 2015. Retrieved from http://centerononlinelearning.org/publications/center-research/.

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