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About Us

Currents in Teaching and Learning is a peer-reviewed electronic journal that fosters exchanges among reflective teacher-scholars across the disciplines. Published twice a year, *Currents* seeks to improve teaching and learning in higher education with short reports on classroom practices as well as longer research, theoretical, or conceptual articles and explorations of issues and challenges facing teachers today. Non-specialist and jargon-free, *Currents* is addressed to both faculty and graduate students in higher education, teaching in all academic disciplines.

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EDITORIAL

Teaching students with disabilities: concepts, approaches, and practices

— Martin Fromm

Amidst continuing public concerns about social inclusiveness and diversity in higher education, the question of where we stand in regard to the inclusion of students with disabilities is a topic worth addressing. Has the passage of civil rights legislation making discrimination illegal and mandating the availability of accommodations leveled the field of learning for students with disabilities? Are there specific and practical instructional techniques that can surmount social and academic barriers to their full inclusion in the college experience? How do instructional accommodations for this student population relate to broader academic standards and best practices in teaching? The articles in this issue address these concerns, inspired by a shared belief that designing effective approaches to teaching students with disabilities is integral to creating a robust learning environment for students from all backgrounds and ability levels.

While noting the importance of federal regulations making discrimination illegal and the significant increase in the number of students with disabilities enrolling in college, the authors in this issue share a concern that attitudinal and structural barriers continue to impede these students' successful integration into higher education. They argue that these students' college success is contingent on improving contextual factors such as social climate and attitudes, raising levels of empathy among instructors and students, expanding opportunities for active inclusion in activities on and off campus, and instructors' openness to multiple teaching methods. These articles contend that superficial accommodations are not enough – there needs to be more extensive, pervasive, and sustained evidence-based research on, development of and training in teaching this population effectively.

In regard to high-impact instructional techniques, Universal Design is a recurring theme as a model for creating an inclusive and flexible learning environment. More broadly, these authors identify and describe approaches to scaffolded learning, the use of multiple modes of representation, and other techniques that enhance student autonomy, empowerment, participation, and inter-connectedness with other students. Through these lenses, they argue persuasively that accommodating the needs of students with disabilities is fully in alignment with and integral to best practices of teaching in general, and promises to elevate the quality of the learning experience for all students.

They collectively present a vision of higher education that is inclusive and integrative while being responsive to the individual's particular learning needs, suggesting that attention to individuality and integration go hand in hand in the higher education learning endeavor.

In their contribution to the issue entitled "Universal Design and College Students with Disabilities: Does the Data Equal the Zeal?", Michael Faggella-Luby, Nicholas Gelbar, Lyman L. Dukes III, Joseph Madaus, Allison Lombardi, and Adam Lalor draw attention to the significant gaps that remain in the current scholarship on effective teaching practices for students with disabilities. Focusing on the much-vaunted Universal Design approach, the authors identify "a paucity of empirical research" and "a considerable disparity between the total number of articles on Universal Design related to instruction and learning (see abstract below) and the limited number of studies including either group designs or measures of learning outcomes." For this reason, the studies that have been conducted are not conclusive regarding the actual impact these techniques have on students learning outcomes. Examining the state of the field on this topic, Faggella-Luby et al. call for a shift from descriptive, perception-based studies toward evidence-based research that can provide faculty with firmer guidance in how to incorporate Universal Design more effectively into their teaching.

Universal Design is featured prominently in Kimberly S. Austin, Edlyn Vallejo Peña, and Beth Brennan's piece in this issue. In their qualitative study of "Promising Instructional Practices for College Students with Autism," they point out that "the [UDL] principles of multiple means of representation, multiple means of action and expression, and multiple means of engagement were clearly evident" in these practices. In particular, they point to "'experimental,' 'experiential' and 'hands-on' techniques along with assignment scaffolding, a "strengths-based structure of adjustments and accommodations," and collaboration with other teaching units as essential components of a teaching repertoire that can address ASD students' issues with social nuances, "sensory overload," and time management.

Looking beyond specific instructional strategies, Lauren Hensley discusses the influence of broader contextual factors, what she refers to as the aggregate and constructed dimensions of the college environment, in "How the College Environment Shapes Learning Opportunities for Students with Disabilities." Observing obstacles to the social and academic integration of students with disabilities in spite of anti-discriminatory regulations and increased rates of college enrollment, Hensley argues that a "chilly climate" conveying the "nonverbal message" that "students with disabilities are unwelcome and unsupported in the college environment" persists. Once again referring to universal design principles, she suggests "inclusive approaches to learning that break down walls between groups of students" and approaches that affirm "dignity, equality, and community as three core values of higher education."

Sheryl Burgstahler, in her teaching report entitled "Fully Including Students with Disabilities in Online Courses: Tips for Instructors," transfers these concepts to the online learning environment. As with "face-to-face" contextual factors, the online interface can include "inaccessible features such as disorganized content pages, uncaptioned videos, and PDF files and other course materials that cannot be read by screen readers" that present barriers to students with disabilities. To overcome these hurdles, Burgstahler introduces instructional techniques ranging from alternative textual and communication methods to scaffolding and assessment strategies that can make online learning more accessible to students from diverse backgrounds and consistent with universal design principles.

In regard to transforming the contextual factors to create a more inclusive environment for students with disabilities, Alice Tesch Graham, Gia A. Renaud, Martha McCann Rose, and Kathryn Rok turn to service learning as a key approach to achieving this goal. In "Service Learning: The Bridge to Engagement, Empowerment, Integration and Learning for Students with Exceptionalities," they discuss a program that "seeks to prepare teachers who can build that bridge." The authors describe the potentially transformative impact of service learning for both instructors and students, and they argue that "the perspective shifts towards seeing students with exceptionalities as individuals who take ownership of newly developed skills and dispositions and who exhibit a can-do commitment to learning," a shift that "focuses on the strengths of individuals, establishing relationships and building community connections."

Julie K. Corkett, in her contribution to this issue entitled "Using Simulations to Develop Pre-service Teachers' Empathy and Understanding of Exceptionalities," argues that inculcating empathy in instructors is essential to an inclusionary environment for students with disabilities. Introducing a week-long simulation technique as a form of empathy-inducing experiential learning for pre-service teachers, she describes a process by which participants experience "all three phases of empathy: sensitivity, cognitive and inhibition." The author suggests that this week-long process, which involves "experiencing a range of emotions," "identifying, evaluating and understanding the challenges faced by individuals with exceptionalities," and "adjusting and regulating their personal perspectives," results in a more comprehensive and contextualized experience than the widely criticized short-term simulations.

In "Clips and Links," Kayla Beman provides information regarding useful online resources pertaining to teaching students with disabilities.

The book reviews selected by our Book Review Editor, Kisha Tracy, address the issue of disabilities in higher education from two angles. In John Antony Pavan and Stephen M. Shore's (edited volume) *College for Students with Disabilities: We Do Belong*, reviewed by Nicole Lopez-Jantzen, eleven essays explore first hand the experiences of being a student with a disability and advocate for a more complete inclusion of this student population in college. Meghan Cosier and Christine Ashby's (edited volume) *Enacting Change from Within: Disability Studies Meets Teaching and Teacher Education*, reviewed by Alyssa Hillary, provides instruction for educators who are interested in incorporating disability studies into their teaching techniques, and discusses the philosophical and institutional tensions that complicate these efforts.

This issue would not be possible without the generous contributions of those who agreed to serve as reviewers and copy editors. Their time and talent are essential for upholding the journal's commitment to scholarly excellence. They are, in no particular order, Barbara Jacoby, Mark Wagner, Dan Shartin, Sam Johnston, Don Vescio, Charles Cullum, Julia Belser, Christina Bebas, Cleve Wiese, Gilly Salmon, Elena Cuffari, Emmanuel Nneji, Hardeep Sidhu, Jay Kuder, Emily Soltano, Blair Hodges, Elizabeth Siler, Christina Santana.

I also must thank members of the Editorial Advisory Board, whose perceptive insights and recommendations help to sustain the innovative direction of the journal. They are, again in no particular order, Charles Cullum, Emanuel Nneji, Dan Shartin, Kisha Tracy (also Book Review Editor), Cleve Wiese, and Daron Barnard. My thanks once again to the web designer, Amanda Quintin, whose elegant design contributes to a pleasurable reading experience. I look forward to deepening our partnership with the university's Marketing Director, Sarah McMaster. I also once again want to express my appreciation for the enthusiastic support and guidance of Linda Larrivee, Dean of the School of Education, Health, and Natural Sciences, who is forging ahead to expand the journal's impact and visibility.

Universal Design and College Students with Disabilities: Does the Data Equal the Zeal?

— Michael Faggella-Luby, Nicholas Gelbar, Lyman L. Dukes III, Joseph Madaus, Allison Lombardi, and Adam Lalor

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Nick Gelbar is an Assistant Professor in Community Medicine and Health Care at the University of Connecticut Health Center and serves as the Research Director at the University Center for Excellence in Developmental Disabilities (UCEDD). Dr. Gelbar earned his PhD from the University of Connecticut in Educational Psychology with a concentration in School Psychology. He is also a licensed psychologist whose clinical and research work focus on adolescents with Autism Spectrum Disorders.

Dr. Lyman Dukes III, Ph.D., is a Professor and Program Coordinator of Special Education at the University of South Florida, St. Petersburg. He is co-editor of the book, Preparing Students with Disabilities for College Success: A Practical Guide to Transition Planning and has published and presented extensively on topics related to postsecondary education and students with disabilities. His current research interests include transition from school to adult life, universal design in postsecondary education, and guidelines for research on postsecondary education and disability.

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Allison Lombardi received her M.A. degree in Education from the University of California, Berkeley, and Ph.D. from the University of Oregon. She is currently an assistant professor in the Department of Educational Psychology at the University of Connecticut. Her research interests include college and career readiness for students with disabilities and promoting inclusive instruction among university faculty.

Adam Lalor, Ph.D., is the Lead Educational Specialist with the Landmark College Institute for Research and Training. He received his Ph.D. in Educational Psychology from the University of Connecticut. His research interests include the postsecondary transition of students with disabilities and the preparation of college faculty and administrators to serve students with disabilities.

Abstract

Increasing numbers of students with disabilities in higher education have served, in part, as a catalyst for reexamining access and instruction in colleges and universities. Universal Design related to instruction and learning (UD-IL) in postsecondary education is a widely referenced practice often regarded as evidence-based. This literature synthesis reviews empirical articles on UD-IL models specific to postsecondary settings and matriculated students with disabilities. Findings support not only a paucity of empirical research, but also further illustrate a considerable disparity between the total number of articles on UD-IL and the limited number of studies including either group designs or measures of learning outcomes. Implications associated with UD-IL as an evidence-based practice and recommendations for improving future research are identified.

Keywords

universal design, universal instructional design, universal design for learning, postsecondary education, disability

Introduction

The number of students with disabilities choosing to pursue postsecondary education has steadily increased since the passage of Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Subpart E of Section 504 requires that "postsecondary education programs and activities . . . that receive or benefit from Federal financial assistance" (Rehabilitation Act of 1973; §104.41) must provide both access and accommodation to matriculating students with disabilities. Current estimates of the number of documented students with disabilities attending a college or university is approximately 11% (U.S. Department of Education, 2015). Interestingly, this percentage accounts for only about half the number of students with disabilities pursuing postsecondary education. As Newman & Madaus (2015) reported, approximately 50% of students who received special education services in high school and subsequently enrolled in a postsecondary institution choose not to self-disclose their disability.

Changing societal demographics add yet another layer of complexity to both access and instruction in postsecondary education. Racial and ethnic diversity, the number of students with disabilities, first generation college students, and the number of students classified as being of non-traditional age have all increased academic diversity in higher education (McGuire & Scott, 2006). Moreover, the total number of these academically diverse students is projected to continue to trend upward. Higher education has a duty to adapt its policies, procedures, and, particularly, its instruction to an increasingly academically diverse student population.

Evidence-based Instructional Practices & Postsecondary Education

There have been recent calls for the use of evidence-based instructional practices in higher education (Dukes, Faggella-Luby, Lombardi, Madaus, & Gelbar, 2017; Shaw & Dukes, 2013). In addition, accountability metrics such as graduation rate and timeliness to graduation render postsecondary institutions increasingly responsible for facilitating the achievement of students' academic goals (Lombardi et al., 2016). Indeed, the U.S. Department of Education recently funded the National Center for Information and Technical Support for Postsecondary Students with Disabilities (NCITSPSD) whose mission is the provision of technical support concerning promising practices applied in postsecondary institutions serving college students with disabilities (Dukes et al, in press). However, recent studies have determined a significant disparity with respect to empirically validated pedagogical practices designed to serve students with disabilities, in particular (Madaus, Gelbar, Dukes, Lalor, Lombardi, Kowitt, & Faggella-Luby, 2016; Peña, 2014).

The fact that postsecondary faculty play a significant role in improving the academic experiences of students with disabilities is a persistent theme in the professional literature (Fichten, Asuncion, & Scapin, 2014; Hartman-Hall & Haaga, 2002; Salzer, 2012; Stumbo, Hedrick, Weisman, & Martin, 2010; Wilson, Getzel, & Brown, 2000). For example, college students with disabilities report feeling most successful when faculty clearly communicate course material and expectations, apply engaging instructional strategies (e.g., hands-on and/or small group activities, scaffolded assignments), and make connections to prior knowledge (Madaus, Scott, & McGuire, 2003). Even so, many universities do not offer professional development training to faculty regarding the use of effective (i.e., evidence-based) and inclusive instruction nor are they made aware of legal obligations with respect to students with documented disabilities (Raue & Lewis, 2011). Methods of instruction based upon the concepts of Universal Design (UD) have emerged over the last two decades as an instructional methodology whose intent is to enhance access and outcomes for a range of academically diverse learners, including students with disabilities.

Enter Universal Design

The earliest tenets of UD were formulated by Mace and colleagues at the Center for Universal Design (n.d.) at North Carolina State University. The intent was, and remains, to apply a set of development and design principles to both products and the physical environment in order to permit their use by the maximum number of individuals regardless of ability (Connell, et al., 1997). Indeed, a number of significant societal changes set the stage for a barrier-free ideology to proliferate, including longer life expectancy, resulting in more people with impairments later in life; technological innovation, e.g., adaptive and assistive technologies; and legislative mandates, e.g., Americans with Disabilities Act, 2008 (Dukes, Walker, & Kmetz, in press). In time, these principles were adapted for use and applied to educational contexts.

Universal Design in Postsecondary Education. The UD models applied in education drew inspiration from the original UD tenets and applied them to support curriculum access to the widest range of students (Dukes, et al., in press). UD, in an academic context, is applied to the design and delivery of curriculum, to instruction, and to assessment in a manner that maximizes access and participation for all students, including students with diverse learning needs. A secondary intent is a reduction in the use of retroactive accommodations for students with disabilities. Generally, there are three prevailing UD models reflected in the postsecondary literature on students with disabilities, which will subsequently be described.

Universal Instructional Design. Silver, Bourke, and Strehorn (1998) presented what is perhaps the first application of UD to postsecondary education. Based on the original concept of UD in the product/physical environment, this model includes its application in K-12 education to improve curricular access for all students while specifically creating a context of support for students with disabilities. Silver et al. chose the term Universal Instructional Design (UID) and, over time, eight principles of UID were developed. These are the following: (1) Creating welcoming classrooms, (2) Determining essential components of a course, (3) Communicating clear expectations, (4) Providing timely and constructive feedback, (5) Exploring use of natural supports for learning, including technology, (6) Designing teaching methods that consider diverse learning styles, abilities, ways of knowing, and previous experience and

background knowledge, (7) Creating multiple ways for students to demonstrate their knowledge, and (8) Promoting interaction among and between faculty and students (e.g., Goff & Higbee, 2008). For example, research has demonstrated the efficacy of the UD approach in K-12 settings related to instruction in reading instruction via reciprocal teaching (e.g., Coyne, Pisha, Dalton, Zeph, & Smith, 2012), writing instruction (e.g., Hall, Cohen, Vue & Ganley, 2015), and informal science settings (e.g., Rappolt-Schlichtmann, Daley, Lim, Robinson, & Johnson, 2013).

Universal Design for Instruction. The second model for UD is called Universal Design for Instruction (UDI). This is a model that has been primarily applied in a postsecondary educational context. It reflects the reality that academic diversity in higher education is the norm, thus instructors should plan, in advance, for a heterogeneous student population (Dukes, Waring, & Koorland, 2006). UDI's nine principles, seven of which were adapted from Mace and colleagues, provide a model for course preparation, implementation, and assessment of student outcomes (McGuire & Scott, 2006). These nine principles are as follows: (1) Equitable use, (2) Flexibility in use, (3) Simpilicity and intuitiveness, (4) Perceptible information, (5) Tolerance for error; (6) Low physical effort, (7) Size and space for approach and use, (8) A community of learners, and, (9) Instructional climate.

Universal Design for Learning. The third UD model is called Universal Design for Learning (UDL). It is a model developed by the Center for Applied Special Technology (CAST) and is perhaps the best known of the models (Meyer, Rose & Gordon, 2014). Originally intended for K-12 education, it has been applied to postsecondary education as well. Its three principles, with a corresponding subset of 9 guidelines and 31 checkpoints, spell out a means of providing multiple options for how students take in information, for practicing content, for expressing understanding of content, and for motivating learners. The three principles are as follows: (1) Provide Multiple Means of Representation, (2) Provide Multiple Means of Action and Expression, and (3) Provide Multiple Means of Engagement. These principles can be applied to all aspects of instruction including learning objectives, methods/materials, and the assessment of learning as experienced by all students, including students with disabilities.

To date, there is no unified model of UD, thus it is common to find examples throughout the literature of misuse, misrepresentation, or missing explanations of UD principles. In an effort to both synthesize and identify commonalities among the various UD models, Orr and Hammig (2009) conducted a literature synthesis on UD and identified five primary themes across several of the models: (1) Backward design, (2) Multiple means of presentation, (3) Inclusive teaching strategies and learner supports, (4) Inclusive assessment, and (5) Instructor approachability and empathy. These themes span across the UD models that are described in the literature on postsecondary education and disability and point to the perceived potential benefits of UD. Further, a comparison of relative strengths and weaknesses across the models for those interested has been conducted by others (see Rao, Wook Ok, & Bryant, 2014) but is beyond the scope of this analysis. Finally, given that there is no unified model, the term UD-IL will be used to reflect the various UD models applied in higher education.

The Promise and Momentum of Universal Design

Despite these issues, there is widespread appreciation and intuitive appeal for UD-IL in the postsecondary educational community. In 2001, the Association on Higher Education and Disability (AHEAD), an international professional organization related to students with disabilities in higher education, began its "Universal Design Initiative." The intent of the initiative is to promote UD-IL in higher education, to explore strategies that can be used in member institutions, to promote access to the curriculum for diverse populations, and to provide resources and training (AHEAD.org, 2016).

UDL is included in the Higher Education Opportunity Act of 2008 (Edyburn, 2010). It is defined in the legislation as "a scientifically valid framework for guiding educational practice" (P.L. 110-315; §103(a)(24)). The legislation further states that UDL "provides flexibility in ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the way students are engaged" (§103(a)(24)(A)) and that UDL "reduces barriers in instruction, provides appropriate accommodations, supports and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient" (§103(a)(24)(B)). The regulations specifically required that Institutes of Higher Education that prepare teacher education candidates provide descriptions of how UDL is incorporated into their programs, made this a requirement of a proposed grant program to prepare teachers, and supported faculty development grants to encourage the use of UDL at the postsecondary level.

Since the publication of Silver et al. (1998) nearly 20 years ago, UD-IL has progressed from an appealing practice to an accepted practice, and is now endorsed in federal legislation. While the application of UDL in K-12 settings has been studied, the evidence base for its use in higher education via Universal Design for Instruction, Universal Instructional Design, and Universal Design for Learning (UD-IL) has not been studied to date as a distinct environment. The intent of the present study is to examine the literature base related to UD-IL in higher education, including research settings, samples, methodologies employed, and key findings.

Methods

The current study presents findings from an updated secondary data analysis in which a systematic review of the literature on postsecondary education and students with disabilities was conducted (e.g., Dukes et al. (2017). Methods for the current study are presented herein, however a thorough explanation of the methods applied in the initial systematic review, including the iterative process for domain and sub-domain development, can be found in Dukes et al. (2017). A review of relevant literature included a Boolean search using electronic databases (listed alphabetically) Academic Search Premier, ERIC, Medline, and PsycInfo with the search terms: (university student or college student or postsecondary education) AND (disability or visual impairment or hearing impairment or deaf or ADHD or dyslexia or blind or handicapped or mental illness or mobility impairment). Initial results for the years 1955-2012, generated 9,131 possible articles. Based on a review of these articles, a hand search of peer-reviewed articles was also completed and expanded the date range back to 1951 in twenty-five specific journals associated with disability and higher education (e.g., *Journal of Postsecondary Education, College Teaching, Journal of College Student Development, Journal of Student Affairs Research and Practice, Higher Education, and NACADA Journal*.) To be included in this review, the publication had to either be coded in the appropriate domain (citation masked for peer review) as being related to a UD-IL model or use the word "universal" in its title or abstract. These publications were then screened against the inclusion criteria as described below.

To update the list of articles for the current analysis, the following additional procedure was utilized. First, procedures outlined in Madaus et al. (2016) were repeated for the existing literature 2012-2015. This included repeating the electronic database and hand searches for abstract reviews of articles that fit the inclusion criteria with the additional search term "universal design." Hand searches were conducted of the five most cited journals based on the initial review. Second, articles were given unique identifiers and coded by two members of the research team, with one member randomly assigned as the primary coder.

Finally, a third comprehensive list, the DO-IT Knowledge Database, of UD-IL publications was also referenced (see Center for Universal Design in Education, 2016). Databases were subsequently combined, duplicates were removed, and titles and abstracts of every article were examined by two members of the research team using the following inclusion criteria: First, the article was published in a peer-reviewed journal and focused on postsecondary education and students with disabilities (including articles related to students, faculty, disability services, college personnel, and emerging constructs and models related to service delivery or assessment). Next, the article included information

related to students accepted to, matriculated in, withdrawn from, or graduated from a postsecondary institution. Any article primarily concerned with the transition of secondary school students to postsecondary settings (i.e., not yet accepted or matriculated) or about secondary transition programs in general were excluded. Finally, the article discussed the application of UD-IL for classroom instruction at the postsecondary level. The concept of UD-IL had to be applied to developing courses or other learning materials or teaching courses at the postsecondary level. Articles about using UD-IL for products or buildings (i.e., architecture), or teaching future teachers, engineers, or architects about the concept were excluded.

Each article that met screening criteria was examined using the original coding instrument (see Madaus et al., 2016) by two members of the research team. The initial examination included items about whether an article presented original data through the use of surveys, measurement or evaluation tools, direct observations, or interviews. Studies were then coded for the following features: research method, study location (domestic or international), and setting (2-year or 4-year degree program). Related sample demographic data including disability categories was also gathered. In the current study, the UD-IL model highlighted in each study was also coded. Team members met to resolve any coding discrepancies and achieve consensus when necessary.

Results

Across the three sources, a total of 106 publications met inclusion criteria. UD-IL articles have been published in 60 discrete journals, however, 49 of these had published only one article that met inclusion criteria. In fact, only four journals published more than three articles and the *Journal of Postsecondary Education* has published the greatest number of articles (n=30). The earliest article meeting inclusion criteria was published in 1998. As depicted in Figure 1, the number of publications has steadily increased over time. In addition, articles presenting data have consistently increased over time, and, since 2013, more have presented data than not.

Overall, approximately 59% of the articles did not present original data (n=62; see Table 1). Of these, the vast majority were categorized as literature reviews (n=52). Of the 44 articles that presented data for 45 total studies, approximately 38.6% were qualitative studies, 36% were descriptive quantitative (e.g. survey), and 8.2% utilized a mixed methods approach. Articles that investigated interventions utilizing group designs (n=3) represented 7% of the total, thus indicating that 93% described the attitudes/perceptions of students and/or faculty/staff members concerning UD-IL.

Analysis of the UD-IL Models

The UD-IL models that were the primary focus of each article were coded as depicted in Table 2. UDL was the most utilized model across all articles followed by UDI and then by UID. Numerous publications did not specifically address any model (n=32), but discussed other models. Of these, ten addressed UD as a general concept without delineating a specific model. For articles that noted a specific model, 47% of the UDL and 41% of the UDI publications presented data, with a lower proportion of the UID articles (29%) doing so.

Overall Study Unit of Analyses

Unit of analysis describes the participant population under study. It is important to note that one article presented two studies so the number of studies analyzed was 45. Across the study corpus, 20 studies isolated students only while 15 isolated faculty only. Nine studies included measures of both student and faculty participants with one remaining study measuring sound levels in a classroom environment. The resulting total number of student-focused studies is 28, with 24 studies including faculty as the unit of analysis.

Studies Implementing or Changing Practice

Unit of Analysis. Of the 45 studies, only 23 studies involved implementing or changing practice relative to UD-IL principles. Of these, 13 isolated students only while 3 isolated faculty only. Seven studies included measures of both student and faculty participants. The resulting total number of studies involving students as the unit of analysis is 20 with 10 studies including faculty as the unit of analysis during implementation.

Content/Academic Course of Study. The content or academic course of study ranged widely across the 23 implementation studies with multiple courses of study in some publications, thus resulting in the total exceeding 23. The largest number of studies (n=13) included STEM-related fields. Although the term was used as a general descriptor in several articles, Biology (n=4), Chemistry (n=2), Human Ecology (n=2) and Health Science (n=1) were specifically examined. In the remaining cases, four were conducted in Psychology and three each with UD-IL as a general pedagogical approach in English/Language. Arts, and Social Science. Literacy, Social Work, History, Library Research and Learning Management Systems (e.g., Blackboard) were included twice. The course of study was unclear in two cases (Seok, DaCosta, Kinsell & Tung, 2010; Fovet& Mole, 2013).

Dosage. Within the implementation studies, the dosage refers to the length of each session, frequency of meetings per week, and total time per participant during implementation. These variables are necessary when generalizing findings of research to unique settings. The majority of studies (n=12) did not provide sufficient information on length of session during implementation. However, six studies took place between 5 and sixty minutes, one between 60 and 120 minutes, two between 90 and 150 minutes and, finally, two studies between three and four hours.

With regard to frequency of session, these similarly included a majority of studies (n=15) with no explicit information about the number of meetings per week. Six studies met only once per week and two studies met for two days per week. The total time per participant was more routinely reported with just four studies not providing sufficient information to determine total time. The majority of studies occurred over one full semester (n=8) with two additional studies taking place in five to seven week sessions. Four studies only held a single meeting, while four other studies met for two to four occurrences. Finally, in one case a (Utschig, Moon, Todd, & Bozzorg, 2011) longitudinal examination of faculty UD-IL implementation across six semesters in which students completed single semesters was conducted.

Study Setting and Demographics

Location. The majority of the studies that presented data were conducted in the United States (~73%; n=33).[1] Of these, 31 were carried out with samples including students at 4-year institutions.[2] Similar to the data regarding dosage, the majority (n=19) took place in an unspecified postsecondary environment. The next most common study setting was online or by email (n=14) and in a classroom (n=9). One study each was conducted in a private study room, hotel, and a library. For comparison purposes, among the 23 implementation or change studies, 8 occurred in the classroom, seven online or by email, and six unspecified. One study each was conducted in a private study room and library.

Demographics of Participants. As portrayed in Table 3, 27 articles included college students as participants and 23 included non-students as participants. Seven of these articles presented data from samples including both students and non-students.[3] Across the articles including student and non-students, the plurality had sample sizes of between 11 and 50 participants. Similar to the larger literature mapping project (Madaus et al., 2016) these articles did not provide detailed information regarding the demographic characteristics of their samples. Disability categories and gender were the most common demographic characteristics reported (though they were reported in less than 50% of the studies). Race/ethnicity and class standing were rarely reported as demographic characteristics. For the samples collected with non-students, faculty members were the most likely group to be included in the samples.

1 One study was conducted with a sample of individuals both from the U.S. and Canada.

2 The type of institutions from which samples were drawn was unclear in two studies.

3 One study presented data that was not collected from human participants, but measured recordings of classroom noise level to inform the accessibility of classroom for individuals with hearing impairments in a Universal Design for Hearing context (Cheesman, Jennings, & Klinger, 2013).

Demographics of Implementers. Studies were implemented overwhelmingly by the authors (n=30) across all studies followed by instructors (n=10), librarians (n=2), unspecified (n=2), and disability service professionals (n=1). For the 23 implementation or change studies, 11 were conducted by the authors, followed by instructors (n=8), librarians (n=2), unspecified (n=1), and disability service professionals (n=1).

Disaggregated Data by Demographic Variables. Disaggregated findings are necessary for understanding impact on specific populations of students, and in particular the impact on students with different disabilities. Moreover, while UD-IL practices target all students for instructional delivery, there is a responsibility for members of the research community in special education to note any particular disabilities included in the subject population as well as report out the specific impact of the UD-IL practice on each sub-group of students with disabilities to accurately judge the potential benefits of the intervention. Across all 28 studies including students as subjects, only four studies disaggregated data by disability type. An additional six studies examined only one disability population, thus allowing for a clearer measure of impact. Of the remaining studies, nine examined demographic data in some capacity (e.g., gender) but not by specific disability and nine did not disaggregate data in any manner. However, among the 20 articles implementing or changing practice that included students as the primary unit of analysis only one study disaggregated data by disability type and an additional four studies examined only one disability population. Of the remaining studies, seven examined demographic data in some capacity but not by specific disability and eight did not disaggregate data in any way.

Measures

There were seven types of measures across all 45 studies with the largest portion utilizing Surveys/Questionnaires (n=32) followed by focus groups (n=12) and interviews (n=10). The remaining measures included observations (n=5), written journals (n=4), and a rubric (n=1). Strikingly, only four studies across all studies included measures of learning outcomes whether proximal (e.g., individual assignments or tests) or distal (e.g., GPA, course completion, persistence). All of the four studies examined implementation or change. Finally, there were five studies that observed classrooms for evidence of practice, but no formal treatment integrity or fidelity measures were used across the 45 studies.

Discussion

In higher education the UD-IL concept is nearly 20 years of age and has shifted from an appealing to an accepted practice. Even so, there is a paucity of empirical research given the seemingly 'universal' zeal for UD-IL in postsecondary education, with only 44 data-based articles published to date. In fact, the literature base displays a trend toward publications that are primarily descriptive in nature (Rao, Ok, & Bryant, 2014). Of the data-based articles, the majority have focused on student and faculty perceptions, with a dearth of investigation exploring the impact of UD-IL on student outcomes. Furthermore, results should be considered in light of limitations with regard to the research designs employed, narrow understanding of participant demographics and almost no measures of treatment integrity. Study findings suggest the following trends: (a) both students and faculty value the principles of UD-IL but may perceive their impact differently, (b) the impact of UD-IL on academic outcomes for postsecondary students is, at best, mixed or, at worst, virtually non-existent, and (c) further training and support for UD-IL instructional practices is necessary so that we may move beyond faculty buy-in to implementation with fidelity.

Perceptions of UD Principles

Adoption of UD-IL, or any new practice, is often driven by faculty belief that the practices are valued by the students, effective in improving academic outcomes, and reasonable to implement. Therefore, it is important to point out that several studies reveal that students self-report valuing the benefits to learning of specific UD-IL related intervention (e.g., lecture capture technology, library search training, study guide improvements, and use of tablet devices; Watt, Vajoczki, Voros, Vine, Fenton, & Tarkowski, 2014; Zhong, 2012; Tzivinikou, 2014; Foley & Masingila, 2015 respectively). Further, students report valuing instructional practices such as having information presented in multiple ways, increased flexibility, social presence, reduced stress, and perceptions of enhanced success in UDI infused courses (e.g., Kumar, & Wideman, 2014; Rao, Edelen-Smith, & Wailehua, 2015; Rao & Tanners, 2011; Catalano, 2014).

Feedback, however, was not entirely positive. Students noted challenges with taking exams online and communication via email only (Catalano, 2014). In an examination of learning management systems (i.e., BlackBoard type environments) students interviewed noted that modules provided an overload of irrelevant information and were not consistent or transparent relative to the UD-IL principles (Habib et al., 2012; Webb & Hoover, 2015). Faculty and student-reported perceptions were also not always consistent. In a study by Seok, DaCosta, Kinsell & Tung (2010) comparing student and faculty perceptions of UD-IL practices in an online course, faculty perceived them to be more effective than students (Seok et al., 2010). This type of comparison is essential for judging the palatability of UD-IL practices.

Faculty Awareness and Application

Faculty that participate in UD-IL training report increased awareness of student needs, including students with disabilities, as well as the recognition that UD-IL may also better integrate "millennium learners" (Fovet & Mole, 2013). Similarly, faculty participating in UD-IL training are concerned about meeting the increasingly diverse learning needs of students, have an interest in acquiring instructional strategies, and desire training and technical assistance in pedagogical methods including UD-IL (Izzo, Murray, & Novak, 2008). In fact, students perceive that instructor training in UD-IL applications may increase their classroom implementation of such methods (Schelly, Davies, & Spooner, 2011). Additionally, longitudinal research indicates that for faculty that are trained in and apply UD-IL practices over time, their students report higher satisfaction rates, though their implementation could be categorized at three levels of fidelity from high to moderate to low (Utschig et al., 2011). Such perceived variation in application is consistent with another study (Davies, Schelly, & Spooner, 2013) that compared UD-IL trained to untrained faculty finding no differences between implementation of UD-IL principles across groups but, instead, variation by instructor. Taken collectively, this body of literature may indicate the need for prolonged professional development to guide implementation. Further, success of appropriate accommodations, including practices synonymous with UD-IL (e.g., providing course content in multiple modalities), requires students and faculty working together (Aguirre & Duncan, 2013). However, while perception of buy-in and impact are potential contributing factors to faculty adoption, understanding impact upon learning is the most relevant benchmark.

Academic Outcomes

Postsecondary institutions have an interest in the adoption of UD-IL practices, but have appropriate questions regarding their impact upon academic measures (Kmetz, Frechette, Dukes, Emert, & Brodosi, 2016). However, only four studies measured student outcome data in relationship to the implementation of UD-IL methods. Street and colleagues (2012) implemented a peer mentoring program, Mastery Peer-Led Team Learning (MPLTL), in which UD principles were infused, with the goal of improving academic outcomes of participants with disabilities. Although students experienced high levels of satisfaction and self-efficacy at program outset, distal findings on program data, STEM persistence and GPA, indicated the program appeared to provide minimal levels of support (Street, Koff, Fields, Kuehne, Handlin, Getty, & Parker, 2012).

Over two years, Moon, Utschig, Todd & Bozzorg (2011) evaluated the SciTrain University instructor training model for students in STEM courses by providing training in teaching practices associated with principles of UD-IL. Training resulted in high rates of implementation as observed in instructor classroom practices (e.g., class note takers, improved oral communication, visual aids, and electronic learning support). However, while there were general improvements in course completion rates and earned grades, a course-by-course comparison showed no improvements for stu-

dents with disabilities. Additionally, faculty application was not evenly distributed, with implementation variability potentially explaining more about outcomes than the actual training. No specific measures of fidelity or treatment integrity were collected in this study making implementation impossible to confirm.

Simoncelli and Hinson's (2008) case study embedded UD strategies into an online history course for students with learning disabilities. Similar to the limited findings of the Moon et al (2011) research, Simoncelli and Hinson could not definitively conclude that the changes were helpful in improving academic performance, though students positively perceived the UD aligned changes. Finally, in a large undergraduate one-term biology course, Bongey and colleagues (2010) planned, implemented and delivered a UDL infused class that included students with disabilities (Bongey, Cizadlo, & Kalnbach, 2010). Although students had positive perceptions of the UDL-infused curriculum, faculty reported that implementation required 15 additional preparation hours per week. Moreover, and perhaps most notable, based on the proximal variable of grades the UDL-infused curriculum did not result in an improvement in participant grades (Bongey, et al., 2010)[4].

This finding that few empirical studies on the effectiveness of UD-IL on student outcomes exist fits within the existing literature (McGuire, 2014; Roberts, Park, Brown, & Cook, 2011). Moreover, it may be understandable given that (1) UD-IL as applied to postsecondary education is a relatively new construct requiring time to judge effects of implementation, (2) there are multiple UD-IL models, and (3) there are no standardized or even common means of assessing UD-IL practices across the existing models and across settings. Understanding of the specific impact of UD-IL course and curriculum development requires consistently measuring learning in the form of academic outcomes.

Limitations

Results should always be weighed in light of potential study limitations. First, as indicated in previous reports by the current authors (Madaus et al., 2016) publications on disability and postsecondary education in general and UD-IL in particular are being regularly issued. It is critical, as the current findings demonstrate, as research is completed that it be synthesized along with other similar efforts. Without synthesis, one cannot see the forest for the trees, so to speak. Second, the publications included in the current analysis may not be all-inclusive. Study methodology included the use of multiple databases, and hand and ancestral searches. However, the use of a narrowly defined search term (universal design) may have unintentionally excluded relevant articles. To compensate for potential oversight, the study methodology included the use of double coding when making a determination of publication inclusion or exclusion. Finally, the current study was, by default, reliant upon the clarity of the existing research when identifying relevant study components such as academic skills, setting, dosage, instructor, and fidelity. At times, it was challenging to clearly ascertain specifics of the data, therefore, leaving much about the current research base unknown, unclear, or unspecified.

Implications and Future Directions

Though the UD-IL construct in higher education was posited nearly 20 years ago, its research base and, in particular, its reported efficacy remains limited. This comprehensive literature review determined that 44 articles presented original data, and only three employed a comparison design to identify the impact of UD-IL practices on student outcomes. Despite these limitations, the existing research indicates value and social validity of the construct, requiring further study. Encouragingly, research on UD-IL continues, with many publications being the product of four rounds of demonstration grants funded by the US Department of Postsecondary Education between 1999 and 2011 (UDI Online, 2016). The series of UD-IL demonstration projects served as an introduction and subsequent expansion of the construct into postsecondary education settings. However, in order to inform policy and practice we must move beyond the UD 'honeymoon phase' in which the field appears to be and fund research that systematically examines and applies UD-IL in practice.

For example, future research must include sufficient information for replication and interpretation of findings related to dosage features, settings, participant demographics, implementer role and expertise, analysis of data that are disaggregated by participant demographics, measures of treatment integrity, and common proximal and distal measures across studies. On this latter point, researchers can explore the impact of UD-IL on such variables as student grades, overall grade point average, and student retention and graduation rates. Examination of proximal measures including course assignments and exams may also prove instructive. Future research must build clarity and consistency around the use of the terms UD, UDI, UID, and UDL. Finally, future research should include measures of both faculty and student perceptions and outcomes to assure that practices are both palatable and effective.

In addition, current research findings should be considered preliminary as many of the evaluative studies inconsistently applied quality research protocol. There is a need to more carefully and fully describe the sample characteristics, as well as the components of UD-IL under investigation. As Madaus et al. (2016) astutely noted, "researchers should be encouraged to use increasingly rigorous research designs in their work … this is particularly true for emerging concepts such as universal design, which has great appeal and popularity, but a limited research base that supports its efficacy" (p. 11). This level of analysis, in the context of rigorously designed experimental and quasi-experimental research methodology, is warranted given the widespread appreciation and intuitive appeal of UD-IL in the postsecondary educational community.

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4 Extra work and considerable roadblocks to implementation of UD-IL principles was also a theme in Bradbard and Peters' (2010) description of two professors updating personal websites to UDL specifications, though this study did not include any academic outcome measures.

References

*Aguirre, R. R., & Duncan, C. (2013). Being an Elbow: A Phenomenological Autoethnography of Faculty-Student Collaboration for Accommodations. *Journal Of Teaching In Social Work*, 33(4/5), 531-551.

AHEAD (2016). Universal design. Retrieved from https://www.ahead.org/node/496

Americans with Disabilities Act of 1990, 42 U.S.C. § 12101 et seq.

Americans with Disabilities Act Amendments Act, 42 U.S.C.A. § 12101 et seq (2008).

Bongey, S., Cizadlo, G., & Kalnbach, L. (2010). Blended solutions: Using a supplemental online course site to deliver universal design for learning (UDL). *Campus-Wide Information Systems*, 27(1), 4-16.

*Bradbard, D. A., & Peters, C. (2010). Web Accessibility Theory and Practice: An Introduction for University Faculty. *Journal of Educators Online*, 7(1), n1-46.

*Catalano, A. (2014). Improving Distance Education for Students with Special Needs: A Qualitative Study of Students' Experiences with an Online Library Research Course. *Journal Of Library & Information Services In Distance Learning*, 8(1/2), 17-31.

Center for Universal Design in Education (2016). http://www.washington.edu/doit/programs/center-universal-design-education/resources/published-books-and-articles-about-universal#block-views-viewblock5b-block-1

Center for Universal Design: Environments and products for all people (n.d.). Retrieved from: https://www.ncsu.edu/ncsu/design/cud/about_us/usronmace.htm.

Cheesman, M., Jennings, M., & Klinger, L. (2013). Assessing communication accessibility in the university classroom: Towards a goal of universal hearing accessibility. *Work 46*(2): 139-150.

Connell, B., Jones, M., Mace, R., Mueller, J., Mullick, A., Ostroff, E., Sanford, J., Steinfeld, E., Story, M., & Vanderheiden, G. (1997). *The principles of universal design: Version 2.0*. Raleigh, NC: The Center for Universal Design.

Coyne, P., Pisha, B., Dalton, B., Zeph, L. A., & Smith, N. C. (2012). Literacy by Design: A Universal Design for Learning Approach for Students with Significant Intellectual Disabilities. *Remedial And Special Education*, 33(3), 162-172.

*Davies, P. P., Schelly, C. C., & Spooner, C. C.,(2013). Measuring the Effectiveness of Universal Design for Learning Intervention in Postsecondary Education. *Journal Of Postsecondary Education & Disability*, 26(3), 195-220.

Dukes III, L.L., Faggella-Luby, M., Lombardi, A., Madaus, J.W., & Gelbar, N. (2017). PASSing College: A taxonomy for students with disabilities in higher education. *Journal of Postsecondary Education and Disability, 30,* 111-122.

Dukes III, L.L., Walker, Z., & Kmetz, K. (in press). *Universal design in education*. Sage Encyclopedia of Educational Research, Measurement, and Evaluation.

Dukes III, L.L., Waring, S., & Koorland, M.A. (2006). The blended course delivery model: The not so distant education. *Journal of Computing in Teacher Education, 22*(4), 153-158.

Edyburn, D. L. (2010). Would you recognize universal design for learning if you saw it? Ten propositions for new directions for the second decade of UDL. *Learning Disability Quarterly, 33*(1), 33-41.

Fichten, C. S., Asuncion, J., & Scapin, R. (2014). Digital technology, learning, and postsecondary students with disabilities: Where we've been and where we're going. *Journal Of Postsecondary Education & Disability, 27*(4), 369-379.

*Foley, A., & Masingila, J. (2015). The use of mobile devices as assistive technology in resource-limited environments: Access for learners with visual impairments in Kenya. *Disability and Rehabilitation: Assistive Technology. 10*(4), 332-339.

Fovet, F., & Mole, H. (2013). UDL-From disabilities office to mainstream class: How the tools of a minority are addressing the aspirations of the student body at large. *Collected Essays on Learning and Teaching, 6*, 121-126.

Goff, E., & Higbee, J. L. (Eds.). (2008). *Pedagogy and student services for institutional transformation: Implementing universal design in higher education*. Minneapolis: Center for Research on Developmental Education and Urban Literacy, University of Minnesota. (http://www.cehd.umn.edu/passit/)

*Habib, L., Berget, G., Sandnes, F. E., Sanderson, N., Kahn, P., Fagernes, S., & Olcay, A. (2012). Dyslexic students in higher education and virtual learning environments: an exploratory study. *Journal Of Computer Assisted Learning, 28*(6), 574-584.

Hall, T. E., Cohen, N., Vue, G., & Ganley, P. (2015). Addressing Learning Disabilities with UDL and Technology: Strategic Reader. *Learning Disability Quarterly, 38*(2), 72-83.

Hartman-Hall, H. M., & Haaga, D. F. (2002). College Students' Willingness To Seek Help For Their Learning Disabilities. *Learning Disability Quarterly, 25*(4), 263-274.

Higher Education Opportunity Act of 2008, Pub. L. no. 110-315, §103(a) et seq., 2008.

*Izzo, M. V., Murray, A., & Novak, J. (2008). The Faculty Perspective on Universal Design for Learning. *Journal Of Postsecondary Education & Disability, 21*(2), 60-72.

*Kumar, K. K., & Wideman, M. (2014). Accessible by design: Applying UDL principles in a first year undergraduate course. *Canadian Journal Of Higher Education, 44*(1), 125-147.

Lombardi, A., Gelbar, N., Dukes III, L. L., Kowitt, J., Wei, Y., Madaus, J. W., Lalor, A., & Faggella-Luby, M. N. (2016). Assessment instruments designed for students, faculty, and staff related to higher education and disability: A systematic review. *Journal of Diversity Higher Education*. http://dx.doi.org/10.1037/dhe0000027

Madaus, J. W., Gelbar, N. W., Dukes, L., Lalor, A., Lombardi, A., Kowitt, J., & Faggella-Luby, M. (2016). Professional literature on students with disabilities in postsecondary education: The road traveled and the road ahead. *Journal of Diversity in Higher Education*. Advanced online publication. http://dx.doi.org/10.1037/dhe0000045

Madaus, J. W., Scott, S., & McGuire, J. (2003). *Barriers and bridges to learning as perceived by postsecondary students with learning disabilities* (No. 01, pp. 1-18). Tech. Rep.

McGuire, J. (2014). Universally accessible instruction: Oxymoron or opportunity? *Journal of Postsecondary Education and Disability, 27*(4), 387-398.

McGuire, J. M., & Scott, S. S. (2006). Universal design for instruction: Extending the universal design paradigm to college instruction. *Journal of Postsecondary Education and Disability, 19*(2), 124-134.

Meyer, A., Rose, D.H., & Gordon, D. (2014). *Universal design for learning: Theory and practice*. Wakefield, MA: CAST Professional Publishing.

*Moon, N., Utschig, T., Todd, R., & Bozzorg, A. (2011). Evaluation of programmatic interventions to improve postsecondary STEM education for students with disabilities: Findings from SciTrain University. *Journal Of Postsecondary Education & Disability, 24*(4), 331-349.

Newman, L. A., & Madaus, J. W. (2015). An analysis of factors related to receipt of accommodations and services by postsecondary students with disabilities. *Remedial and Special Education, 36*(4), 208-219.

Orr, A. C., & Hammig, S. B. (2009). Inclusive postsecondary strategies for teaching students with learning disabilities: A review of the literature. *Learning Disability Quarterly, 32*(3), 181-196.

Peña, E. V. (2014). Marginalization of published scholarship on students with disabilities in higher education journals. *Journal of College Student Development, 55*, 30-40.

*Rao, K., Edelen-Smith, P., & Wailehua, C. (2015). Universal design for online courses: Applying principles to pedagogy. *Open Learning, 30*(1), 35-52.

Rao, K., Ok, M. W., & Bryant, B. R. (2014). A review of research on universal design educational models. *Remedial & Special Education, 35*(3), 153-166.

*Rao, K., & Tanners, A. T. (2011). Curb cuts in cyberspace: Universal instructional design for online courses. *Journal Of Postsecondary Education & Disability, 24*(3), 211-229.

Rao, K., Ok, M. W., & Bryant, B. R. (2014). A Review of Research on Universal Design Educational Models. *Remedial And Special Education, 35*(3), 153-166.

Rappolt-Schlichtmann, G., Daley, S. G., Lim, S., Lapinski, S., Robinson, K. H., & Johnson, M. (2013). Universal Design for Learning and Elementary School Science: Exploring the Efficacy, Use, and Perceptions of a Web-Based Science Notebook. *Journal Of Educational Psychology, 105*(4), 1210-1225.

Raue, K., and Lewis, L. (2011). *Students With Disabilities at Degree-Granting Postsecondary Institutions* (NCES 2011–018). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Rehabilitation Act of 1973, 29 U.S.C. § 104.41 et seq.

Roberts, K., Park, H., Brown, S., & Cook, B. (2011). Universal design for instruction in postsecondary education: A systematic review of empirically based articles. *Journal Of Postsecondary Education & Disability, 24*(1), 5-15.

Salzer, M. M. (2012). A comparative study of campus experiences of college students with mental illnesses versus a general college sample. *Journal Of American College Health, 60*(1), 1-7.

*Schelly, C. C., Davies, P. P., & Spooner, C. C. (2011). Student perceptions of faculty implementation of universal design for learning. *Journal Of Postsecondary Education & Disability, 24*(1), 17-30.

*Seok, S., DaCosta, B., Kinsell, C., & Tung, C. K. (2010). Comparison of instructors' and students' perceptions of the effectiveness of online courses. *Quarterly Review of Distance Education, 11*(1), 25-36.

Shaw, S. F., & Dukes III, L. L. (2013). Transition to postsecondary education: A call for evidence-based practice. *Career Development and Transition for Exceptional Individuals, 36*, 51-57.

Simoncelli, A., & Hinson, J. M. (2008). College students' with learning disabilities personal reactions to online learning. *Journal Of College Reading & Learning, 38*(2), 49-62.

Silver, P., Bourke, A., & Strehorn, K. C. (1998). Universal Instructional Design in higher education: An approach for inclusion. *Equity & Excellence, 31*(2), 47-51.

*Street, C. C., Koff, R., Fields, H. H., Kuehne, L. L., Handlin, L. L., Getty, M., & Parker, D. D. (2012). Expanding access to STEM for at-risk learners: A new application of universal design for instruction. *Journal Of Postsecondary Education & Disability, 25*(4), 363-375.

Stumbo, N., Hedrick, B., Weisman, C., & Martin, J. (2010) An exploration into the barriers and facilitators experienced by university graduates with disabilities requiring personal assistance services. *Journal of Science Education for Students with Disabilities. 14*(1), 1-24.

*Tzivinikou, S. S. (2014). Universal Design for Learning-application in higher education: A Greek paradigm. *Problems Of Education In The 21st Century, 60*, 156-166.

U.S. Department of Education, National Center for Education Statistics. (2015). Digest of Education Statistics, 2013 (2015– 011). Retrieved from https://nces.ed.gov/fastfacts/display.asp?id_60.

UDI Online. (2016). Project history. Retrieved from http://www.udi.uconn.edu/index.php?q=content/project-history.

*Utschig, T., Moon, N., Todd, R., & Bozzorg, A. (2011). Faculty efficacy in creating productive learning environments: Universal design and the lens of students with disabilities. *International Journal of Process Education, 3*(1), 51-63.

*Watt, S., Vajoczki, S., Voros, G., Vine, M., Fenton, N., & Tarkowski, J. (2014). Lecture capture: An effective tool for universal instructional design?. *Canadian Journal Of Higher Education, 44*(2), 1-29.

*Webb, K., & Hoover, J. (2015). Universal design for learning (UDL) in the academic library: A methodology for mapping multiple means of representation in library tutorials. *College & Research Libraries, 76*(4), 537-553.

Wilson, K., Getzel, E., & Brown, T. (2000). Enhancing the post-secondary campus climate for students with disabilities. *Journal Of Vocational Rehabilitation, 14*(1), 37-50.

*Zhong, Y. Y. (2012). Universal design for learning (UDL) in library instruction. *College & Undergraduate Libraries, 19*(1), 33-45.

*Indicates articles included in this synthesis that also involved faculty implementing a change based on UD-IL.

Table 1: Number of articles by article type/subtype

Article type	n of articles (%)
Presented Original Data	44 (41.51)
Qualitative	17 (16.03)
Phenomenological	11 (10.38)
Case Study	5 (4.72)
Grounded Theory	2 (1.89)
Descriptive-Quantitative	16 (15.09)
Simple	12 (11.32)
Correlational	4 (3.77)
Comparative	2 (1.89)
Mixed methods	8 (7.55)
Phenomenological	5 (4.72)
Case Study	4 (3.77)
Simple	8 (7.55)
Comparative	2 (1.89)
Group Design	3 (2.83)
Did not present original data	62 (58.49)
Literature review	52 (49.06)
Program descriptions	6 (5.66)
Legal/policy analysis	3 (2.83)
Editorial	1 (0.94)

Table 3: Sample size and demographic characteristics

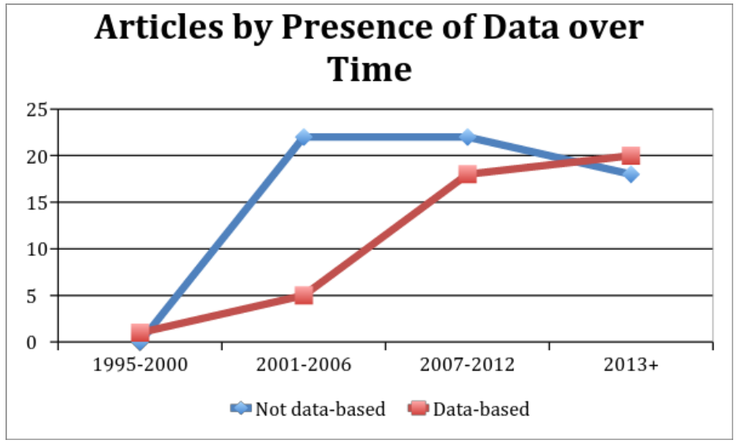
Sample Demographic	n of articles (%)
College Students	27
Sample Size	
1-10	5 (18.52)
11-50	12 (44.44)
51-99	3 (11.11)
100+	7 (25.93)
Race	1 (3.7)
Disability	13 (48.15)
Gender	9 (33.33)
Class Standing	2 (7.41)
Non-student	23
Sample Size	
1-10	5 (21.74)
11-50	12 (52.17)
51-99	3 (13.04)
100+	7 (30.43)
Unclear	4 (17.39)
Faculty	17 (73.91)
Staff	2 (8.7)
Disability Services	2 (8.7)
Unclear	2 (8.7)

Table 2: Characteristics of Articles by Universal Design Model

Model[1]	Data-based	Participants: Student	Participants: Faculty	Total
Universal Instructional Design (UID)	6	4	3	21
Universal Design for Instruction (UDI)	14	5	8	34
Universal Design for Learning (UDL)	24	15	9	51
Other	13	8	5	32
Universal Design	0	0	0	10

[1] Articles could be coded into more than one model.

Figure 1: Number of articles by presence of data over time



How the College Environment Shapes Learning Opportunities for Students with Disabilities

— Lauren Hensley

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Abstract

Assessing the college environment reveals ways in which it impedes or supports learning opportunities for students with disabilities. In this essay, I contextualize the participation of students with disabilities in postsecondary education, including trends of increased enrollment paired with little social or academic integration. I then focus on two key areas of the college environment defined by Strange and Banning (2001)—aggregate and constructed—and describe how each may challenge and isolate students with disabilities. For each area, I also outline practical steps college instructors can take to build inclusive and engaging classrooms and learning experiences. Understanding these aspects of the college environment helps instructors identify contextual constraints that their actions can counteract.

Keywords

environmental assessment, higher education, college teaching, students with disabilities

Introduction

Those responsible for creating and transforming college environments can promote experiences of equal opportunity for students through an awareness of the unique needs of different subgroups (Perna & Thomas, 2008). Environmental assessment provides a lens for understanding aspects of the college environment that either include or exclude one of these subgroups in particular: students with disabilities (Strange, 2000). Students with disabilities have the innate ability to succeed in higher education, yet they encounter challenges when the college environment is oriented toward those with traditional sensory, physical, and cognitive abilities. The resulting nonverbal message can imply that students with disabilities are unwelcome and unsupported in the college environment (Trammell, 2009). By understanding the functions of the college environment and the barriers and opportunities afforded within it, instructors can work intentionally to develop inclusive learning environments.

In this paper, I first document how postsecondary enrollment has increased for students with disabilities while college completion and campus integration have lagged behind. I then introduce the paper's theoretical framework, which combines environmental assessment with universal design. I describe and examine two key aspects of the college environment that instructors can exert control over: aggregate and constructed (Strange, 2000; Strange & Banning, 2001). For each area, I incorporate scholarly literature about the experiences of students with disabilities and highlight broadly applicable recommendations for practice.

Enrollment Trends

The number of students with disabilities choosing to enroll in postsecondary education has increased steadily over the past four decades. Only three percent of first-year college students reported a disability in 1978 (Hall & Belch, 2000). Now eleven percent of undergraduates—more than 2.5 million students—report one or more disabilities (National Center for Education Statistics, 2016). Disabilities vary in nature and reflect a broad array of conditions. Most fall into one of three categories: sensory, physical, and cognitive. Sensory disabilities involve visual, hearing, or speech impairment. Physical disabilities include mobility impairments and long-term health conditions. Cognitive disabilities involve difficulties in processing information (e.g., dyslexia) or directing attention to tasks (e.g., ADD).

Accompanying the increase in postsecondary enrollment for students with disabilities, from 1990 to 2005 the number of public institutions providing disability support services increased by 90 percent (Wehman & Yasuda, 2005). A main reason for these upward trends was the introduction of the Americans with Disabilities Act (ADA) in 1990, which required that both public and private institutions make their policies, practices, and services accessible (Reilly & Davis, 2005). An additional reason for the upward trends was the increased inclusion of students with disabilities in pre-college education spanning from pre-kindergarten through senior year of high school (Wehman & Yasuda, 2005). College admissions policies also changed. Before the 1970s, colleges and universities could choose not to grant admission to students with disabilities based simply upon the existence of the disability (Stanley, 2000). Intelligence testing has since demonstrated that students with disabilities can meet collegiate-level academic standards, especially when in a supportive environment (Deford, 2006). Today, not only is discrimination in college admissions illegal but college fairs welcome students with disabilities (Deford, 2006).

Despite the equity in admissions policies and prevalence of disability support services at both two- and four-year institutions, students with disabilities are more likely to attend two-year colleges than four-year colleges. They also report being more satisfied with their college experience and encountering fewer physical, social, and educational barriers at two-year colleges (Joshi & Bouck, 2017). One explanation for this difference is simply that two-year institutions enroll higher percentages of students with disabilities, increasing the prevalence and visibility of accommodations. Another explanation is that many two-year colleges were established later than four-year institutions. These campuses included physical accommodations into their master construction plans rather than retrofitting them, creating a more natural and accessible physical space (West et al., 1993). Although about 70% of students with disabilities initially pursue postsecondary education by enrolling in two-year colleges, only about 15% ultimately transfer to four-year colleges and universities (Ponticelli & Russ-Eft, 2009). A likely cause of the low transfer rate is students' perceptions that four-year colleges lack integrated support for accessibility and accommodations (Hall & Belch, 2000).

Moreover, despite the relatively positive experiences students with disabilities have at two-year colleges and the upward trends in their overall enrollment in higher education, "students with disabilities are not participating in college at the level that they should be" (Wehman & Yasuda, 2005, p. 14). Participation entails not merely enrollment or degree completion but also social and academic integration to support this end goal (Hall & Belch, 2000). College completion provides economic benefits and career-advancement possibilities that can empower individuals with disabilities (Baum, Ma, & Payea, 2010), yet institutional practices may unintentionally present barriers to attaining degrees and fully experiencing college resources and activities (Wehmen & Yasuda, 2005).

Theoretical Framework

The theoretical framework for this paper combines environmental assessment with principles of universal design for instruction. Environmental assessment illuminates barriers to learning that occur in the aggregate and constructed environment of a college campus. Grounded in the definitional framework provided by Strange and

Banning (Strange, 2000; Strange & Banning, 2001), I will address the aggregate and constructed aspects of the college environment to identify common challenges as well as recommended supports. Both aspects of the environment give insight into the classroom climate, though in distinct ways. The aggregate environment reflects the characteristics of and connectedness among individuals and subgroups, whereas the constructed environment primarily expresses attitudes and values. Recommendations for practice in each component of the environment will also incorporate universal design principles for classroom environments that welcome and engage diverse learners. Instructors can use universal design principles to enact inclusive instructional practices that do not diminish the course's structural or academic integrity (Scott & McGuire, 2005). By bringing together these frameworks, my intent is to help instructors understand how the campus environment informs the college experience for students with disabilities as well as how to create supportive environments.

The Aggregate Environment

Examining the aggregate environment is one way to understand the impact of the college environment on students with disabilities. The combined characteristics of the persons occupying an environment comprise the aggregate environment. The characteristics may relate to a variety of factors, including ability and personality (Strange & Banning, 2001). In the college environment, homogeneity and similarity will attract and reinforce homogeneity and similarity. The degree to which students fit into the aggregate environment—for instance, whether they view themselves as congruent or incongruent with its occupants and characteristics—affects the quality of their college experience (Strange, 2000). Thus, "an individual placed in an incompatible environment is less likely to be reinforced…, and the likelihood of that person's leaving the environment is increased" (Strange, p. 21).

Barriers in the Aggregate Environment

Persistence and graduation rates for college students with disabilities are lower than for college students without disabilities (Wessel, Jones, Markle, & Westfall, 2009). Examining the aggregate environment may reveal a root of this issue. At college, students with disabilities comprise a subgroup that is dissimilar from and often incongruent with the prevailing aggregate. As such, they are likely to experience a majority-minority divide that results in a chilly climate (Strange, 2000). Pascarella and his colleagues' groundbreaking study of women's encounters with chilly climates across 23 different institutions provides insight into conditions that other minoritized groups experience; such a climate involves scarce recognition, devaluation, limited opportunities for participation, and negative comments (Pascarella et al., 1997).

The social separation between students with and without disabilities creates a chilly climate. Bringing together the findings of several foundational studies, Enright, Conyers, and Szymanski (1996) describe such trends in the interactions among college students:

> (a) College students without disabilities are more uncomfortable interacting with peers with disabilities than with peers without disabilities;
>
> (b) when a socially acceptable way of avoiding contact with students with disabilities exists, students without disabilities will choose this option …;
>
> (c) students with disabilities are more comfortable interacting with peers with similar disabilities …; and
>
> (d) mere contact between students with and without disabilities does not necessarily improve the quality of social interaction between these groups. (p. 106)

Since that time, additional studies have documented the tendency for students without disabilities to distance themselves from students with visible sensory and physical disabilities due to discomfort and false perceptions (e.g., DaDeppo, 2009; Fleming, Oertle, Plotner, & Hakun, 2017). The resulting social barriers prevent many students from experiencing a key contributor to their academic engagement and persistence: a sense of belonging (Fleming et al., 2017).

Opportunities in the Aggregate Environment

Ongoing contact with other students through classroom and campus involvement is a powerful way to work through barriers in mutually reinforcing academic and interpersonal ways (Hadley, 2011). Instructors are in a position to create opportunities for meaningful interaction among students of differing abilities through their support of both curricular and co-curricular engagement. The messages instructors convey about not only participation in the classroom but also participation in the broader campus community carry substantial weight with students (Zusho, Karabenick, Bonney, & Sims, 2007).

Some practices may work especially well to support students when used in concert with universal design principles. Universal design principles can benefit the aggregate environment because of their emphasis on inclusive approaches to learning that break down walls between groups of students. As Belch (2004) argued, universal design for instruction "expand[s] the definition of diverse learners in class rather than treating students with disabilities as a distinct category" (p. 13).

Most immediately, instructors can impact the aggregate environment by means of their words and actions in the college classroom. Through their ongoing and structured contact with groups of students, instructors can provide scaffolded opportunities for students of differing abilities to interact. The hallmarks of effective teaching practices can guide approaches to addressing the aggregate environment. Through self-study or partnership with the university teaching center, instructors can assess how their classroom practices support cooperation among classmates, provide high expectations as well as an identifiable path toward achieving them, and acknowledge the different ways in which students learn (Chickering & Gamson, 1991). Such practices promote the *instructional climate* principle of universal design through which instructors work toward inclusivity and high expectations in tandem (McGuire, Scott, & Shaw, 2006). Specific teaching practices that support positive experiences with the aggregate environment include developing cooperative learning groups in which students work together to solve problems or discuss content, helping to create study groups that have clear expectations and goals, and building a shared sense of classroom community by incorporating students' unique perspectives and contributions (Smith, 2000).

Instructors can use cooperative group work as a means for students with sensory and physical disabilities to contribute unique perspectives on a course concept or issue. In this manner, students with and without disabilities can witness how differing perspectives complement one another to support deep learning and effective problem solving. Facilitating interaction and communication is an application of the *community of learners* principle of universal design (Scott & McGuire, 2005).

Instructors can also provide multiple options for completing assignments and final projects, allowing a range of written, visual, and auditory submission types while maintaining similar expectations of what content to cover. Providing options allows students with cognitive and sensory disabilities to share their knowledge in a way that suits them while simultaneously introducing autonomy that allows all students to build intrinsic motivation (Niemiec & Ryan, 2009). Such instructional practices are an application of the *flexibility* in use principle of universal design, which affirms multiple ways of attaining knowledge and expressing understanding (McGuire et al., 2006). Ideally, instructors will not keep this good work to themselves but will fortify the aggregate environment by providing students with opportunities to brainstorm ideas and share outcomes with one another. Regardless of the discipline or size of the class, setting aside even a few minutes for sharing in small groups promotes engagement with the content and other students (Cooper & Robinson, 2000).

Instructors can also support engagement outside of the formal classroom environment. Participation in student organizations that include relationship building and advocacy among students with disabilities can provide a mechanism for campus involvement as can participation in organizations that are open to students without respect to ability status (e.g., service organizations, special interest groups; Hadley, 2011). Instruc-

tors' own involvement in and support of such programs can provide greater insight into the strengths, differing abilities, and concerns of students. Involvement can range from formal advisor status for an organization to occasional attendance at related events. Such activities provide co-curricular faculty-student interaction that supports students' academic and social integration with the institution (Kuh et al., 2006). Moreover, such activities follow Fichten, Robillard, Judd, and Amsel's (1989) argument that extensive and equal interaction among students is the solution to misconceptions and discomfort that typically characterize the interactions between students with and without disabilities and even the interactions between instructors and students.

Another means for facilitating meaningful contact among and with students is the campus disability services office. This is particularly true if instructors view the office as an ally in supporting student involvement and integration (Strange & Banning, 2001). Duffy and Gugerty (2005) put forth two rationales for the existence of disability support services. The first is practical: "U.S. civil rights laws require the provision of equal access to people with disabilities, and the likelihood of achieving equal access is amplified by the presence of personnel, policies, and programs dedicated to executing these rights" (p. 89). The second relates to pedagogy: "Educators are concerned with student learning; disability services help ensure that all students have an equal opportunity to learn" (p. 89). Disability support services play an important role in providing access and opportunities to students with disabilities and in encouraging this commitment throughout the institution.

Having knowledge of the practical and pedagogical purposes of disability support services can aid instructors in making appropriate referrals and responding to requests for accommodations (Cook, Rumrill, & Tankersley, 2009). It may not always be clear how to implement universal design principles regarding *equitable use*, for instance; consultation with the disability services office can help. Through statements in the syllabus and in class, instructors can convey positive perceptions of disability services along with other services that support student learning. Written and spoken statements can shape classroom norms and encourage students of all backgrounds to engage in help-seeking behaviors and self-advocacy as they make use of campus resources (Karabenick, 2004). This approach can reduce the stigma about using support services and lessen the degree to which students with differing abilities view one another as inherently separate.

The Constructed Environment

As a second key element in an environmental perspective, the constructed environment involves social constructions and subjective perceptions. The constructed environment includes both culture and social climate. Culture is comprised of several levels: assumptions, values, perspectives, and artifacts (Kuh & Hall, 1993). Assumptions are the most profound level and are often unconscious, whereas artifacts are the most surface level, representing behavior or the results of behavior. Social climate reflects the personality of an environment (Strange & Banning, 2001). It contains various dimensions, such as relationships, personal growth, and change-resistance (Trickett & Moos, 1995). Ultimately, the constructed environment concerns the dynamics of a campus and the social forces at work within it.

Barriers in the Constructed Environment

Certain assumptions about the nature of fairness and the nature of ability translate into perspectives and behavior that may disadvantage students with disabilities. Many instructors have developed positive and sensitive views toward students with disabilities. There is diversity within faculty attitudes, however. One study found that willingness to provide accommodations differed based on instructor seniority with senior-level faculty being less willing to provide teaching accommodations than contingent or junior-level faculty (Murray, Wren, & Keys, 2009). Another recent study found that faculty attitudes about students' abilities to be successful and compete in college were more positive toward students with physical disabilities and more negative toward students with cognitive disabilities (Sniatecki, Perry, & Snell, 2015). The researchers concluded that although attitudes toward students with disabilities are becoming more positive, "at least a small proportion of faculty continue to demonstrate negative attitudes towards [students with disabilities] and the provision of accommodations" (p. 266).

Attitudes have far-reaching impacts. When instructors either subtly or directly indicate that academic accommodations are unfair, students who need accommodations may resist asking for them (Hartman-Hall & Haaga, 2002). Faculty who are uncertain about whether disabilities hinder students' ability to be academically competitive or pursue certain majors are thus less likely to encourage these students to undertake academic challenges (Houck, Asselin, Troutman, & Arrington, 1992; Sniatecki et al., 2015). Unchecked assumptions about fairness also can lead instructors to hold negative perceptions of students with disabilities. Being ill-informed about the needs and characteristics of students with disabilities engenders suspicion toward non-visible disabilities in particular; suspicion can lead to ignoring, interrupting, avoiding, or lowering expectations for students with disabilities (Beilke & Yssel, 1999). Perspectives are often at the heart of negative student-faculty interactions and classroom experiences.

Specific elements such as teacher support, affiliation, control, innovation, and involvement reveal how classroom climate has a positive or negative impact (Trickett & Moos, 1995). The relational dimension of teacher support is not fully present at many institutions as students with disabilities report encountering faculty who are not flexible in providing accommodations, blame the students for their difficulties, and doubt the students' ability to do well in their courses (Beilke & Yssel, 1999; Marshak, Van Wieren, Ferrell, Swiss, & Dugan, 2010). Affiliation—classmates' friendships and fondness—is also central. Students with disabilities may feel scorn or isolation in relationships with other students because of their disabilities in general as well as in response to receiving accommodations (West et al., 1993; Marshak et al., 2010). Change-resistance can also create an unwelcoming climate. In their study, West et al. concluded that "all too frequently, instructors gave priority to instructors' 'class rules' over the legal rights of the students" ("Recommendations" section, para. 4). Control and innovation are at odds in such cases.

Values yield a strong influence over the constructed environment. Hall and Belch (2000) identified dignity, equality, and community as three core values of higher education. Although not universally enacted, these three values reflect the ideals of student support and can provide a baseline for assessment (Hall & Belch, 2000). Human dignity involves viewing all students as having intrinsic worth and value. Unfortunately, "numerous examples are found on most campuses where individual students' feelings of self-worth are threatened by the dehumanizing and depersonalizing behavior of others" (p. 11). Classmates' and instructors' underestimation, avoidance, or negative treatment of students with disabilities demonstrate a lack of consideration for human dignity. Equality, a second value, concerns equal status and rights of groups. Although ADA has caused institutions to make accommodations, most campuses are still not fully accessible to students with disabilities, which leads to unequal ability for groups to physically and socially access and participate in the environment (Singh, 2003). Community, a third value, "is a place where individuals can communicate honestly [and] authentic and intimate relationships are established," yet it also "emerges through the process of human interaction" (Hall & Belch, 2000, p. 10. When teacher support and classmate affiliation are weak, so too is community.

Opportunities in the Constructed Environment

Cultivating supportive and equitable values can counter negative behaviors and perspectives with positive ones, creating a more welcoming and caring climate. Instructors can use the values of human dignity, equality, and community to make a positive difference. For instance, "educators who build community in their classrooms begin with a view of each student as a person having value and worth. Effective teachers don't assume they understand disability: They ask the other person to describe his or her world" (Treloar, 1999, "Promoting success" section, para. 2). Each student with a disability is different from any other student with a disability;

therefore, refraining from assumptions and judgments places value on the individual rather than allowing his or her status to be the defining attribute. Community includes human dignity while emphasizing the joining together of individuals in a welcoming context through meaningful relationships. Involving all students in the classroom, through offering accommodations and respect, is another path toward greater equality.

A powerful way to address and reverse negative aspects of the constructed environment is for instructors to examine and perhaps modify their teaching philosophy in light of universal design principles. Instructional choices made in line with universal design principles convey attitudes and values about differing abilities that can bolster the constructed environment.

The *equitable use* principle suggests designing instruction to be accessed by those with a range of abilities (McGuire et al., 2006). One way to encourage equitable use is by posting notes online or ensuring captioning on class videos is correct. These steps assist students with sensory or cognitive disabilities, students who speak English as second language, and any students who seek reinforcement of content (Scott & McGuire, 2005). Holding office hours or arranging meetings in locations that students with sensory or physical disabilities can readily access supports equitable use as well as the principle of *low physical effort* (McGuire et al., 2006).

Instructors can enact the *instructional climate* principle of universal design by fostering an open classroom environment (McGuire et al., 2006). As they set the tone in the first week of the semester, instructors can indicate in the syllabus and state in class that they value diversity, expect classmates to respect one another, and are willing to provide accommodations for special needs (Shaw, 2011). Instructors can express value for varied ways of learning and development by incorporating diverse perspectives and scholars when choosing readings, videos, and examples. Instructors can also highlight examples of students' innovative ways of completing course assignments. These practices bolster the constructed environment by "provid[ing] a powerful, tacit message—student diversity is now the norm, not the exception, and college instructors can welcome all students through the creation of inclusive instructional environments" (Scott & McGuire, 2005, p. 136).

Finally, a pervasive component of the constructed environment is language. Language is powerful in that it shapes attitudes toward others and impressions of oneself (Strange & Banning, 2001). This paper has deliberately used language described as appropriate and affirming by advocates for persons with disabilities. Such language is person first, mentioning the person before the disability, and thus giving emphasis to the individual (Arendale, 2007). As such, it fulfills the higher education value of human dignity. Instructors may not be aware of tendencies to use disability-biased language, which unintentionally "promotes exclusion and difference, devaluation, and notions of incompetence" (Treloar, 1999, "Becoming aware" section, para. 1). Being sensitive to language means making the conscious decision to use preferred terms such as: the woman who is deaf as opposed to the deaf woman, students without disabilities as opposed to normal students, and students with disabilities or differing abilities as opposed to handicapped students. Over time, sensitive language becomes automatic, and its ongoing and widespread use helps to extend acceptance for diversity and portray a welcoming environment for all learners (Strange & Banning, 2001).

Conclusion

College students with disabilities encounter a number of obstacles to their learning. The situation is due not primarily to the existence of disabilities but rather to barriers mediated by the environment. Assessing the college environment illuminates the unique features and implications of learning contexts. This analysis has looked at two components of the college environment that inform how students engage in classroom learning experiences, navigate campus resources, or experience a sense of connection to their classmates and instructors. The aggregate and constructed aspects of the environment can unwittingly limit learning experiences for college students with disabilities. Just as the barriers in college environments are multifaceted, so too are the opportunities for instructors to more fully engage and include their students.

References

Arendale, D. R. (2007). A glossary of developmental education and learning assistance terms. *Journal of College Reading and Learning, 38*(1), 10-35.

Baum, S., Ma, J., & Payea, K. (2010). *Education pays, 2010: The benefits of higher education for individuals and society. Trends in higher education*. New York: College Board.

Beilke, J. R., & Yssel, N. (1999). The chilly climate for students with disabilities in higher education. College Student Journal, 33, 364-371.

Belch, H. A. (2004). Retention and students with disabilities. Journal of College Student Retention, 6(1), 3-22.

Chickering, A. W., & Gamson, Z. E. (1991). Seven principles for good practice in education. *New Directions for Teaching and Learning, 47*, 63-69.

Cook, L., Rumrill, P., Tankersley, M. (2009). Priorities and understanding of faculty members regarding college students with disabilities, 21, 84-96.

Cooper, J. L., & Robinson, P. (2000). Getting started: Informal small-group strategies in large classes. *New Directions for Teaching and Learning, 81*, 17-24.

DaDeppo, L. M. W. (2009). Integration factors related to the academic success and intent to persist of college students with learning disabilities. *Learning Disabilities Research and Practice, 24*, 122-131.

Deford, C. (2006). A chance to prove themselves. Diverse: I*ssues in Higher Education, 23*(18), 78-81.

Duffy, J. T. (1999). Disability services: Easier done than said. *Metropolitan Universities: An International Forum. 9*(4), 19-28.

Duffy, J. T., & Gugerty, J. (2005). The role of disability support services. In E. E. Getzel & P. Wehman (Eds.), *Going to college: Expanding opportunities for people with disabilities* (pp. 89-115). Baltimore, MD: P.H. Brookes.

Enright, M. S., Conyers, L. M., & Szymanski, E. M. (1996). Career and career-related educational concerns of college students with disabilities. *Journal of Counseling & Development, 75*(2), 103-114.

Fichten, C. S., Robillard, K., Judd, D., & Amsel, R. (1989). College students with physical disabilities: Myths and realities. *Rehabilitation Psychology, 34*, 243-257.

Fleming, A. R., Oertle, K. M., Plotner, A. J., & Hakun, J. G. (2017). Influence of social factors on student satisfaction among college students with disabilities. *Journal of College Student Development, 58*, 215-228.

Hadley, W. M. (2011). College students with disabilities: A student development perspective. *New Directions for Higher Education, 154*, 77–81

Hall, L. M., & Belch, H. A. (2000). Setting the context: Reconsidering the principles of full participation and meaningful access for students with disabilities. *New Directions for Student Services, 91*, 5-17.

Hartman-Hall, H., & Haaga, D. (2002). College students' willingness to seek help for the learning disabilities. *Learning Disability Quarterly, 25*, 263-274.

Houck, C. K., Asselin, S. B., Troutman, G. C., & Arrington, J. M. (1992). Students with learning disabilities in the university environment: A study of faculty and student perceptions. *Journal of Learning Disabilities, 25*, 678-684.

Joshi, G. S., & Bouck, E. C. (2017). Examining postsecondary education predictors and participation for students with learning disabilities. *Journal of Learning Disabilities, 51*(1), 3-11.

Karabenick, S. A. (2004). Perceived academic goal structure and college student help seeking. *Journal of Educational Psychology, 96*, 569-581.

Kuh, G. D., & Hall, J. E. (1993). Using cultural perspectives in student affairs. In G. D. Kuh (Ed.), *Culutral perspectives in student affairs work* (pp. 1-20). Lanham, MD: American College Personal Association.

Kuh, G. D., Kinzie, J., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2006). What matters to student success: A review of the literature. *National Postsecondary Education Cooperative (NPEC) Commissioned Paper*. Retrieved from http://nces.ed.gov/npec/pdf/kuh_team_report.pdf.

Marshak, L., Van Wieren, T., Ferrell, D. R., Swiss, L., & Dugan, C. (2010). Exploring barriers to college student use of disability services and accommodations. *Journal of Postsecondary Education and Disability, 22*, 151-165.

McGuire, J. M., Scott, S. S., & Shaw, S. F. (2016). Universal design and its applications in educational environments. *Remedial and Special Education, 27*, 166-175.

National Center for Education Statistics. (2016). *Digest of education statistics*. Washington, DC: National Center for Education Statistics. Retrieved from: https://nces.ed.gov/programs/digest/d14/ch_3.asp.

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. *Theory and Research in Education, 7*, 133-144.

Pascarella, E. T., & Hagedorn, L. S., Whitt, E. J., Yeager, P. M., Edison, M. I., Terenzini, P. T., & Nora, A. (1997). Women's perceptions of a "chilly climate" and their cognitive outcomes during the first year of college. *Journal of College Student Development, 38*(2), 109-124.

Perna, L. W., & Thomas, S. L. (2008). Theoretical perspectives on student success: Understanding the contributions of the disciplines. *ASHE Higher Education Report, 34*, 1-87.

Ponticelli, J. E., & Russ-Eft, D. (2009). Community college students with disabilities and transfer to a four-year college. *Exceptionality: A Special Education Journal, 17*, 164-176.

Reilly, V. J., & Davis, T. (2005). Understanding the regulatory environment. In E. E. Getzel & P. Wehman (Eds.), *Going to college: Expanding opportunities for people with disabilities* (pp. 25-46). Baltimore, MD: P.H. Brookes.

Scott, S. S., & McGuire, J. M. (2005). Implementing universal design for instruction to promote inclusive college teaching. In E. E. Getzel & P. Wehman (Eds.), *Going to college: Expanding opportunities for people with disabilities* (pp. 119-138). Baltimore, MD: P.H. Brookes.

Shaw, R. A. (2011). Employing universal design for instruction. *New Directions for Student Services, 134*, 21-33.

Singh, D. K. (2003). Students with disabilities and higher education. *College Student Journal, 37*, 367-379.

Smith, K. A. (2000). Going deeper: Formal small-group learning in large classes. *New Directions for Teaching and Learning, 81*, 25-46.

Sniatecki, J. L., Perry, H. B., & Snell, L. H. (2015). Faculty attitudes and knowledge regarding college students with disabilities. *Journal of Postsecondary Education and Disability, 28*, 259-275.

Strange, C. (2000). Creating environments of ability. *New Directions for Student Services, 91*, 19-30.

Strange. C. C., & Banning, J. H. (2001). *Educating by design: Creating campus learning environments that work*. San Francisco, CA: Jossey-Bass.

Trammell, J. (2009). Red-shirting college students with disabilities. *Learning Assistance Review, 14*, 21-31.

Treloar, L. L. (1999). Editor's choice: Lessons on disability and the rights of students. *Community College Review, 27*(1), 30-40.

Trickett, E. J., & Moos, R. H. (1995). *Classroom environment scale manual*. Palo Alto, CA: Consulting Psychologists Press.

Wehmen, P., & Yasuda, S. (2005). The need and the challenges associated with going to college. In E. E. Getzel & P. Wehman (Eds.), *Going to college: Expanding opportunities for people with disabilities* (pp. 3-23). Baltimore, MD: P.H. Brookes.

Wessel, R. D., Jones, J. A., Markle, L., & Westfall, C. (2009). Retention and graduation of students with disabilities: Facilitating student success. *Journal of Postsecondary Education and Disability, 21*, 116-125.

West, M., Kregel, J., Getzel, E., Ming, Z., Ipsen, S. M., & Martin, E. D. (1993). Beyond section 504: *Satisfaction and empowerment of students with disabilities in higher education. Exceptional Children, 59*, 456-467.

Zusho, A., Karabenick, S. A., Bonney, C. R., & Sims, B. C. (2007). Contextual determinants of motivation and help seeking in the college classroom. In R. P. Perry & J. C. Smart (Eds.), *The scholarship of teaching and learning in higher education: An evidence-based practice* (pp. 611–659). New York: Springer.

Promising Instructional Practices for College Students with Autism

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Abstract

This article reports on the findings of a qualitative study that examined the ways that responsive faculty members support students with autism spectrum disorder (ASD) at the post-secondary level through their teaching approaches. The researchers engaged in the qualitative analysis of interviews of nine faculty members at institutions of higher education (both two and four-year, public and private) who incorporated individualized methodologies to support student learning. This study draws a connection between the approaches that supportive faculty members describe in the data with three major principles of universal design for learning (UDL). Finally, the authors discuss recommendations for faculty in institutions of higher education to continue to meet the learning needs of college students with autism.

Keywords

autism, higher education, faculty, Universal Design for Learning, teaching

Introduction

Since 1975, the Individuals with Disabilities Act (IDEA) has required K-12 school districts to identify and provide a free, appropriate public education for all students with disabilities. Since that legislation was enacted, the number of students with disabilities being served in public K-12 settings has risen dramatically. From 1976 to 2014, the number of youth with disabilities, ages 3 – 21, served under the Individuals with Disabilities Education Act, Part B in U.S. schools grew from approximately 3.7 million to approximately 6.5 million (U.S. Department of Education, 2016). Consequently, the growing number of students with disabilities, who were often educated in the same general education classrooms as their peers, are now increasingly continuing their educational pathways to postsecondary opportunities. Students with disabilities now make up over 10% of the population of college students in the United States (U.S. Department of Education, 2009). While current laws have established policy regarding required supports for college students with disabilities, little attention has been paid in the research to fully recognizing and supporting their needs (Peña, 2014). Furthermore, little attention has been given to the specific needs of college students with autism spectrum disorders (ASD).

Currently, 1 in 68 children has been identified as being on the autism spectrum (Center for Disease Control, 2014). With the increase in prevalence, the number of students with ASD who are attending college will increase (Gelbar, Smith & Reichow, 2014). According to Brennan and Peña (in press), "Students with ASD who have been included in their community elementary and high schools are now gaining access to post-secondary environments, desiring to have equitable educational opportunities in higher education and to develop into independent and contributing members of society" (p. 2). Currently, close to one-third of high school students with ASD go on to college (Roux, Shattuck, Rast, Rava, & Anderson, 2015). Although students with ASD may have the academic ability to succeed in college, they are at high risk of failure due to social and communication challenges (Pinder-Amaker, 2014). Specifically, students with ASD experience challenges with understanding nuances of classroom and faculty interactions (Peña & Kocur, 2013). In addition, issues with sensory overload and time management skills present challenges in classroom settings (Van Hees, Moyson & Roeyers, 2014).

The instructional interactions and relationship between student and instructor have long been recognized as key to college student success (Hong, Haefner, & Slekar, 2011; Muller, 2006; Murray, Lombardi, Wren & Keys, 2009). That relationship becomes even more critical for students with disabilities (Harris, Ho, Markle, and Wessel, 2011), who face specific disability-related challenges and who are often hesitant to seek out assistance. However, little is known about instructional practices that leverage the ability for college students with ASD to succeed in the classroom. As such, the purpose of this qualitative research study was to document promising teaching practices and pedagogical approaches of supportive faculty members who responsively teach college students with ASD. Furthermore, a discussion will be provided that establishes the connection between those documented practices and accepted principles of Universal Design for Learning (UDL).

Literature Review

Literature on teaching college students with ASD is in its infancy compared to literature about faculty attitudes and practices with students with disabilities in general (White et al., 2016). While faculty attitudes toward students with disabilities vary considerably (Muller, 2006; Murray et al., 2009), challenges for students with ASD most often fall into what students experience in the 'invisible' disabilities category. Invisible disabilities present challenges in educational and community environments but do not have immediate visible means of disability identification (e.g. a wheelchair, use of sign language). Results of a recent study showed that students with learning or mental health disabilities face more attitudinal challenges than students with physical disabilities (Sniatecki, Perry & Snell, 2015). Whereas faculty may be aware of the needs of individuals with certain disabilities, such as blindness or deafness, they are less aware and prepared to support students with ASD (Taylor, 2005).

This lack of awareness may be largely due to the lack of dissemination of information and training in this area.

By law, faculty members are required to meet the needs of college students with ASD by providing appropriate accommodations. Yet, in addition to typical accommodations at the postsecondary level, students with ASD need support in two other areas. The first is supporting students in developing the executive function skillset of planning, organizing, and time management. According to Longtin (2014), executive functioning

> allow[s] individuals to manage their day-to-day lives and activities in order to achieve goals. These skills are clearly necessary for college life, with its emphasis on independence and self-determination. Tasks such as pacing course readings, completing long-term assignments, coping with schedules that vary from day to day, and keeping appointments pose significant challenges to this student population (p. 65).

The second area of assistance critical for college students with autism is providing social-emotional and relationship support (Longtin, 2014). This has to do, in particular, with social interactions in the classroom, such as engaging in group projects, contributing appropriately to class conversations, and managing social boundaries with the faculty and classroom peers.

In addition, one of the relatively unexplored areas in the research pertains to the ways in which faculty support college students with ASD in the classroom from a Universal Design for Learning (UDL) lens (Burgstahler & Russo-Gleicher, 2015). Faculty members who apply UDL principals in the classroom do so with the purpose of meeting the diverse learning needs of students with a range of strengths and abilities. The idea is to make the learning environment welcoming and accessible to all students. While UDL is based on a set of seven universal design principals originally created to make buildings and commercial products accessible, a UDL curriculum reflects three major elements (Center for Applied Special Technology [CAST], 2012). First, instructors must provide multiple means of representation. This involves providing students with instructions in multiple ways, providing class notes to underscore key ideas, and teaching with different media—including videos, lectures, small group discussions, and online activities (Burgstahler & Russo-Gleicher, 2015). Second, instructors must provide multiple means of action and expression. This involves providing opportunities for multiple means of responding (e.g. white boards, peer discussion, checklists) and assessment (e.g. portfolios, written papers, presentations) (Burgstahler & Russo-Gleicher, 2015). Third, instructors must provide multiple means of engagement. Activities that promote student engagement can include cooperative learning with peers, relevant and meaningful projects, and class discussions that encourage student contribution (Burgstahler & Russo-Gleicher, 2015). It is not clear, however, the extent to which faculty members who have been identified as exceptionally supportive to college students with ASD engage in practices that are reflective of these three elements of UDL.

Method

To gain a greater understanding of the experiences of faculty working with students with ASD, this study looked at the ways in which supportive faculty members responsively approach students with ASD in their teaching. The researchers engaged in a qualitative study of nine faculty members at two and four-year institutions of higher education, both public and private. Through a call for participant nominations that was distributed through several media sources, college students with ASD and directors of college disability offices nominated nine faculty participants. All of the participants were identified as being highly supportive of their students with ASD. Given the lack of research in this area, the goal of the study was to gain a deep understanding of how faculty can be exceptionally effective in their teaching supports for students with ASD. A semi-structured interview protocol was developed and designed to produce complex responses. As suggested by Yin (2014), the questions were developed to guide the participants to share their experiences openly, instead of being shaped with the intention of getting structured and rigid responses. Interview questions focused on faculty

members' experiences and perceptions about teaching and interacting with students with ASD. For example, faculty members were asked what they thought students with ASD needed in order to be successful academically, what were some accommodations they had provided to students with ASD, and what teaching methods did they use that they thought had been most helpful to their students with ASD. Each interview lasted approximately one hour in length, but varied from participant to participant depending on the length of responses given. The qualitative data software Saturate App was used for data analysis to conduct open coding, which involved identifying participant statements in the transcripts that were particularly relevant to faculty support of students with ASD. Codes were then assigned to these statements, and finally themes emerged from clusters of codes that had shared meanings of the participants' experiences related to teaching students with ASD.

The researchers acknowledge that their interests and this study are rooted in a social justice perspective that frames faculty as responsible for supporting historically under-served students who require accommodations. It is further acknowledged that the findings have limitations in generalizability but that the voices of these nine faculty members add much to the awareness of the experiences of faculty who work effectively with college students with ASD.

Findings

This section describes the responsive teaching approaches common across the faculty members that helped to meet the needs of college students with ASD. Faculty members' foundational beliefs and experiences related to students with ASD formed a foundation for their pedagogical approaches. The following instructional approaches and strategies emerged as salient among faculty members who responsively teach students with ASD.

Differentiated Instruction

The findings revealed that faculty participants utilized several methods of instruction that helped to meet the needs of the students with ASD. One element of faculty members' responsive instructional methods was their delivery of classroom material. Faculty described how they used multiple mediums in which to convey concepts, allowing for all students to learn depending on their strengths. The aim to reinforce the material presented by the instructors was achieved through multiple approaches that were often described as "experimental", "experiential" and "hands-on." One instructor described how he individualized approaches for each student to produce positive learning outcomes for students with ASD. He explained, "With that richness of diversity you have to be able to relate to where they're going. Find that individual path, tap into their learning style, and look at a universal design for learning and integrate everybody as you go." Other approaches such as use of technology, small group discussions and projects, and interactive classroom activities were employed in group settings to engage students and to reinforce learning.

Most faculty members spoke about how open they were to various learning methods, and that simply being appreciative of the diversity in ways of learning helped them to engage most fully with all their students. Anna described how she surveyed each new class at the beginning of the semester in an attempt to quickly learn the needs of her students from the very start. Specifically, Anna asked her students to write down on an index card a few things that they thought she could do to "create a conducive learning environment", and she was often surprised that the responses were things that she would not have necessarily thought of on her own. She stated that she did this exercise with the intention of uniquely tailoring her approach to the individual student's needs.

There was universal agreement among the faculty that there is an element of teacher-directedness and responsibility in framing and delivering the curriculum to students but the way to accomplish that successfully varied among instructors. So while they embraced high expectations for their students and understood the importance of responsibility on the part of the students, these faculty assumed the obligation to find the best individualized delivery methods.

Structured Scaffolding

The faculty participants spoke of working with students with ASD in particular to break down assignments into smaller parts when they noticed the students struggled to complete assignments or class projects. From their observations, faculty felt that scaffolding assignments by packaging them into smaller segments of the larger whole provided more clarity and structure to students with ASD. They mentioned that it seemed to make the assignments less intimidating for the students, but at the same time did not compromise the quality of the assignment. Methods of task analysis and breaking up larger projects and assignments into smaller parts were discussed by five faculty. Some faculty members shared their own personal challenges as students themselves, in which they discussed how breaking down larger assignments had helped them. Jacqueline shared:

> I never actually learned how to read music. But in order to get me to try and learn and get over that hump she was the one who was really good at breaking things down into digestible steps, and that was, I think, the first trait that really sticks out for me as a teacher. That, you know, I got as far as I did because we were able to break up the procedure into step one, master step one, step two, master step one and two, you know, and build on all of those lessons along down the line.

The personal experiences of these faculty members helped them come to the understanding that strategies such as scaffolding only serve to enhance the learning process and lead to greater student comprehension.

Comprehensive Accommodations

The majority of faculty members described a personal sense of responsibility to "level the educational playing field" for the students with ASD. All but one faculty member described accommodations for their students with ASD that rose above what is mandated by their respective campus disability offices. One faculty member described this responsibility by explaining,

> The way I see it is that people who have special needs have hurdles that other people don't have . . . By giving the accommodations, is [to] try to level the playing field. To try and put down some of those hurdles. So it's not a question of an unfair accommodation; rather it's to make it fairer for those people who have these extra hurdles that these other people don't have.

Faculty participants employed a strengths-based structure of adjustments and accommodations rather than focus on learning weaknesses. Faculty participants described actively finding ways to know their student's learning strengths and to build accommodations around those strengths. While rigor and high student expectations were upheld, faculty members adapted teaching methodologies and assignments to promote student success and accomplishment. Jacqueline reinforced the idea of allowing the student's strengths to emerge with assistance. She described how she "tweaked" traditional drawing methods to digital ones in her costume design class when she observed that a student excelled with anything computer oriented. Stephen also shared a specific example of working with a student with ASD in a class where he decided to modify the expectations of the assignments in order for the student to feel supported and successful despite his challenges. He recalled that he adjusted the assignment guidelines in his design class for the student who had difficulty with fine motor skills from model building to computer based projects. As evident from these excerpts, faculty members found ways to accommodate the various strengths of their students, yet they all agreed that these adjustments did not alter the goals nor the rigor of the assignments. Faculty members felt strongly that giving comprehensive accommodations to students with ASD was a way to make sure that the students received equitable opportunities to fully engage in college.

Collaborative Institutional Support

Collaboration across campus units, resources, and individuals was a key strategy reported by faculty to support the learning of college students with ASD. Faculty most commonly asked assistance from campus disabilities staff, but they also sought out advice from faculty members within their departments. Five faculty members

discussed approaching colleagues for support who had taught the same students with ASD. The goal for the faculty in seeking this assistance was so that they could best meet the needs of their students with ASD. For example, Cynthia sought out the help of her colleagues and others to best provide an academically successful experience for her students. She suggested to faculty:

> Get help. Go to the resources that we have on campus. Ask for referrals, ask for things to read, talk to your colleagues. Because I think the more we talk to each other the more we can brainstorm. We need to help those students.

Another effective approach that Anna took was to ask her students with ASD about the ways in which other faculty have been particularly supportive. She then turned to those faculty members to learn more about their strategies to teach and advise students with ASD. In addition, Cynthia recalled a time when she asked for guidance from the campus disability office with a particular student whom she was having difficulty with, and was given suggestions that allowed her to work more readily with the student. Kathy described a similar experience of collaboration in which Health Center psychiatrists, disabled student services, dining hall staff and Residential Life members all convened to help students with ASD in their dorm life. Even though faculty are the direct contact to the student with ASD in the classroom setting, the study indicates that the faculty member does not work alone in developing responsive teaching practices.

Discussion

The purpose of this qualitative study was to document promising practices of college faculty who were recognized as supportive in their teaching approaches with college students with ASD. Faculty practices and pedagogical approaches in the classroom were grounded by a genuine care and belief in their students with ASD. Shannon spoke thoughtfully about the ethic of care that drove her actions:

> I think what we must do is see the humanity in all our students, and if we start there the rest of it is revealed really. But when you shut up a little bit, you see the student…So I would say the first [piece of advice] is see the humanity. That would be great for all of us and not just teachers. And the second is to remember why we get paid, which is to take people from where they are to where they need to be. So the third thing would be . . . so that's what we have to figure out is how do we do that.

Faculty members in this study showed several ways in which they responsively approached their students with ASD in their teaching practices, including specific instructional methods such as structured scaffolding and differentiation, and in their networking with other institutional support services. Further analysis reveals that these documented practices align with the three major elements of UDL. The principles of multiple means of representation, multiple means of action, and expression and multiple means of engagement were clearly evident in practice in the majority of faculty approaches. While UDL is designed to help engage all individuals in theory, the findings from the current study confirm that these principles helped faculty to responsively teach students with ASD.

Multiple Meanings of Representation

In line with the first principle of UDL-"providing multiple means of representation"- many faculty in the study described their utilization of various methods of delivering instruction and reinforcing material. Stephen explained his approach, "To provide a variety of ways of communicating, so not just the oral communication but have it written down, and have it in several different places and in several different ways for communicating the same thing." The faculty seemed to practice this UDL principle by making sure that there were multiple pathways for the students to access the content. Kurt revealed his willingness to use several methods to help his students, even going above and beyond accommodations required by law. These faculty's use of the UDL principle of providing multiple means of representation offered their students with ASD an increased chance to be successful in their classes.

Multiple Means of Action and Expression

In addition to providing multiple means of representation, the findings revealed that most of the faculty adhered to the second principle of UDL-"providing multiple means of action and expression". In other words, faculty gave many specific examples of how they willingly altered assignment guidelines through strategies such as scaffolding and providing a variety of assessment opportunities. James shared that he was committed to creating a comfortable classroom by slightly modifying the way in which he gave a test, or even in the way he handed back the tests. As evident in James' and other faculty stories, they did not feel like these adjustments were too hard or too difficult for them to make, but instead were seen as giving their students with ASD different ways to express their understanding. Faculty shared a common idea that it was more important for them to slow down and get to know each student's strengths in order to tailor their approach to help the student be the most successful. Again, as reinforcement of their commitment toward this UDL principle, the faculty members wanted to make sure they were making the correct adjustments to their curriculum to enable the student with ASD to show their understanding however it was revealed. James commented:

> And then of course I have my own toolbox and we kind of see what works. And it can sometimes take a couple of weeks to just size up and then create that environment that's going to be most successful... I think that it's important to take that extra time and assess and in a wide way, look at what's going to be the best possible path for the individual.

Multiple Means of Engagement

The findings suggest that the faculty also follow the third UDL principle-providing multiple means of engagement-in the descriptions of their teaching approaches. James shared that his former job as a firefighter gave him the ability to quickly assess the overall ability of the student with ASD to fully engage in the classroom setting, and then create a comfortable space for that student. He was able to "size up the scene" and figure out what the challenge was for the student-whether it was sensory overload, space issues, or some other obstacle-and then make necessary adjustments to help. Faculty also described specific methods for helping students with ASD to acclimate to upcoming expectations for engagement so that they had the time to prepare themselves. Anna shared a successful method that she developed with a student of hers to allow the student time and assistance in participating fully in the group activities:

> My job was to put on the board any time that we were going to do 'pair and share' so that she could see it, that it was coming. And then before I went into that I'd say like we're going to discuss the chapter in a minute. Before we do that we're going to get into pairs. And then I would literally say in front of fifty-two college students so now it's your opportunity to smile and make eye contact to the person, people around you. There was a lot of building a context for her to be successful in ways that took a few seconds. And that helped.

By utilizing the UDL principle of multiple means of engagement, the faculty allowed the students to become contributing members of the classroom community. Stephen and others felt that by giving their students with ASD alternative means to engage fully in the class discussions and other activities, they would be best serving their needs.

Recommendations

This study highlights specific approaches that faculty members utilized to provide learning support for their students with ASD. In addition to approaches that incorporate key pedagogical approaches in the classroom, these findings support the critical need for faculty in higher education to put the principles of UDL into their teaching approaches to support the success of students with ASD. Training on UDL is of critical importance when designing curriculum and pedagogical approaches. Whether they knew it or not, the faculty practiced principles of UDL, showing in the context of this study that these practices contribute to their successful support of students with ASD.

The findings of the current study suggest a need for postsecondary institutions to provide further faculty training on ASD and supportive teaching strategies. Although faculty members in the current study were recognized as supportive of their students with ASD, most mentioned their desire for more training on the challenges and needs of students with ASD. Previous research supports the need for more faculty development, with outcomes of faculty members who are more willing and able to support their students with significant challenges (Henderson, 2012; O'Brien, 2010). Future research should be conducted on developing training specifically for faculty on awareness of ASD. Just as important, once these training opportunities are established, monitoring of the effectiveness of these faculty development opportunities on the willingness and ability of faculty to appropriately support students with ASD must be conducted.

The findings of the current study revealed a desire and self-initiated actions by the faculty to seek out help from their campus disabilities offices and others to find ways to best support their students with ASD. Faculty members like Cynthia and Anna described their interactions with their colleagues in which they both gained invaluable advice, and occasionally met with hesitation about how help this student population. Faculty must be encouraged to collaborate with other campus resources offices to meet the needs of students with different learning needs. While faculty members are mandated to comply with legal requirements to provide certain accommodations for students with ASD, an effective means for encouraging faculty members to go beyond these basic requirements are to have other faculty members to model supportive teaching strategies. Zhang et al. (2010) revealed that college faculty will have a greater likelihood of supporting students with disabilities if they perceive that other faculty members are also willing to accommodate. In other words, faculty members who model supportive behaviors toward students with ASD will attract and encourage other faculty members to do the same. Institutions of higher education must encourage spaces for this kind of modeling and mentoring to occur.

It is the duty of institutions of higher education, most importantly the faculty, to create a welcoming climate that will allow the growing number of college students with ASD the best chance at success. Responsive faculty like those from this study should be identified and then be encouraged to train other faculty members to best support this student population in their pursuits in higher education. To conclude, James, one of the faculty members who responsively teaches students with ASD, provides insight into how to create a supportive campus climate through faculty buy-in. He explains that the faculty must ask themselves,

> 'What are the strategies to make this a successful relationship? What little accommodations can I do to make this a comfortable classroom for my individual that might need to take a break?' That might need to have a little bit of tweak to the way I give a test. Or the way I hand out a test after it's done. And so now we have this buy-in from colleagues as well as from the community that this post-secondary model can work across the board.

The time is now to create a culture of collaboration to support both the faculty and the students with ASD whom they teach, engage, and inspire.

References

Brennan, E. & Peña, E.V. (in press). Autism, inclusion, and communication in higher education. *Developments*.

Burgstahler, S. & Russo-Gleicher, R. J (2015). Applying universal design to address the needs of postsecondary students on the autism spectrum. *Journal of Postsecondary Education and Disability, 28*(2), 199-212.

Center for Applied Special Technology. (2012). *About UDL*. Retrieved from The National Center for Universal Design and Learning: Retrieved from http://www.udlcenter.org/aboutudl/udlguidelines.

Gelbar, N. W., Smith, I., & Reichow, B. (2014). Systematic review of articles describing experience and supports of individuals with autism enrolled in college and university programs. *Journal of autism and developmental disorders, 44*(10), 2593-2601.

Harris, J., Ho, T., Markle, L., & Wessel, R. (2011, May/June). Ball State University's Faculty Mentorship Program: Enhancing the first-year experience for students with disabilities. *About Campus, 16*(2), 27-29.

Henderson, C. A. (2012). *Preparing college faculty for working with students with Asperger's syndrome: A web-based training module* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 1037814563)

Hong, B., Haefner, L., & Slekar, T. (2011). Faculty attitudes and knowledge toward promoting self-determination and self-directed learning for college students with and without disabilities. *International Journal of Teaching and Learning in Higher Education, 23*, 175-185.

Longtin, S. E. (2014). Using the college infrastructure to support students on the autism spectrum. *Journal of Postsecondary Education and Disability, 27*(1), 100-121.

MacLeod, A., & Green, S. (2009). Beyond the books: Case study of a collaborative and holistic support model for university students with Asperger syndrome. *Studies in Higher Education, 34*(6), 631-646.

Muller, L. (2006). Research collaboration with learning-disabled students: Strategies forsuccessful student-faculty partnerships. *Journal of College Science Teaching, 36*(3), 26-29.

Murray, C., Lombardi, A., Wren, C. T., & Keys, C. (2009). Associations between prior disability-focused training and disability-related attitudes and perceptions among university faculty. *Learning Disability Quarterly, 32*, 87-100.

O'Brien, L. M. (2010). Caring in the ivory tower. *Teaching in Higher Education, 15*, 109-115.

Peña, E. V. (2014). Marginalization of published scholarship on students with disabilities in higher education journals. *Journal of College Student Development, 55*, 30-40.

Peña, E. V., & Kocur, J. (2013). Parenting experiences in supporting the transition of students with autism spectrum disorders into community college. *Journal of Applied Research in Community Colleges, 20*(2), 5-12.

Pillay, Y., & Bhat, C. S. (2012). Facilitating support for students with Asperger's syndrome. *Journal of College Student Psychotherapy, 26*(2), 140-154.

Pinder-Amaker, S. (2014). Identifying the unmet needs of college students on the autism spectrum. *Harvard Review of Psychiatry, 22*(2), 125-137.

Roux, A. M., Shattuck, P. T., Rast, J. E., Rava, J. A., and Anderson, K., A. (2015). *National Autism Indicators Report: Transition into Young Adulthood*. Philadelphia, PA: Life Course Outcomes Research Program, A.J. Drexel Autism Institute, Drexel University.

Sniatecki, J. j., Perry, H. h., & Snell, L. l. (2015). Faculty Attitudes and Knowledge Regarding College Students with Disabilities. *Journal Of Postsecondary Education & Disability, 28*(3), 259-275.

Taylor, M. J. (2005). Teaching students with autistic spectrum disorders in higher education. *Education & Training, 47*, 484-495.

U.S. Department of Education, National Center for Education Statistics. (2016). Digest of Education Statistics, 2014 (NCES 2016-006), Chapter 2. Retrieved from https://nces.ed.gov/fastfacts/display.asp?id=64.

U.S. Department of Education, National Center for Education Statistics. (2009). *2003-04 and 2007-08 National Postsecondary Student Aid Study (NPSAS:04 and NPSAS:08)*. Retrieved from http://nces.ed.gov/programs/digest/d10/tables/dt10_240.asp.

Van Hees, V., Moyson, T., & Roeyers, H. (2015). Higher education experiences of students with autism spectrum disorder: Challenges, benefits and support needs. *Journal of Autism and Developmental Disorders, 45*(6), 1673-1688.

White, S.W., Elias, R., Salinas, C.E., Capriola, N., Conner, C.M., Asselin,S.B., Miyazaki, Y., Mazefsky, C.A., Howlin, P., & Getzel E.E. (2016). Students with autism spectrum disorder in college: Results from a preliminary mixed methods need analysis. Research in Developmental Disabilities, 56, 29-40.

Yin, R. K. (2014).Case study research: Design and methods. Thousand Oaks, CA. SAGE Publications, Inc.

Zhang, D., Landmark, L., Reber, A., Hsu, H. Y., Kwok, O., & Benz, M. (2010). University faculty knowledge, beliefs, and practices in providing reasonable accommodations to students with disabilities. *Remedial and Special Education, 31*, 276-286. doi:10.1177/0741932509338348

Fully Including Students with Disabilities in Online Courses: Tips for Instructors

— Sheryl Burgstahler

Dr. Sheryl Burgstahler founded and directs the DO-IT (Disabilities, Opportunities, Internetworking, and Technology) Center and the Access Technology Center (ATC). These two centers promote (1) the use of technology and other interventions to support the success of students with disabilities in postsecondary education and careers and (2) the development of facilities, software, websites, multimedia, and online learning programs that are welcoming and accessible to individuals with disabilities. Author or co-author of eight books, she is the editor and lead author of *Universal Design in Higher Education: From Principles to Practice*.

Abstract

The past two decades have witnessed significant increases in the number of courses offered online, the number of students enrolled in them, and the diversity of electronic tools available to teach them. Over this time period, civil rights complaints and resolutions with the Office of Civil Rights and the Department of Justice have also made it perfectly clear that online courses must be made accessible to students with a wide variety of disabilities. This article shares possible motivations for the design of accessible online courses, examples of access challenges for students with a variety of disabilities, two approaches for making online courses accessible to people with disabilities, and tips for online instructors.

Keywords

accessibility, disability, universal design, inclusive design, universal design for learning, usable design, pedagogy, online learning, distance learning, course design

In the early days of the Internet, 1995 to be specific, I taught the first online course offered through the University of Washington in Seattle. At the time I worked within the University's central IT organization. Among other things, my group helped University units make their websites and other IT accessible to students, faculty, and staff with disabilities. I also held an affiliate faculty position in the College of Education. With a long history teaching—at secondary school, college and university levels—(1) I was curious to see if a course typically taught on-site could be effectively offered online and, (2) I wondered if such a course could be made fully accessible to students and instructors with a wide variety of disabilities. I offered to teach the first online course in part to explore these two issues.

My co-instructor was Dr. Norm Coombs, a professor at the Rochester Institute of Technology, who is himself blind. We designed the course to be accessible to Dr. Coombs, who uses screen reader technology to read aloud text presented on the screen. We also made it welcoming and accessible to students who were blind or deaf, had physical disabilities, had learning disabilities, or were English language learners. We employed the latest technology of the time—email, discussion list, Gopher, file transfer protocol, and telnet. All online materials were provided in a text-based format in documents distributed through Gopher. Videos with captions and audio descriptions (extra audio content that describes visual aspects of the video for individuals who are blind) were distributed through postal mail. Throughout the course's many offerings, we did not know if our students had disabilities unless they voluntarily self-disclosed because all aspects of the course were designed to be accessible to everyone. In our experiences teaching this course, my co-instructor and I learned that, (1) yes, a course typically offered on-site can be effectively offered online and, (2) yes, it can be made accessible to students and instructors with disabilities.

I continue to teach online. Today the technology used to deliver online learning is dramatically more advanced and diverse. However, the basic issues are the same when it comes to accessibility. First, as I choose content, document formats, and teaching methods, I consider the wide variety of characteristics potential students might have; these differences may relate, for example, to gender, race, ethnicity, culture, age, communication skills, physical and sensory abilities, interests, social skills, learning abilities and preferences, values, socioeconomic status, native language, and religious beliefs. I imagine these students in my class and explore how I might design my course to maximize the learning for all of them. For example, to make the course welcoming and usable by students who are English language learners, of different gender identities, and/or from diverse cultural backgrounds, I make sure to avoid slang and jargon, unless I define terms used; include images that represent people with diverse characteristics; caption videos so that viewers can see the spelling of words presented in audio format; and give multiple examples of a concept to make it understandable by students with a wide variety of backgrounds.

The next section of this article presents possible motivations for the design of accessible online courses. In the sections that follow I share examples of access challenges for students with a variety of disabilities, two approaches for making online courses accessible to people with disabilities, and tips for online instructors.

Motivations for Accessible Online Learning Design

Inclusive practices are not widely employed in online courses today. This situation may be due to lack of awareness of accessibility barriers and solutions, competing needs for funding course development, lack of technical support on accessible design to course designers and instructors, institutional failure to comply with legal mandates, and the common accommodations-only approach to providing access to students with disabilities.

Some instructors strive to make a course accessible because they consider it their ethical responsibility to make their content available to anyone who enrolls in their course. They might consider privacy issues as they design their course in such a way that students do not need to self-identify in order to have full access to the content and activities. Some are proactive in accessible course design because they want to minimize the need for accommodations for individual students with disabilities after they enroll in the class. Some see the benefit of accessible design for all students.

Some instructors may be motivated to employ inclusive practices by legal mandates. More than thirty postsecondary institutions nationwide have had to resolve civil rights complaints about the inaccessibility of their information technology (IT), including IT used in online courses (University of Washington, n.d.). In each case resolutions were made with the Office of Civil Rights of the U.S. Department of Education or the Civil Rights Division of the Department of Justice. The resolutions to date, which have been very expensive to implement, have made perfectly clear that courses, services, and information delivered to students online must be made accessible to individuals with disabilities. The most common laws referenced in the resolutions are Section 504 of the Rehabilitation Act of 1973 and the Americans With Disabilities Act of 1990 along with its 2008 Amendments. These laws form a firm legal basis for the requirement that IT procured, developed, and used by educational institutions be accessible to individuals with disabilities. Together they make it clear that online offerings for students, faculty, staff, and visitors must be accessible to those with disabilities.

In these legal resolutions "accessible" in the context of IT is defined as follows.

> "Accessible" means a person with a disability is afforded the opportunity to acquire the same information, engage in the same interactions, and enjoy the same services as a person without a disability in an equally effective and equally integrated manner, with substantially equivalent ease of use. The person with a disability must be able to obtain the information as fully, equally and independently as a person without a disability. (Resolution agreement: South Carolina Technical College System)

Access Challenges

Students can face many different access challenges when taking an online class. Students who are deaf cannot access audio content without captions or transcriptions. Students whose first language is not the one used by speakers or students who are simply unfamiliar with terms used in the audio or video content may also have challenges in accessing such content. Individuals who have low vision may have difficulty reading small text, fancy fonts, and/or text presented on a background that has little contrast with the text. Students with attention deficits may be distracted when too much content and too many images are presented on the screen at once. Many students may find reading difficult when it is not broken up into smaller parts and with clear headings to guide them. Individuals who are colorblind will not be able to distinguish between colors in particular combinations.

Some individuals with disabilities operate standard IT using specialized software and hardware called *assistive technology*. Head control, speech input, Morse code input, and dozens of alternatives to the standard keyboard and mouse make it possible for almost anyone to fully operate a computer and software. Most of these systems provide access to all keyboard functions, but do not fully emulate the mouse. Therefore, to be accessible to students using these assistive devices, all aspects of an online learning course needs to be operable by using the keyboard alone. This can be accomplished when programmers make the functions commonly used with a mouse achievable by using the arrow keys on the keyboard. This provision should be made as developers of learning management systems create mechanisms for navigation, menu selections, and other operations.

Individuals who are blind may miss valuable content in a video presentation unless visual images not obvious from the audio are described; inserting audio description within a video can accomplish this task. Like Dr. Coombs, many people who are blind use screen reader technology to access an online course. Screen readers read aloud the text and structural elements of content presented on the screen. However, they cannot access the content displayed within a graphic image unless this content is alternatively described using text so that it can be read aloud with a screen reader. For example, a Portable Document Format (PDF) file is often simply a scanned in image of text. It is not displayed in a text format that a screen reader can read aloud; it is just a picture of text. Instructors can easily test to see if this is the case. If they cannot select words or a line of text as they would do to cut and paste content, this text is presented as an image and cannot be read by a screen reader. PDF files can be created from a printed document in an accessible format so that the text and structural elements of the document are accessible to a screen reader by using optical character recognition software as it is scanned. Accessible PDF documents can be created from other formats, such as Microsoft Word, through a specific process. Students who have disabilities that affect their ability to read (e.g., dyslexia) or are English language learners also use screen readers to read text presented in documents.

Screen reader technology is capable of skipping from heading to heading and reading the text of each heading as well as identifying its hierarchical level within the document. It can also skip from the text of one link to the next on a web page. These capabilities help blind users skim through the content of a document or quickly discover the content to which a web page links. However, if the headings in a document are not formatted (e.g., using the Styles function in Microsoft Word) and the text of links to websites is not descriptive (e.g., it says "click here" for each link) this capability of the screen reader cannot benefit the user. Using formatting functions to create bulleted and numbered lists, rather than manually inserting a bullet point or number for each item, is also made clear to a screen reader user to facilitate reading comprehension.

Table 1 summarizes how accessible IT design practices can be developed in response to limitations of assistive technologies.

Over the past couple of decades there have been dramatic increases in the variety of technologies used in online learning, in the number of online courses offered, and in the number of students taking these courses, including students who have disabilities. These trends make accessibility issues increasingly important to address. However, throughout this time period it has been reported in the literature that most online courses unintentionally erect barriers to individuals with disabilities (Coombs, 2010; Fichten, et al., 2009; Keeler & Horney, 2007; Schmetzke, 2001; Thomson, Fichten, Havel, Budd, & Asuncion, 2015). Students with disabilities report inaccessible features such as disorganized content pages, uncaptioned videos, and PDF files and other course materials that cannot be read by screen readers (Durre, Richardson, Smith, Shulman, & Steele, 2015; Gladhart, 2010; Roberts, Crittenden, & Crittenden, 2011).

Approaches to Access: Accommodations and Universal Design

The most common approach to making a course accessible to a specific student with a disability is to offer accommodations once the student enrolls in a class (Barnard-Brak & Sulak, 2010; Kinash, Crichton, & Rupnow, 2004). To receive an accommodation a student must register with the campus disability services office and provide appropriate documentation of the disability and the need for the accommodation. Common accommodations made in online learning courses include captioning videos and making PDF, Microsoft Word, PowerPoint, and other documents accessible to screen readers.

Table 1: The Implications of the capabilities of assistive technology on course design

Assistive technology:	**Therefore:**
Emulates the keyboard, but may not fully emulate the mouse	Design websites and software to operate with the keyboard alone
Cannot read content presented in images	Provide alternative text
Can tab from link to link and read the link text	Make links descriptive
Can skip from heading to heading, read the headings and indicate the heading hierarchy	Structure the content with hierarchical headings
Can identify list structure	Use list formatting feature of application
Cannot accurately convert audio to text	Caption video, transcribe audio

The "universal design" (UD) framework can be applied to proactively create online learning activities that are accessible to students with disabilities. First applied to the built environment, the definition of UD established by Ron Mace of the Center for Universal Design (CUD) is "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" (CUD, 2008, p. 1). Other proactive design approaches include "accessible design," which is often used to describe design efforts more narrowly focused on individuals with disabilities, and "usable design," which is measured by "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" (International Organization for Standardization, 1998). Even IT that is technically accessible may not be very usable. For example, a software application may be made accessible to screen readers by offering special commands that must be memorized by blind users to complete inaccessible functions; this approach may result in a product that is technically accessible, but with a low rating with respect to usability. Universal designs are both accessible and usable. They are also offered in an inclusive setting so that they do not result in the segregation of people who have disabilities.

When the UD framework is applied to teaching (sometimes referred to as "Universal Design for Learning" [UDL] or "Universal Design of Instruction"), three principles are applied to curriculum and instructional practices: provide multiple means for (1) representation, (2) action and expression, and (3) engagement to ensure that students have multiple ways to gain knowledge and skills, demonstrate knowledge and skills, and engage with the curriculum and each other (Burgstahler, 2015b; Center for Applied Special Technology, n.d.). The results of some studies suggest that UDL is an effective approach for designing flexible learning environments that are accessible to and usable by a diverse group of students with respect to abilities, background knowledge, and culture (Al-Azawei1, Serenelli, & Lundqvist, 2016).

Access barriers for students with disabilities can occur with (1) the technology used to deliver online learning, as well as (2) the methods used by instructors. UD can be applied to both. For example, universally designed learning management systems ensure that all functions and documentation within the system can be operated with the keyboard alone and with a screen reader and include captions or transcriptions of audio content. Modern learning management systems make varying degrees of effort toward this goal. On the other hand, online instructors can apply UD to aspects of the course over which they have control to ensure that their course is welcoming to, accessible to, and usable by the broadest audience. This applies to both the pedagogy and technology they employ (Burgstahler, 2015b).

Many strategies for making online courses accessible to students with disabilities are reported in the literature (e.g., Burgstahler, 2015b; Coombs, 2010; Fichten, et al., 2009; Keeler & Horney, 2007; Pearson & Koppi, 2006; Rangin, 2011; Robinson & Wizer, 2016; Savidis & Stephanidis, 2005; Seale, 2014). Learning management systems promote accessibility when they make it easy for a person who is blind to follow discussions, include an option to enlarge characters on the screen, ensure that all content and navigation can be accessed using the keyboard alone, and prompt instructors to insert alternative text with images.

There is much an instructor can do to deliver an accessible course, no matter what learning management system he/she is using, and minimize the need for accommodations after students enroll. To create an accessible and usable environment, they can apply UD to the overall design of the online course (e.g., choosing which learning management system features to employ; planning to use a variety of instructional strategies). They can also apply UD to specific course materials (e.g., providing text alternatives for content included in graphic images, captioning videos, providing transcripts for audio, structuring the format of documents, defining jargon) and communication methods (e.g., ensuring that discussions are accessible to students with all types of disabilities). Instructors who offer "scaffolding" to students (e.g., outlines, study guides) can help them gain the skills they need to become successful learners. As far as assessment, testing in the way content is taught can minimize confusion, and providing multiple methods of assessment overall and individual choice in some assignments can benefit many students.

UD can also be built into an assignment. For example, in one of my online courses, I assigned small groups to complete a project and answer specific questions to report their work. The first thing they were told to do was decide which mode of communication they would employ so that all students could attend group "meetings" and fully engage in the discussions. Members of groups were not required to disclose disabilities or any other characteristics that contributed to their choice of communication method; they just needed to reach consensus on the communication tool they would use. One group reported back that they used e-mail because one of the students was deaf and could not easily engage using a synchronous communication mode. Actually, the majority of groups used asynchronous communication options, usually because it worked best when group members lived in different time zones and/or had different daily schedules. In this course, if not for her voluntary disclosure, not even the instructor would have known there was a deaf student in the class because the course was universally designed (e.g., captions and audio descriptions were provided for all video presentations).

Some subjects present particular challenges in ensuring access to online learning. For example, mathematics classes pose accessibility challenges because of their heavy use of symbols that can make content difficult to convert to formats accessible to students who are blind. However, there are proven techniques that can solve this problem (DO-IT, n.d.b). Similarly, courses that use complex graphic images to deliver content (e.g., in fields such as biology) or rely on complex tables can be difficult to convert to a format students who are blind can easily access. In these cases, instructors should consult with a disability services or accessible technology group on campus.

It is encouraging to report that the popular Quality Matters Rubric of eight benchmarks for high quality online courses includes accessibility and usability as the eighth benchmark that should be applied to all of the other benchmarks—course overview and introduction, learning objectives (competencies), assessment and measurement, instructional materials, course activities and learning interaction and engagement, course technology, and learner support (Quality Matters, n.d.). The national standards for quality online courses published by the International Association for K–12 Online Learning (2011) also include accessible design recommendations for both technology and learning activities.

Tips for Instructors

There are multiple sources of information about accessible design for online learning—the AccessDL website (DO-IT, n.d.a.) highlights many of them. Included is a document in which I share twenty tips for instructors on how to make their online courses accessible to a broad audience (Burgstahler, 2015a). The list is informed by common access challenges experienced by students with disabilities, accessible online learning strategies reported in the literature, and my own experiences as an online instructor. Although it does not cover every potential accessibility issue, the list provides a good place to start and includes references to resources that provide further instruction regarding specific suggestions. In Table 2 I share UD-inspired tips for online faculty.

I think that most people would agree that many of these suggestions are easy to implement immediately (e.g., using the heading structure provided in the learning management systems), but others may take some time, and still others will require technical resources (e.g., captioning videos). Instructors should not let the difficult steps prevent them from immediately embracing the low-hanging fruit. Even simple steps toward accessible design can make a course more welcoming to a broad audience and minimize the need for accommodations in the future.

Table 2: Tips for proactively addressing the diversity of potential students through UD

UD approach	Specific tips
Provide multiple ways for potential students to gain knowledge.	Present content in multiple ways (e.g., using a combination of text, video, audio, and/or images).
	Allow students to choose assignments that are most relevant to them.
	Allow adequate time for activities, projects, and tests (e.g., give details of project assignments in the syllabus so that students can start working on them early).
Design each course content page, document, and audio/video presentation in an accessible format.	Minimize the use of PDFs, especially when presented as an image. If PDFs are used, present them in an accessible format and consider offering a text-based alternative as well.
	Use clear, consistent layouts and organization schemes for presenting content in documents and on course content pages.
	Structure headings and lists (using style features built into the learning management system, Word, PowerPoint, PDFs, etc.).
	Use large, bold, san serif fonts on uncluttered pages with plain backgrounds.
	Use color combinations that are high contrast and can be read by those who are colorblind.
	Provide concise alternative text descriptions of content presented within images.
	Use descriptive wording for hyperlink text (e.g., “National Science Foundation” rather than “click here”).
	Caption video presentations and transcribe audio files.
Support a wide range of background knowledge, skills, and experiences of potential students.	Assuming students have a wide range of technology skills, point to resources for gaining specific skills needed to engage in the course.
	Provide clear instructions for assignments.
	Address a wide range of language skills in presenting content (e.g., spell acronyms, define terms, avoid or define jargon).
	Offer outlines and other scaffolding tools to help students learn.
	Provide adequate opportunities for practice.
	Make examples and assignments relevant to learners with a wide variety of interests and backgrounds.
Provide multiple ways for potential students to engage with the instructor and each other.	Use tools for class communication that are accessible to everyone.
	For small group work and for meetings with the instructor offer communication options that are accessible to everyone involved in those engagements.
Provide multiple ways for potential students to demonstrate knowledge.	Provide a variety of options for demonstrating learning (e.g., different types of test items, portfolios, presentations, discussions).
	Provide rubrics or otherwise make expectations clear for engagement, activities, projects, and assigned reading.

Conclusion

Much has happened at the intersection of education and IT fields that has the potential to open doors to learning opportunities to more students worldwide, including individuals with disabilities. This vision will not be fully realized, however, unless pedagogy and IT employed in online courses is accessible, usable, and welcoming to individuals with diverse abilities, gender identities, races, ethnicities, and other characteristics. Evidence suggests that inclusive practices are not widely implemented in online courses today, due at least in part to lack of awareness of accessibility barriers and solutions, competing needs for funding, lack of technical support, institutional failure to comply with legal mandates, and the common accommodations-only approach to providing access to students with disabilities. Instructors can play a critical role in demanding that online learning tools be designed with accessibility and usability in mind and employing pedagogical practices and online tools that are universally designed. This article provides tips for getting started.

References

Al-Azawei1, A., Serenelli, F., & Lundqvist, K. (2016). Universal Design for Learning (UDL): A content analysis of peer-reviewed journal papers from 2012 to 2015. *Journal of the Scholarship of Teaching and Learning, 16*(3), 39–56.

Americans with Disabilities Act Amendments Act of 2008. 42 U.S.C.A. § 12101 note (2011)

Barnard-Brak, L., & Sulak, T. (2010). Online versus face-to-face accommodations among college students with disabilities. The American *Journal of Distance Education, 24*, 81–91.

Burgstahler, S. (2015a). *20 tips for teaching an accessible online course*. Seattle: University of Washington. Retrieved from http://www.washington.edu/doit/20-tips-teaching-accessible-online-course.

Burgstahler, S. (2015b). Universal design of instruction: From principles to practice. In S. Burgstahler (Ed.). *Universal design in higher education: From principles to practice* (pp. 31-64). Boston: Harvard Education Press.

Carter, I., Leslie, D., & Kwan, D. (2011). Applying universal instructional design to course websites by using course evaluations. *Collected Essays on Learning and Teaching, 5*, 119–125.

Center for Applied Special Technology. (n.d.). *Universal Design for Learning*. Retrieved June 1, 2017, from http:// http://www.cast.org/our-work#.WU7xbRQxRlg.

The Center for Universal Design (CUD). (2008). *About UD*. Raleigh: North Carolina State University. Retrieved from http://www.ncsu.edu/ncsu/design/cud/about_ud/about_ud.htm.

Coombs, N. (2010). *Making online teaching accessible: Inclusive course design for students with disabilities*. San Francisco: Jossey-Bass.

DO-IT (Disabilities, Opportunities, Internetworking, and Technology). (n.d.a.). *AccessDL: The Center on Accessible Distance Learning*. Retrieved June 1, 2017, from http://www.washington.edu/doit/ programs/accessdl.

DO-IT. (n.d.b). *How do I create online math content that is accessible to students who are blind?* Retrieved June 1, 2017, from http://www.washington.edu/doit/how-do-i-create-online-math-content-accessible-students-who-are-blind.

Durre, I., Richardson, M., Smith, C., Shulman, J. A., & Steele, S. (2015). In S. Burgstahler (Ed.). *Universal design in higher education: From principles to practice* (pp. 117–130). Boston: Harvard Education Press.

Gladhart, M. A. (2010). Determining faculty needs for delivering accessible electronically delivered instruction in higher education. *Journal of Postsecondary Education and Disability, 22*(3), 185–196.

International Association for K–12 Online Learning. (2011). Version two national standards for quality online courses. Vienna, VA: Author.

Keeler, C. G., & Horney, M. (2007). Online course designs: Are special needs being met? *The American Journal of Distance Education, 21*(2), 61–75.

Kinash, S., Crichton, S., & Kim-Rupnow, W. S. (2004). A review of 2000–2003 literature at the intersection of online learning and disability. *The American Journal of Distance Education, 1*8(1), 5–19.

Pearson, E., & Koppi, T. (2006). Supporting staff in developing inclusive online learning. In M. Adams & S. Brown (Eds.) *Towards inclusive teaching in higher education* (pp. 56–66). London: Routledge.

Quality Matters. (n.d.). Higher Ed Program–Rubric. Retrieved June 1, 2017, from https://www.qualitymatters.org/rubric.

Rangin, H. (2011). *How to guide for creating accessible online learning*. CANnect. Retrieved from http://projectone.cannect.org.

Resolution agreement: South Carolina Technical College System, *OCR Compliance Review, 11-11-6002*.

Roberts, J. B., Crittenden, L. A., & Crittenden, J. C. (2011). Students with disabilities and online learning: A cross-institutional study of perceived satisfaction with accessibility compliances and services. *Internet and Higher Education*, 14(4), 242–250.

Robinson, D. E., & Wizer, D. R. (2016). Universal Design for Learning and the Quality Matters Guidelines for the design and implementation of online learning events. *International Journal of Technology in Teaching and Learning, 12*(1), 17–32.

Savidis, A. & Stephanidis, C. (2005). Developing inclusive e-learning and e-entertainment to effectively accommodate learning difficulties. *SIGACCESS Accessibility and Computing, 83*, 42–54.

Schmetzke, A. (2001). Online distance education: "Anytime, anywhere" but not for everyone. *Information Technology and Disabilities, 7*(2). Retrieved from http://www.rit.edu/~easi/itd/itdv07n2/axel.htm.

Seale, J. K. (2014). E-learning and disability in higher education. *Accessibility research and practice*. London: Routledge, Taylor & Francis.

Thomson, R., Fichten, C. S., Havel, A., Budd, J., Asuncion, J. (2015). Blending universal design, e-learning, and information and communication technologies. In S. Burgstahler (Ed.). *Universal design in higher education: From principles to practice* (pp. 275-284). Boston: Harvard Education Press.

University of Washington (n.d.). *Laws, policies, and standards*. Seattle, WA: Author. Retrieved June 1, 2017, from http://www.washington.edu/accessibility/requirements/.

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Using Simulations to Develop Pre-service Teachers' Empathy and Understanding of Exceptionalities

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Abstract

Within North America students with exceptionalities are integrated into the regular classroom. As such, pre-service teachers must be prepared to teach in an inclusive environment. To be successful in an inclusive classroom the pre-service teacher should possess empathy towards individuals with exceptionalities. A common method used to develop pre-service teachers' empathy toward individuals who have exceptionalities is through simulations. The current study examines the effectiveness of a seven-day simulation activity in enabling pre-service teachers who are training to teach kindergarten to grade 6 to develop empathy and understanding of students who have exceptionalities. Findings suggest that the simulation enabled the pre-service teachers to develop sufficient insight for them to appreciate the strengths possessed by individuals who have exceptionalities and to realize that an individual's exceptionality is only one aspect of a person's life. Overall participants reported that the experience was very positive and that they gained knowledge and greater empathy towards individuals who have exceptionalities.

Keywords

empathy, self-concept, simulations, exceptionalities, pre-service teachers

An essential attribute possessed by teachers who work in diverse and inclusive classrooms is empathy towards individuals with exceptionalities (Peck, Maude, & Brotherson, 2014; Mauceri, Di Marco, & Licciardello, 2012). Empathy enables teachers to understand, feel, communicate and respond to variations in students' perspectives and it is through empathy that teachers foster inclusive practices and understand the behaviour and experiences of students with diverse abilities and socioeconomic backgrounds (Peck et al., 2014; Tettegh & Anderson, 2007). As such, it is essential that pre-service teachers be prepared to teach in a diverse and inclusive classroom. The purpose of the current study is to examine the effectiveness of a seven-day simulation activity in enabling pre-service teachers who are training to teach kindergarten to grade 6 (primary/junior) to develop empathy and understanding of students who have exceptionalities.

In the field of special education, there is some disagreement regarding the use of the term exceptionality versus the term disability. In Canada the term exceptionality refers to individuals whose physical, behavioural, or cognitive performance is so significantly different from the norm that they require specialized services to meet their needs. A disability, on the other hand, refers to a specific category of exceptionality (e.g., learning disability). Since the simulation used in the current study does not focus on a specific disability, the term exceptionality will be used.

In its simplest form, empathy has been defined as the response of one individual to the experiences of another (Dvash & Shamay-Tsoory, 2014; Tettegh & Anderson, 2007). It is important to note that empathy is not interchangeable with sympathy or pity. Sympathy is a vicarious emotional reaction based on the apprehension of another's emotional state resulting in the feeling of care and concern for someone and accompanied by a wish to see the person better off or happier (Cuff, Brown, Taylor & Howat, 2014; Burton, 2015). The distinguishing factor between empathy and sympathy is that sympathy drives the observer to take action to alleviate a person's perceived suffering (Baron-Cohen & Wheelwright, 2004). Within the classroom setting, it is important that teachers do not view students with exceptionalities as suffering from an affliction that must be alleviated. Therefore it is empathy, not sympathy, which enables a teacher to understand a student's emotional and cognitive state so that effective accommodations and modifications to the curriculum can be made. Pity, on the other hand, is the feeling of discomfort at the distress of another and often has condescending overtones (Burton, 2015). A teacher who feels pity for a student may be less likely to implement effective programming for a student because they may view the challenges of an exceptionality as being a burden that cannot be overcome. Overall, pity is less engaging than empathy or sympathy, as it is little more than a conscious acknowledgement of an individual's plight (Burton, 2015).

Empathy can be best understood through the examination of its three main components: sensitivity, cognition, and inhibition. Sensitivity is an affective response that occurs through a person's ability to temporarily identify one's self with another person's life and share one's ideas and emotions (Baron-Cohen & Wheelwright, 2004; Klis & Kossewska, 1996). For a teacher to identify, evaluate and understand a student's perspective, sensitivity must be tempered with the cognitive (Baron-Cohen & Wheelwright, 2004; Decety & Jackson, 2004; Klis & Kossewska, 1996). The cognitive facet of empathy enables a teacher to make predictions regarding a student's emotional and mental state. Specifically, through the act of assuming another person's perspective the teacher sets aside his/her personal perspective in order to infer the mental and/or emotional state of the student (Baron-Cohen & Wheelwright, 2004; Dvash & Shamay-Tsoory, 2014). Finally, the inhibitory component of empathy involves the use of a regulatory mechanism to keep track of the origins of self- and other-feelings (Decety & Jackson, 2004). Through inhibition, teachers are able to evaluate a student's perspective by adjusting and regulating their personal perspective.

A common method used to modify and develop pre-service teachers' empathy toward students with exceptionalities is simulations (Colwell, 2012; Leo & Goodwin, 2013; Stamou & Padeliadu, 2009). Simulations are an instructional processes that imitate a system, entity, phenomenon, or process for the purpose of gaining information, clarifying values, understanding others or developing a skill (Cruz & Patterson, 2005; Lean, Moizer, Towler, & Abbey 2006). In general, simulations provide pre-service teachers with the opportunity for experiential learning that requires them "to integrate and make sense of the meanings embedded in their experiences and knowledge" (Leo & Goodwin, 2013, p. 460). The objective of exceptionality simulation activities is to enable pre-service teachers to develop favourable attitudes towards people who have exceptionalities, empathetic responses to exceptionalities, and insight into the issues of inclusion (Lean et al., 2006). Therefore, through kinaesthetic and affective simulations pre-service teachers are provided with the opportunity to learn by doing, feeling, analyzing and reflecting, thereby developing attitudes of emotional decentralization and the ability to enter the private perceptual world of others (Cruz & Patterson 2005; Mauceri et al., 2012). Research has found that pre-service teachers who participate in simulations have a more positive attitude toward mainstreaming students with special needs (Colwell, 2003). Specifically, simulations help them to develop a basic understanding of the difficulties faced by individuals' with exceptionalities (Colwell, 2003) as well as to gain a greater level of sensitivity, awareness and compassion towards individuals with exceptionalities (Colwell, 2003; Wadlington, Elliot & Kirylo, 2008). Overall, pre-service teachers indicate that simulations help them become more effective educators (Wadlington, Elliot & Kirylo, 2008).

On the other hand, research also suggests that the use of simulations may foster negative views of exceptionalities such as displeasure with self, embarrassment, frustration, and reliance on others (Herbert, 2000; Nario-Redmond, Gospodinov & Cobb, 2017). It is also argued that a simulation of an exceptionality does not enable the participants to truly perceive the skills and dexterities possessed by individuals who have an exceptionality (Stamou & Padeliadu, 2009). Instead, simulations can portray individuals with exceptionalities as either victims or heroes (Leo & Goodwin, 2013; Stamou & Padeliadu, 2009). Finally, simulations are also criticized for not addressing the social aspects of exceptionalities (Leo & Goodwin, 2013; Stamou & Padeliadu, 2009).

This study aims to examine the benefits and drawbacks of using simulations to develop or enhance pre-service teachers' empathy and understanding of exceptionalities. Specifically, by using qualitative methodology, the following research question will be addressed: Does the use of a simulation assignment help develop pre-service teachers' empathy and understanding of individuals who have exceptionalities?

Methodology

Participants

The participants were recruited from the 157 pre-service teachers enrolled in a small Northern Canadian university's Bachelor of Education degree program. All participants were enrolled in the primary/junior division, which means that they were in training to teach kindergarten to grade 6. The participants were recruited on the last day of their compulsory, 36-hour special education course to ensure that all of the participants' required assignments have been marked and returned to the participants. Of the 157 pre-service teachers enrolled in the primary/junior division, 127 consented to participate in this study. The majority of the participants were female (n = 109; male n = 18), which is representative of the program; and, 18 of the participants (female = 14; male = 4) self-identified as having an exceptionality.

Simulation

Herbert (2000) suggests that when using a disability simulation, it is important for the learner to understand the purpose of the simulation. Therefore, prior to beginning the simulation activity all of the pre-service teachers had completed six weeks of teaching practicum experience in elementary schools and written mock individual education plans for students with exceptionalities. In addition, the professor outlined the purpose of the simulation. Finally, during the week of the simulation, the participants were learning about learning disabilities and had an opportunity to listen to two adults with exceptionalities discuss their personal experiences of living with an exceptionality. All of these learning opportunities reinforced the purpose of the simulation.

On the first day of the second term, all primary/junior pre-service teachers completed a required assignment for the compulsory special education course. The assignment necessitated the wearing of mittens 24 hours a day for a period of one week, including the weekend. The participants could wear any type of mitten (not gloves), provided that they were not form fitting. The pre-service teachers were to wear the mittens at all times. The only time they were to remove the mittens was for using the washroom or in any situation where the individual deemed it unsafe to wear the mittens. Heyman (1975) advises that the facilitator run the simulation, but should not interfere with the students as they engage in the simulation. Following this advice, the professor introduced the activity and its objectives to the pre-service teachers and then did not interfere in their experiences. This enabled the learning to stem from the simulation rather than from the professor.

Upon completion of wearing the mittens for one week, the pre-service teachers were required to write a reflection paper. The pre-service teachers were provided with the following guiding questions to assist with their reflection: How did this simulation affect your perception of self? How did it affect your perception of exceptionalities? What are your thoughts/feelings entering your next practicum? How will this experience impact your teaching? The reflective essay was marked and returned to the pre-service teachers prior to the recruitment process. This procedure was followed for three main reasons: first, to help control for bias in the marking of the assignment by helping to ensure that the professor was not influenced by the objectives of the research study when marking the assignment. Second, to help control for response bias by ensuring that the pre-service teachers were not writing their essays in an attempt to meet the objectives of the study. Finally, to ensure that the pre-service teachers' marks would not be influenced by their consent to participate in the study. Only the essays of the pre-service teachers who consented to participate in the study were analyzed.

Data Analysis

A qualitative approach was used to analyze the participants' reflective essays. Qualitative methodology is particularly appropriate for examining the effect of a simulation activity on pre-service teachers' empathy and understanding of exceptionalities, as the focus is on the participants' experiences, as well as on the meaning that they assign to various aspects of those experiences (e.g., see Bogdan & Biklen, 2002). When analyzing the essays, a whole text narrative analysis was used. That is, after a thorough reading of the essays, a line-by-line approach was used to identify segments of the text that reveal an aspect of the phenomenon being investigated, such as: elements of the narratives (e.g., setting, events, relationships); themes; and the larger cultural narrative of disability (Lean et al., 2006). Coding categories, consisting of a brief phrase, were assigned to each excerpt to capture its meaning. The coding categories were modified throughout the analysis as new categories and subcategories evolved. The following themes were identified: emotions, daily routines, judgement, connection between simulation and exceptionalities, and educating the public.

Results

Emotions

All of the participants commented on how surprised they were by the emotional impact of the simulation. The emotions described by the participants were mainly negative and included frustration, embarrassment, humiliation, discomfort, and helplessness. As one participant stated, "I slowly started to feel helpless within only a few hours into my first day of wearing mitts." Two of the participants who had exceptionalities had particularly strong emotions. One of the participants who had an exceptionality indicated that the simulation made her feel incompetent and another participant, who indicated that she had difficulties with anxiety, found that the simulation increased her anxiety.

Due to the strong negative emotions felt by the participants, one of the sub-themes that emerged was self-concept. Self-concept is a composite view of oneself that encompasses a person's thoughts and feelings, which are formed through experiences and influenced by environmental reinforcements and significant others (Bong & Skaalvik, 2003). Since an individual's self-concept may be developed through one's ability to perform a task masterfully (Skaalvik & Skaalvik, 2002), the difficulties the participants experienced when completing tasks may have influenced their self-concept. As one participant indicated:

> My perception of self was highly impacted. I instantly felt ashamed that I couldn't perform this simple task myself, I felt totally dependent on others to help me, and I was angry with myself for not being self-sufficient.

Another participant with an exceptionality also commented on how her self-concept was affected by the simulation.

> My perception of myself made me realize that in some ways I still felt insecure, only the insecurities were about different things. It made me realize some things about myself that I did not know were still within my psyche.

While some of the participants realized that having an exceptionality can impact an individual's self-concept, they also realized that an exceptionality should not be used to define a person. As one of the participants with an exceptionality explained:

> I think that this is the most critical piece to remember about this activity; having an exceptionality does not hinder one from living a fulfilling, successful life, and it cannot be turned off. It is a part of that person's life and who they are.

Daily Routines

The second theme that emerged from the essays pertained to the impact that the simulation had on the participants' daily routines. Almost all of the participants reported that the simulation affected their daily routines and many reported that they were surprised at how quickly their lives became impacted by the simulation. Due to the strong negative emotions experienced by the participants, some of the participants began to avoid public and private situations that would trigger negative emotions. The avoided public activities included grocery shopping and working out in the gym. As one participant indicated, public activities were avoided because they felt like they were being constantly watched and judged by others: "I think that feeling like people were always watching me with my mittens made me avoidant of public situations. If I didn't have to leave the house throughout the week, I wouldn't."

The private activities that were avoided included personal hygiene (e.g., shaving, braiding hair, makeup), meals, certain foods (e.g., oranges), and clothing. As one participant indicated, "When I got dressed in the morning during the week of the assignment, I avoided all my button up blouses because I lacked the capability of being able to button them up on my own." Despite the fact that the participants were avoiding certain tasks and were, in essence, not participating fully in the simulation, some of the participants used their desire to avoid certain tasks to explain why students with an exceptionality may try to avoid academic tasks.

> I have a much more real understanding of avoidance and why students who are faced with an exceptionality would want to avoid difficult situations. I saw a few examples of this while on placement. I was placed in a grade two classroom, and while only one student in the class had been identified and required an IEP [Individual Education Plan], many of the students would use avoidance when they did not think they could effectively complete a task.

Through this realization the pre-service teachers were able to acknowledge not only how an exceptionality can affect a student's performance and behaviour in the classroom, but also how it affects a student's life in general. As one participant indicated:

> My greatest struggles I found were with things like turning pages in books, preparing meals, doing my hair, putting on jewellery, getting dressed etc., all of which are daily actions for me. These struggles really made me appreciate the amount of effort some individuals have to put into everyday tasks and why there may not be enough effort left for other things like school.

Although the planned learning objective of the simulation was to develop pre-service teachers' empathy towards students with exceptionalities, instead of developing empathy some participants developed feelings of pity. As two participants stated:

> Although my frustrations were for seven days, my heart goes out to all those who experience these difficulties on a day-to-day basis and cannot simply turn it off.

> I needed to get help to do many things even including taking off my jacket. It was an experience that I couldn't wait to end, which in turn made me feel sad for those who have no other option.

While a few participants expressed feelings of pity throughout the entirety of their essay, others proceeded to explain that feelings of pity must be rejected and instead one should focus on a person's strengths; as one participant explains, "It must be a battle every day to constantly not become engulfed by their exceptionality, whatever it may be, and to look at the positives of what they can do instead of focusing on what they cannot."

Since the simulation impacted the participants' daily routines, they began to use accommodations, the second sub-theme of daily routines. Accommodations are defined as creative and adaptive strategies that can be used to support an individual's ability to complete a task. The accommodations that the participants reported included extra time, using a stylus to operate their touchscreen devices, and speech-to-text technology. All of the participants, as part of their special education course, had learned about accommodations and why they are provided to students with exceptionalities. As demonstrated by the following two participants, once the participants personally experienced the need for accommodations, they began to truly understand how accommodations enhance a student's learning.

> It wasn't until the mitten assignment that I truly understood how beneficial having extra time is to complete a task.

> By the end of the week I learned how to adapt my actions in certain ways to make life with mittens easier. I found it was easier to comb my hair than brush it. This affected my perception of exceptionalities because I was still able to participate. People with exceptionalities can still participate in daily activities; they just have to adapt the activity to make it easier for them.

Judgement

A third theme that arose from the participants' reflective essays was the judgement they felt from the general public. The participants reported that they felt fairly comfortable wearing the mittens at school because so many of them were participating in the simulation. However, when they were away from the university and their peers the majority of the participants felt like they were constantly being judged. As two participants explained:

> During the week, I ended up having to go to the grocery store twice and both times I felt like everyone around me was watching me and judging me because I was wearing mittens. The worst was in the produce section trying to open the plastic bags to put my vegetables in. I stood there for awhile getting frustrated trying to open the bag with my mittens and I felt like everyone around was just staring at me wondering what I was doing. I felt like I was being judged and made fun of, all because I had my mittens on. I felt vulnerable and helpless. I felt so embarrassed that I took my mittens off quickly to open the bag to stop the stares. Once I had the bag open, I put my mittens back on to continue my grocery shopping. However, those with exceptionalities cannot take something off quickly to not feel embarrassed and to stop the stares when completing a task. Those with exceptionalities have to live through this each and every day.

> While doing this assignment I almost felt as though people viewed me as stupid and that they got impatient with me. I believe that people viewed me as odd for not taking off my mitts to do things when usually you would have free hands and this made me feel embarrassed. I believe that people also thought I was slow and incapable. I now can relate all these emotions with how someone with an exceptionality may feel.

Some of the participants commented on how people have a tendency to judge individuals with exceptionalities based on their perceived physical abilities rather than considering the person as a whole.

> I felt as if people were looking at me and thinking, "Why doesn't that girl just take those off and do that properly?" This really made me realize that the average person likely judges people with exceptionalities on things that are not physical and can't be seen, but are still very much present and affect their life.

Other participants were able to make the connection between the judgements that they experienced and the judgements individuals with an exceptionality may feel.

> I gave in quickly to how others viewed me in those situations, whereas people with exceptionalities would have to continue through, regardless of what onlookers may say or do. This makes me think of how I react to someone with an exceptionality. Do I identify them by their disability, or by who they are as a person?

> When I was in placement I experienced the other side of the spectrum of viewing people with exceptionalities in a certain way. A student in my class with Autism constantly needed help tying his shoes after every recess every single day. Whenever he would ask me to tie them for him I couldn't help but think that he was just being lazy and didn't want to try himself. The mitten activity, though, made me realize that the boy wasn't being lazy, his exceptionality just made him so easily distracted that he was physically unable to perform this task, even if he wanted to.

It is important to note that the feelings of judgement experienced by the participants corresponded to the real-life judgement reported by the participants who had an exceptionality. As two participants with an exceptionality explained:

> The mitten project was not only the physical limitations placed upon us, but equally important were the social barriers it represented. Wearing the mittens where they didn't belong resulted in strange stares and awkward questions—something I have dealt with for years. All my life, I have always had the problem of people seeing me as a disabled person, not a person with an exceptionality. Countless times I have had people tell me they are surprised by how intelligent I am. As if someone's intelligence is somehow influenced by a physical impairment.

> In my own experience with my invisible disability, people are less understanding when they do not know what is happening because they cannot see physical evidence of a disability. It seems to me that the people who helped me (with the debit machine at the cafeteria, for instance) were understanding and helpful because they could see my disability, and possibly because they figured that I did not have a "real" disability – I was a "normal" person, "like them", who was just wearing mittens. My experiences of the past week confuse me because they contradict my personal experiences; I know for a fact that people are not always accommodating when it comes to disabilities, especially outside of a progressive university environment.

Since the vast majority of the participants in this study did not have exceptionalities, the emotions and judgements that correspond to being unable to perform a task may have been enlightening. As one participant explained, having the opportunity to experience judgement enabled her to have better insight into her students: "I'm glad that this activity was able to show me the other perspective of what it feels like to be judged with an exceptionality. Now I am able to have a clear idea of how that judgement feels."

Connection between simulation and exceptionalities

The participants reported that the simulation paralleled their experiences working with individuals who had exceptionalities. Specifically, the majority of participants indicated that the simulation activity enabled them to consider the rationale behind the behaviour expressed by students with exceptionalities. As two participants explain,

> During my university career I worked as a scribe in my old elementary school. They also got me to work with a student who suffered from multiple learning and physical disabilities. When I worked with the student, I was patient to a point, but I simply would get frustrated with the student when they were unable to perform the simple tasks that I was asking them to do. My experience with the mitts brought my mind right back into that classroom with that student. The struggle I had with my mitts buttoning up my shirt took up so much energy and time and concentration this must have been what the student was experiencing when trying to complete the simple tasks I had set out for her. Now that I understand some of her plight, I am angry with myself for feeling frustrated with the student. It made me realize that all of the frustration I felt as a teacher was nothing compared to what the student was feeling.

> This made me think back to a student in my practicum who really disliked writing. He was on an IEP, but most of the time was just very lazy and seemed to do just enough to get by, and even that was a struggle. It wasn't until one of the more major projects, with a rough draft, that he had to recopy down his notes and was very upset because he could not read his own writing. During the mitten week, it became apparent to me that he did the bare minimum in writing because that's all he could do and all he was confident enough to do. Like me, he did the bare minimum just to get the job done because it would be too hard for him to go above and beyond.

Another connection the participants made pertained to why students with exceptionalities often refrain from asking for assistance. As one participant, who has two family members who have exceptionalities, explained, "One aspect that resonated with me was having to ask for help because that is often the biggest complaint I hear from them is wishing that they did not have to ask for help."

One of the criticisms of simulations is that they do not accurately reflect the experiences of individuals with exceptionalities. Two of the participants with exceptionalities concurred with this criticism as they reported that the activity did not reflect their personal experience of having an exceptionality.

The mitten assignment could not teach me what it feels like to have other people judge someone you love. While I was teased mercilessly as a child for having so many issues it is nothing in comparison to how I feel when someone treats my mother badly or when someone tries to discriminate against my mother [because of her Multiple Sclerosis].

> The mitten assignment was a challenging task but if I were being honest with myself then I would have to say that I did not learn anything new. Throughout my life I have had multiple experiences that have had a deeper and more meaningful impact on myself than this assignment has.

Another participant with an exceptionality commented on how the simulation differed from her personal exceptionality.

> With my exceptionality it is easy to hide, and no one needs to know about it unless I choose to disclose this to them. The only people that know are the ones that need to and people that are close to me. It was very different living for a week with an exceptionality that others could see and was extremely hard to hide from people's view. I felt as though I was on display, which is a very uncomfortable feeling for me as I try very hard to conceal my exceptionality from others and this exceptionality was next to impossible for people to miss.

However, in contrast, other participants with exceptionalities commented on the strong relationship between the simulation and their personal experiences:

> This assignment was important to me because I have an exceptionality that affects my everyday life. While it is not visible it is very real, and very tiring. I cannot get rid of my OCD, I can only adapt to it. Some things will always take me longer than they take other people. Some people might not understand my exceptionality, or take me seriously. These feelings were all heightened by this assignment.

It is interesting to note that one of the participants commented that it was her interaction with an individual with an exceptionality that helped to reinforce the concepts embedded within the simulation.

> After explaining to the young girl, Ally, why I was wearing mittens as we walked through the mall, without thinking, I complained about how annoying the experience was because my hands were always sweaty. In response, Ally who is developmentally challenged replied, "I don't think that is such a big deal Sam. It is only a week that you have to wear them. I have to have Autism for my entire life." This realization that came from a thirteen year-old girl, made me feel embarrassed and guilty for complaining about my 'exceptionality' that I could remove after only one week. Therefore, Ally's response to my ignorance was what ultimately changed my perception of exceptionalities.

Educating the public

An unforeseen implication of this simulation was its impact on the general public. Several participants commented that they found themselves explaining the activity to members of the general public, such as cashiers and people waiting in line at the grocery store. These brief conversations may have helped the participants to enhance their empathy as their conversations would require them to evaluate their experience and explain their understanding, which in turn would enable them to adjust their personal perspective of exceptionalities.

> One specific conversation I had with a cashier stuck out to me as we discussed how important of an assignment it was, especially for someone striving for a career as a teacher, like myself. This conversation stuck with me, most importantly because we both agreed that it is something that everyone should experience in an attempt to remove the stigma that comes from exceptionalities; especially physical exceptionalities.

In addition, a couple of participants mentioned that there were postings on the university's student website commenting on the fact that they were wearing mittens.

> There was a post I saw on the Internet asking why so many people were wearing mittens, saying that they looked silly. This post goes to show the ignorance our society holds towards individuals with exceptionalities and I now understand how much of an effect it can have on you.

Finally, a participant commented on the relationship between education and acceptance.

> Throughout the week I did not feel that I was being judged or viewed in a different light for wearing my mittens. However, the university was not as busy as it could have been with other students being away, still on winter break. I did however get several questioning looks by staff and students who are not a part of the Education Department. By the end of the week, these people became aware of the assignment and the questioning glances ended. In my view, this was a great reflection of the real world, as when awareness increases, so does people's acceptance and recognition. This made me a little sad. Specifically, it upset me that it took a simple explanation for individuals to be more accepting of my situation. I feel that people should already be accepting of an individual from the beginning, not based on terms and conditions explained to them.

Discussion

The purpose of the current study was to examine the effectiveness of a seven-day simulation activity in developing primary/junior pre-service teachers' empathy and understanding of individuals with exceptionalities. The formation of empathy requires that an individual utilize observations, memories, knowledge and reasoning to formulate insight into another's thoughts and feelings (Decety & Jackson, 2004). To fully develop empathy an individual not only needs to be able to recognize and understand another person's emotional state, but it also requires the affective experience of that person's actual or inferred emotional state (Decety & Jackson, 2004).

One of the main criticisms of simulating exceptionalities is that it increases negative perceptions and emotions towards exceptionalities. However, these criticisms are often based on brief simulation activities. For example, in the study by Nario-Remond, Gospodinov and Cobb (2017), the simulations took place in a campus dining hall and the simulations only lasted approximately one minute each. However, in the current study, by providing the pre-service teachers with a week to experience an exceptionality, it provided sufficient time for them to look beyond their negative emotions of frustration and embarrassment and move towards a more empathic understanding of exceptionalities. While the negative emotions experienced by the participants generated feelings of sympathy and pity, the extended time frame of the simulation provided the participants with the opportunity to reflect on their experience and adjust their perception. As a result, the participants may have come to realize the detrimental effect pity may have on students' programing and development. This progression suggests that the majority of participants were experiencing all three phases of empathy: sensitivity, cognition and inhibition. For example, by experiencing a range of emotions the participants were able to enter into the sensitivity state of empathy. Through reflection, the participants were able to identify, evaluate and understand the challenges faced by individuals with exceptionalities, which suggests that the participants moved from the sensitivity state of empathy into the cognitive.

Since the pre-service teachers were able to transition from the sensitivity state to the cognitive state of empathy, they moved beyond a succumbing framework (the focus on what the individual cannot do) to a coping framework (a solution-focused approach) (Herbert, 2000; Wright, 1983). This progression corresponds to social constructionism, which views exceptionalities not as an individual deficit, but rather as the result of social barriers that oppress and exclude individuals with exceptionalities (Stamou & Padeliadu, 2009). By experiencing social judgements, the participants developed an understanding that social exclusion is generated from the negative attitudes society holds towards individuals with exceptionalities. Therefore, the participants may have accepted that individuals with exceptionalities should be perceived in terms of their abilities and strengths rather than their limitations (Stamou & Padeliadu, 2009).

The negative emotions experienced by the participants resulted in several of the pre-service teachers expressing pity towards individuals with exceptionalities. It is unclear from the current study whether these feelings of pity existed prior to starting the simulation and the simulation merely reinforced those feelings or if the simulation itself generated the feelings of pity. The participants' expression of pity is similar to past research (e.g., Leo & Goodwin, 2013; Stamou & Padeliadu, 2009) which found that the negative emotions experienced during a simulation may result in a disproportional focus on what an individual cannot do rather than recognizing the skills and dexterities possessed by individuals who have exceptionalities. It is possible that the participants expressed feelings of pity because they were unable to move beyond their negative emotions and the challenges they faced in their daily activities (Leo & Goodwin, 2013).

As the simulation in the current study extended a full week and included all aspects of an individual's life, it provided the pre-service teachers with the opportunity to "find solutions to problems, not to remain stuck with them" (Wright, 1983, p. 463). This realization demonstrates that the participants experienced the inhibition phase of empathy, which requires that they adjust and regulate their personal perspective. For example, through the realization of how an exceptionality impacts an individual's life, the participants gained an understanding of the importance of accommodations. Accommodations are sometimes viewed as an unfair advantage provided to a limited number of students (Berry, 2010; Elhowerls & Alsheikh, 2010) or as an automatic accompaniment to an exceptionality. Through the use of a simulation, the pre-service teachers were able to develop a greater understanding and appreciation of the fact that accommodations are about equity not equality. Specifically, they realized that accommodations enable students to accomplish the same tasks as their peers and ensure that they are not defined by their exceptionalities.

A criticism of exceptionality simulations is that the social and environmental interactions are often overlooked (Lean et al. 2006). The current study addressed this criticism by providing pre-service teachers with the opportunity to participate in all their regular daily activities. The extended time period enabled the participants to no longer focus on having a disability, but to begin to focus on the impact it had on them emotionally and socially. For example, when shopping for groceries, participants reported the occasional negative reaction to their disability and were surprised by the visceral reaction they felt in return. They were further amazed by how many people in the general public seemed to avoid, ignore or blatantly stare at them while simulating the disability. Based on these experiences, the participants realized that an individual's exceptionality is only one aspect of a person's life and should not be viewed as a life that is lacking or requiring pity.

Future Implementation

There are several recommendations regarding the future implementation of this activity. First, some participants reported that their hands became hot and sweaty wearing the mittens all the time. In the future, it is recommended to implement mitten-free time periods. For example, the participants would not have to wear the mittens at night or while watching television. A second recommendation is to implement either a checklist of daily tasks that must be completed while wearing mittens or to have the participants keep a log of the tasks they completed each day. The advantage of a checklist is that it ensures that more challenging tasks are completed (e.g., grocery shopping). In contrast, the advantage of a log is that it enables the participants to maintain consistency in their daily routine. Third, while all of the participants' professors were consulted prior to the activity and were provided with the option of telling the participants that they may remove their mittens while attending their class, too many professors took up this option. While this cannot be addressed in some courses that required labs (e.g., science and art), obtaining a stronger commitment from fellow professors would help improve the impact of the simulation. Fourth, the simulation activity was implemented for the purpose of developing pre-service teachers' empathy and understanding of individuals with exceptionalities; however, the simulation could be adapted to be used in a variety of settings. For example, while this study focused on pre-service teachers preparing to teach kindergarten to grade 6, the simulation could be used with pre-service teachers preparing to teach grade 7 to grade 12. It could also be used as professional training for in-service teachers, faculty and staff. Furthermore, a similar simulation could be used to help students of all age levels understand and reflect on what it is like for a person with exceptionalities and why certain accommodations may be necessary in a classroom.

Conclusion

Simulations can be a beneficial method for developing pre-service teachers' empathy towards students who have exceptionalities. To increase a simulations' effectiveness, the simulation must be of sufficient duration to ensure that the participants have time to overcome their initial negative emotions. It is only after these negative emotions are addressed that the participants can progress through the sensitivity, cognitive and inhibition phases of empathy.

References

Baron-Cohen, S. & Wheelwright, S. (2004). The empathy quotient: An investigation of adults with Asperger syndrome or high functioning autism, and normal sex differences. *Journal of Autism and Developmental Disorders, 34*(2), 163-175. doi: 0162-3257/04/0400-0163/0

Berry, R. A. W. (2010). Pre-service and early career teachers' attitudes toward inclusion, instructional accommodations, and fairness: Three profiles. *The Teacher Educator, 45*, 75-95. doi: 10.1080/08878731003623677

Bogdan, R. C., & Biklen, S. K. (2002). *Qualitative research for education: An introduction to theory and methods* (4th ed.). Boston: Allyn & Bacon.

Bong, M. & Skaalvik, E. M. (2003). Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review, 15*(1), 1-40. doi: 1040-726X/03/0300-0001/0

Burton, N. (2015). Empathy vs sympathy. *Psychology Today*. Retrieved from https://www.psychologytoday.com/blog/hide-and-seek/201505/empathy-vs-sympathy.

Colwell, C.M. (2003). Integrating disability simulations into a course for student music therapists. *Music Therapy Perspectives, 21*(1), 14-20. doi: 10.1093/mtp/21.1.14

Colwell, C.M. (2012). Simulating disabilities as a tool for altering individual perceptions of working with children with special needs. *International Journal of Music Education, 31*(1), 68-77. doi: 10.1177/0255761411433725

Cruz, B. C. & Patterson, J. M. (2005). Cross-cultural simulations in teacher education; Developing empathy and understanding. *Multicultural Perspectives, 7*(2), 40-47. doi: 10.1207/s15327892mcp0702_7

Cuff, B. M. P., Brown, S. J., Taylor, L., & Howat, D. J. (2014). Empathy: A review of the concept. *Emotion Review*, 1-10. doi: 10.1177/1754073914558466

Decety, J. & Jackson, P. L. (2004). The Functional Architecture of Human Empathy. *Behavioural and Cognitive Neuroscience Reviews, 3*(2), 71-100. doi: 10.1177/1534582304267187

Dvash, J. & Shamay-Tsoory, S. G. (2014). Theory of mind and empathy as multidimensional constructs. *Topics in Language Disorders. 34*(4), 282-295. doi: 10.1097/TLD.0000000000000040

Herbert, J. (2000). Simulations as a learning method to facilitate disability awareness. *Journal of Experiential Education, 23*(5), 5-11. doi: 10.1177/105382590002300102

Heyman, M. (1975). *Simulation games for the classroom*. Bloomington, IN: Phi Delta Kappa Educational Foundation.

Klis, M. & Kossewska, J. (1996). Empathy in the structure of personality of special educators. *ERIC* Document Reproduction Service No. ED 405323.

Lean, J., Moizer, J., Towler, M., & Abbey, C. (2006). Simulations and games: Use and barriers in higher education. Active Learning in Higher Education, 7, 227–242. doi:10.1177/1469787406069056.

Leo, J. & Goodwin, D. L. (2013). Pedagogical reflections on the use of disability simulations in higher education. *Journal of Teaching in Physical Education, 32*, 460-472. Retrieved from www.JTPE-Journal.com.

Mauceri, M., Di Marco, G., & Licciardello, O. (2012). Action Learning's effects on special educators' attitudes towards students. *Proceida – Social and Behavioral Sciences 46*(2012), 5698-5702. doi:10.1016/j.sbspro.2012.06.500

Nario-Redmond, M. R., Gospodinov, D. & Cobb, A. (2017). Crip for a day: The unintended negative consequences of disability simulations. *Rehabilitation Psychology*. Retrieved from: http://dx.doi.org/10.1037/rep0000127

People for Education. (2015). *Public Education: Our Best Investment*. Retrieved from http://www.peopleforeducation.ca/wp-content/uploads/2015/06/P4E-Annual-Report-2015.pdf.

Peck, F. N., Maude, S. P., & Brotherson, M. J. (2014). Understanding preschool teachers' perspectives on empathy: A qualitative inquiry. *Early Childhood Education Journal*, 1-11. doi: 10.1007/s10643-014-0648-3

Skaalvik, E. M. & Skaalvik, S. (2002). Internal and external frames of reference for academic self-concept. *Educational Psychologist, 37*(4), 233-244. doi: http://dx.doi.org/10.1207/S15326985EP3704_3

Stamou, A. & Padeliadu, S. (2009). Discourses of disability by teacher candidates: A critical discourse analysis of written responses to a disability simulation. *Journal of Applied Social Psychology, 39*(3), 509-540. doi:10.1111/j.1559-1816.2009.00449.x

Tettegh, S. & Anderson, C. J. (2007). Pre-service teachers' empathy and cognitions: Statistical analysis of text data by graphical models. *Contemporary Educational Psychology, 32*, 48-82. doi: 10.1016/j.cedpsych.2006.10.010

United States Department of Education. (2014). *36th Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act*. Retrieved from http://www2.ed.gov/about/reports/annual/osep/2014/parts-b-c/36th-idea-arc.pdf.

Wadlington, E., Elliot, C. & Kirylo, J. (2008) The Dyslexia Simulation: Impact and Implications, Literacy Research and Instruction, 47:4, 264-272, doi: 10.1080/19388070802300363

Wright, B. A. (1983). Developing constructive views of life with a disability. In *Physical Disability – A Psychosocial Approach* 2nd Ed. (pp. 459-480), New York, NY: HarperCollins Publishers.

Service Learning: The Bridge to Engagement, Empowerment, Integration and Learning for Students with Exceptionalities

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Abstract

Service learning provides a powerful opportunity for students with exceptionalities to be providers of service rather than receivers. This article presents a service-learning model. This bridge model includes pre- and post- assessments, individual education program requirements, community needs, learning outcomes, student voices, and reflection. Following this model, educators will realize the usefulness for truly engaging students with exceptionalities. Initial data and plans for gathering additional information are included. This model is appropriate for use in inclusive settings by teacher candidates, special educators, and inclusion teachers. It was developed by the authors and field tested by student teachers and their clinical partners during student teaching. This is one of the requirements for student teachers in their undergraduate special education major.

Keywords

service learning, inclusion, special education, teacher education, exceptionalities

As Alex surveyed his fifth-grade inclusion class, it truly was a "lean-in" moment. Students in their collaborative groups eagerly leaned in and listened to one another share their persuasive points about why recycling is so important. To a casual observer, distinguishing typical students from those with Individual Education Programs (IEP) was impossible. Student engagement was evident with all learners. The groups demonstrated true support for each other, acceptance and integration. Alex recognized these attributes when surveying the working groups. Alex's students were in day five of their Respect-Recycle service-learning project.

Dariann loved science and learned about hydroponics in college. When she took her first teaching job at the high school she knew that integrating service learning and hydroponics was something she wanted to explore. Her science team leader agreed. The next day Dariann talked with a group of students with moderate disabilities. They had never heard of growing plants in water! It was an immediate buy-in: the students could grow vegetables and have a lunch with the teachers. That was a great incentive! On that very first day, the students were empowered. Dariann witnessed the transformation. IEP goals for math and science were a natural fit for the service-learning project. Dariann's students were on the move in their Go-Grow service-learning project.

Two first-graders with IEP fine motor goals were in Victoria's class. Working with the occupational therapist, Victoria brainstormed some meaningful fine motor skill activities. The activities Victoria had used were not engaging. Using an Interest Inventory, Victoria soon discovered her students' passion: Dogs! The students loved dogs and often talked about their dogs. She broached the subject: What did the students think about doing something for the dogs at the local animal shelter? One could hear the enthusiastic student voice all the way out in the hallway! From that point on Victoria's students were involved. Student voice and reflection were paramount to the success of the project. The students made decisions and reflected daily on what needed to be done next. Victoria's students led the way on their Bow-Wow service-learning project.

Building on Teacher Candidates' Prior Experience

True inclusion can be elusive. As educators we ensure that our students with exceptional learning needs (ELN) spend enough time in the Least Restrictive Environment; we group them to foster acceptance and integration; we develop instruction that allows all students to shine. However, the element we teachers might neglect is student empowerment. Inclusion can't just be something that happens TO our students with exceptionalities. It must be achieved BY our students with exceptionalities. Students with exceptionalities have historically been the recipients of assistance. What an empowering experience for them to serve others! What an equalizing active and what a concrete way to build a bridge for our students!

The Student Teaching Service Learning Project seeks to prepare teachers who can build that bridge. The Education curriculum includes service-learning courses beginning in the sophomore year. In the senior year, during a student teaching weekly seminar, teacher candidates reflect on their personal involvement in service learning and discuss the way service learning exemplifies the university's mission. Moving from the personal to the professional, the teacher candidates both investigate the benefits of engaging K-12 students with ELN in service-learning projects and are presented with generalized procedures for designing and implementing a successful service-learning project in their student teaching setting. They are challenged to use the strategy of service learning in their student teaching placements to promote quality meaningful inclusion characterized by student growth (as defined by IEP goals) and student empowerment.

Early research about college students shows the value of service learning for increasing students' community participation and commitment as citizens (Giles & Eyler, 1994). It has been a natural step to bring service learning into teacher training programs because it provides teacher candidates with opportunities to engage with learners who have different life experiences, and it provides growth opportunities around the diversity of education (Desrochers, 2006; Galvan & Parker, 2011;

Harrison, 2013). As we infuse service learning into all levels of teacher education, it is important to listen to the teacher candidates to ensure that the service learning has the intended impact (Bamper & Hankin, 2011; Hildenbrand & Schultz, 2015). This article not only provides the perspective of teacher candidates, it also provides insight through the lens of the students. As teacher education programs grapple both with program approval requirements around the impact of student learning and with new federal regulations to improve teacher preparation, beginning to incorporate voices across teacher education faculty, students, community, and teacher candidates becomes imperative. One may consider measuring impact on student learning for youngsters with ELN through service learning.

Believing that a student teaching service-learning project is a valuable professional growth opportunity for our teacher candidates and an effective learning experience for their students, the faculty of our teacher education program set about to create a student teaching service-learning project prototype. Over the past ten years the project has undergone various iterations in which procedures have been further clarified and improved upon resulting in the model presented here. In addition, this model provides an opportunity for the teacher candidates and their students -- as well as the faculty of our teacher education program -- to ascertain the effectiveness of service learning as a requirement of student teaching. Therefore, the data gathered by teacher candidates during the most recent iteration of the service-learning assignment will be analyzed and presented. The model presented here serves as a bridge; it allows all students, teacher candidates, special education teachers, and inclusion teachers to travel across the divides that often pose barriers for students with ELN. The project also lays a foundation for beginning to view impact on student learning.

As the stories of Alex, Dariann, and Victoria begin to illustrate, service learning is an instructional strategy that positively impacts the experience of all students. The impact on the teacher candidates as they build the bridge on their journey as teachers also unfolds below.

What is Service Learning?

Service learning is an instructional strategy. Through service learning, students develop a deepened understanding of academic concepts by applying them to practical work in the service of others. Service learning is "a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities" (National Service Learning Clearinghouse, 2016). Jacoby (1996) emphasized that reflection and reciprocity are two essential characteristics for successful service learning.

Examples abound. For the student in a history class, recording the stories of folks at the senior center enhances understanding of oral history while improving communication skills. For the student in the accounting class, time spent completing tax forms for those in poverty allows for practice of those skills as well as the development of sociocultural consciousness. The teacher candidates described in the opening vignettes found opportunities for their students with ELN to meet content standards through service. The act of reflection that is an essential component of service learning is the vehicle by which students' understanding is deepened. As John Dewey (1933) famously said, "We do not learn from experience. We learn from reflecting on experience."

Why Include a Service Learning Requirement?

For several reasons, a service-learning lesson plan is required of our teacher education candidates during their student teaching. The primary concern is the promotion of social integration and inclusiveness. In addition, organizing a service-learning project enhances our novice teachers' acclimation to their new learning communities.

The first focus is on the social integration of students with ELN. Gent & Gurecka (1998) note that service learning is an appropriate instructional strategy in inclusive settings because, at its core, service learning focuses on the strengths of individuals, establishing relationships and building community connections. Clearly society values individuals when they are helping others and providing service. Views may be transformed by this instructional method. Rather than seeing those with ELN as individuals disengaged and lacking skills, the perspective shifts towards seeing students with exceptionalities as individuals who take ownership of newly developed skills and dispositions and who exhibit a can-do commitment to learning (Wolfensberger, 1983, 2000). Therefore, service learning that empowers all learners can be that bridge to support social integration.

Whether social integration is effective or not for students with ELN is discussed in the literature. Researchers have documented that when students with ELN are seen only as recipients of services negative stereotyping often follows (Gent & Gurecka, 2001). Although the playing field may be level in the classroom through accommodations and technology, the terrain shifts when students are in new surroundings. Service learning may allow students to use new sets of skills and abilities – providing more opportunities for students with ELN to shine and thus become a part of the learning community (O'Connor, 2009). Many soft skills as well as academic skills may be scaffolded and strengthened through service learning. As Billig (2000) noted, students who participated in service learning were kinder to one another and helped each other to a greater degree than those who had not participated.

To summarize, service learning is an effective teaching strategy that has proven to deepen student's understanding of core concepts. Service learning is a strategy that, by its very structure, allows for the enhancement of soft skills and the focus on the strengths of the learner. Students with ELN need effective teaching opportunities to work closely with non-disabled peers and the chance to contribute to their communities and settings in which their own skills may shine. Inclusion outside the classroom has been difficult to achieve without structure. Service learning provides such structure.

Impact on Teacher Candidates

To show commitment to the possibility of true inclusion, our teacher education program requires that our student teachers employ service learning as a strategy with their students with ELN. Not surprisingly, the education faculty have found, through ongoing university student teaching seminar discussions and reflection, that the project has enriched the teacher candidates' personal and professional lives as well as enhancing the learning experience for their students.

Dariann reported feelings of personal growth as a teacher because she really saw how instruction could be developed to meet the needs of her students using universal design for learning (UDL) and differentiated instruction (DI). As evidence, she shared many ways she adapted the components of hydroponics to the skills and abilities of each learner with ELN and explained how the experience transformed her teaching in her other science classes. She understood service learning as universal design for learning because as an undergraduate she had conducted service learning herself and now she had come full circle by having students with ELN implement a service-learning project.

Service learning is a bridge for the transporting and transformation of students and student teachers alike.

The Need to Engage, Empower, Integrate and Learn

To begin, it is important to look at the needs that students with exceptionalities have that are fulfilled when implementing service learning. While educators are guided by the academic and functional goals in the IEP, they do not lose sight of the need to educate the whole child. This means these teachers have four focus points: (a) engage students with exceptionalities; (b) empower these youngsters; (c) provide opportunities for integration; and (d) implement a system to measure student learning. *Alex, Dariann, and Victoria used service learning to fulfill those needs. Service learning is a strategy that not only meets students' needs, but addresses the needs for young educators like Alex, Dariann, and Victoria, to build a bridge outside of their classrooms to the larger community*. The teacher candidates illustrate how teachers who believe they can affect student outcomes are more likely to use effective instructional strategies and have meaningful relationships with students (Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013). In turn, their students stay motivated and cooperative, which sets the

stage for these students to achieve desired outcomes (Shen et al., 2015). Service learning meets the needs of students with exceptionalities and also provides teacher candidates, special educators, and inclusion teachers with opportunities to see the difference they are making in the lives of their students. This is a win-win situation for all in such classrooms. Service learning is one strategy that provides students with exceptionalities opportunities to engage, be empowered, integrate with others, and learn.

Student Engagement

A persistent challenge facing teacher candidates, special education, and inclusion teachers is engaging those students who seem disengaged from the learning process. Burgess (2012) emphasizes the need for teachers to find ways to fully, creatively, and actively engage students in the daily experience called 'school'. Abernathy and Obenchain (2001) emphasize how service-learning projects provide meaningful opportunity for community engagement by students with exceptionalities as service providers. This meaningful engagement empowers students and can enhance self-determination, which can lead to academic, social, and community growth. When reviewing typical service-learning projects, the consistent thread is student engagement. Students are actively engaged in each step of the process from conceptualizing what the service and learning will be through the planning and implementation to the final celebration (Dymond, Renzaglia, & Slagor, 2011). Students become highly invested in this work. Carter, Swedeen, and Moss (2012) discuss the compelling activities in service learning that connect and engage learners. Service-learning goal setting by students is likely to increase engagement (Lee, Palmer, & Wehmeyer, 2004).

Student Empowerment

Special educators are familiar with self-determination, i.e., for students with exceptionalities to advocate for themselves (Ward, 2005). Empowerment is one of the components of self-determination (Wehmeyer, 2006). Research has shown that students with emotional and behavioral disorders felt empowered when engaged as service-learning providers (Muscott, 2000). Empowering students with exceptionalities means that they will direct their own learning and make a difference. High expectations, meaningful opportunities, and appropriate supports are necessary for the development of self-determination (Shogren & Shaw, 2016). These concepts are part of the service-learning model presented in this article. Students with exceptionalities have the opportunity to see the power of their service-learning contributions to society (Scott, 2006).

Student Integration

Academic and social integration are necessities for students with exceptionalities, as shown in the Least Restrictive Environment component of Individuals with Disabilities Education Act (IDEA) (Friend, 2014). This integration is not always a smooth and seamless process. Grade level-Common Core Standards are academic goals that do not always match present level of performance and goals of students with ELN. Social integration is often difficult for students with exceptionalities who may not have the understanding or skills in everyday social situations. Students in special education may be adrift. Finding instructional techniques that have potential to provide academic and social integration for students with exceptionalities is critical. The service-learning design presented in this article includes steps to make the strong academic link to the IEP based on both academic and/or functional goals. Social integration opportunities are also paramount. O'Connor (2009) discusses the social interactive nature of service learning, which provides a built-in structure for positive social interactions. Earlier research indicated that students who participated in service learning were kinder to one another and helped each other (Billig, 2000). Through the examples of service-learning projects presented in this article the connections of building bridges among students, peers, adults, and community are evident.

Student Learning

Special educators and inclusion teachers are under pressure to ensure all learners reach designated academic and functional outcomes. Teacher evaluation is tied to student performance. High stakes testing has also magnified the requirements that teachers ensure students reach specified learning outcomes. Service learning has shown that students with exceptionalities have made gains in academic and functional skills (Dymond, Renzaglia, & Slagor, 2011). Research analysis has shown that service learning has led to higher test scores in achievement and basic skills testing (Billig, 2000). The service-learning model presented in this article includes data gathering to ensure that teachers are well aware of how each student is doing on achieving designated learning outcomes.

The Bridge to Service Learning

Service-Learning Standards

Service learning is an instructional strategy that allows students to master academic knowledge through meeting a genuine community need (Billig, 2011). As a strategy, service learning has officially entered its mature phase with the development of Service-Learning Standards for Quality Practice. These were promulgated in 2008 by the National Youth Leadership Council (NYLC) as shown in Figure 1. Billig (2011) emphasized the need to make the most of instructional time, and doing service learning well leads to powerful outcomes. Looking back at the concepts presented as needs, viz. engagement, empowerment, integration and learning, we se that these are clearly embedded in the service-learning standards. Moving forward on these concepts requires reflection and reciprocity. Standard 3 addresses reflection, and Standard 6 focuses on partnerships that are mutually beneficial. These standards all underpin the service-learning bridge presented next.

Service-Learning Bridge

Beyond meeting service-learning standards, the goal of our teacher candidates is to strengthen social inclusion while impacting learning. The authors have developed the bridge model presented in Figure 2. This bridge to success is for students with ELN to be engaged, empowered, integrated and learn through well-designed service-learning projects. Next, consider how this bridge is built and sustained.

The pillars at either end of the bridge are the foundational supports. The bridge cannot be built without the first pillar, laying the foundation based on IEP goals, Common Core Standards, and curriculum. This pillar is supported and grounded in pre-assessment. This means teacher candidates, special educators, and inclusion teachers must pre-assess while a service-learning project is being designed. Collecting data is imperative for identifying the entry point for achieving the skills that will be designed into the service-learning project and also for ensuring that the student has the pre-requisite skills necessary to be successful. The pillar at the end of the bridge is the post-assessment. For this service-learning model it is critical that the teacher candidates measure learner outcomes by pre- and post-assessment.

Once the foundation pillars are in place, the bridge span itself is built. 'Community' can be defined as a small group of learners, the classroom, school, neighborhood or community at large. The teacher candidate empowers the students as the bridge builders who will putt his span into place. The students must first be able to identify a need within their community in order to come up with a way they can serve or help others. Assuring student voice and self-determination both are imperative to successful service-learning projects.

The teacher candidate typically resumes the lead in the next portion of the bridge span: buy-in. Who needs to support this project? Is it inclusion teachers, teaching assistants, principal, and/or a community contact? This support is necessary prior to moving to the development of the project. This step of contacting community members provides teacher candidates the opportunity to hone professional collaboration skills.

Next, the structure is put into place. Development of the project, implementation of the project, and celebration of the project are the next three steps in the service-learning process. Look carefully at the bridge: it will not perform its function without suspension cables.

Service learning exists through student voice and reflection. It is the student voice and reflection that make possible the engagement, empowerment, and integration that lead to both the learning and service outcomes.

Putting It Together: The Bridge in Action

Alex, Dariann, and Victoria followed the service-learning bridge model shown in Table 1.

All decision making was rooted deeply in reflection. The four Cs of reflection are Continuous (i.e., the reflection is ongoing), Connected (i.e., there is a connection between real-life experiences and classroom learning), Challenging (i.e., higher level critical thinking is required), and Contextualized (i.e., requiring application of what has come from the reflection (Eyler, Giles, & Schmiedes, 1996). These four drove the learning of the teacher candidates and their students with ELN as well as the impact the project had on the community partners. Reflection that is continuous, connected, challenging, and contextualized provides the growth process that results from service learning. Knowing that reflection is critical in decision making, what follows is putting the structure together.

At the onset, the teacher candidates survey their students' IEP goals, common core standards and curricula, prioritizing the skills and knowledge that were most appropriately addressed through a service-learning project. Next, the teacher candidates embarked on the pre- assessment, gathering base line data on students' abilities relative to the prioritized elements. This is an essential step that confirms the continued relevancy of the prioritized goals and allows for the measurement of student growth through the service-learning project. *Alex prioritized students' IEP goals in persuasive writing and oral speaking. Darian prioritized students' IEP goals in math, specifically measurement and curriculum goals in science. Victoria selected students' IEP functional goals in fine motor skill development as a priority. Knowing the importance of initial assessment of pre-requisite skills and instructional learning targets, Alex, Dariann, and Victoria selected the tools and conducted the necessary assessments. Alex used the 5th grade writing rubric to collect baseline data. Math and science quizzes provided curriculum baseline data for Dariann. Victoria compiled observational data on students' ability on fine motor tasks such as use of scissors.*

When exploring community needs, the term "community" was, appropriately, defined in a variety ways. *Alex saw community as school-wide; for Dariann community was part of the school and the teachers; and for Victoria the community was outside the school.* Community may be with one other person, a small group of students, a class, a grade level, a school or a component of the community at large. For students with exceptionalities, the right community match for service opportunities will vary.

As service learning has an outreach component, special educators and inclusion teachers want to ensure they have acquiescence from those individuals who either have a say in what is done in schools or are outreach partners. Ensuring this buy-in will keep the project flowing. Through the give and take on both sides, the importance of reciprocity is demonstrated, i.e., the service learning is beneficial to all participants. *Partnerships can provide excellent suggestions, as Alex discovered when he began working with his fifth graders. The project blossomed into a school-wide assembly event thanks to the principal's support and suggestion.*

A component of service learning is looking at the cost/benefit ratio to see if community partners feel the service learning is beneficial. The teacher candidate written reflections showed that the fact that there was reciprocity in developing the service-learning projects helped to make the projects valuable. *The head of the Animal Shelter took the time to write the students a thank you letter, enclosing a photo of a dog with one of the toys the students had made!*

Development, implementation, and celebration take hold when driven by student voice and reflection. *Alex, Dariann, and Victoria all took the time initially to have students develop priorities and a timeline for the service-learning projects, which boosted excitement among the learners who eagerly awaited their service-learning time. Implementing the service activities built comradery and crystallized the meaning of service for the learners, all the while providing them with needed practice in academic and functional skills. Students were further empowered to improve upon their work; the students edited recycling posters, decided that plant pH levels should also be monitored, and took the time to make additional dog toys.*

As the project draws to an end, the teacher candidates lead student discussions and involve students in activities to promote their reflection on the ways they made a difference in their community. *Alex's students calculated the average number of recycled containers filled each week. They created collages showing littered environments 'before recycling' and beautiful landscapes saved by recycling. Dariann's students delivered their produce to the food bank, and Victoria's students were sent photos of shelter animals playing with the toys.*

Finally, the teacher candidates prepare a celebration event. The teacher candidates seek out opportunities for their students to be recognized by the community. *Alex's students' efforts were applauded by the principal, and Alex had a letter to the editor published in the local paper. Dariann's students received a thank you letter and certificate of appreciation from the food bank, and Victoria's students received the student of the month award at the school-wide assembly. Intuitively Alex, Dariann, and Victoria knew the service learning project made a difference in their students. They talked about the students walking a little taller and receiving unsolicited "bravos" from other students providing recognition for work well done. Victoria's students, who made the front page of their local paper with their dog toys, beamed with pride.*

Remember Dariann's reflection on her growth in effectively using universal design for learning (UDL) and differentiated instruction (DI)? These two instructional strategies are key to a successful service-learning project in an inclusive setting.

Universal Design for Learning

UDL ensures access for all learners. From the Higher Education Opportunity Act of 2008 (HEOA), the term 'universal design for learning' means a scientifically valid framework for guiding educational practice that:

> (a) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and (b) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient.

Differentiated instruction

DI allows you to make changes in four areas of instruction to meet the individual needs of the students with ELN. These are: (a) the student learning process; (b) student products or demonstrations; (c) the learning environment; and (d) content (Tomlinson 2001). *Alex, Dariann, and Victoria began by reviewing the IEP goals and matching different roles and requirements of the service-learning projects to the students' strengths and needs. Alex, Dariann, and Victoria then monitored student progress and made changes where needed.* This use of formative assessment allowed for the ebb and flow of DI (Parsons, Dodman, & Cohen Burrowbridge, 2013).

Alex, Dariann, and Victoria had taken the time in the beginning to develop rubrics or use observation for pre-assessment. This made it easier to then collect data for post-assessment. Student learning and service outcomes were measured. This data was used in a multitude of ways: IEP and report card evidence as well as evidence for their own teacher evaluation school requirements.

Alex, Dariann, and Victoria concurred that service learning was only effective because of the bridge model suspension components of student voice and reflection. Throughout the process, the students with ELN constantly had to make decisions. This was effectively accomplished through reflection, the teachers listening to the student's, and then providing direction, support, and encouragement.

Is Service Learning Effective?

Alex, Dariann, and Victoria believed that service learning was an effective instructional strategy when they reviewed their students' pre- and post- assessment data. Students with ELN improved their persuasive writing, as shown by increased rubric scores. They practiced oral speaking, and some students said they'd like more practice in the future, though a few were still quite nervous in front of a large group. Students who had struggled with scissor use and braiding were getting more confident. The occupational therapist felt the students' finger dexterity was improving through the dog-toy making project.

When Alex, Dariann, and Victoria shared about their service-learning projects in seminar they acknowledged that it took a leap of faith and some time to initially get the ball rolling. How to start the conversation with the partners and the students took time, and sometimes they felt they had no time to move in the direction of service learning. However, each said it was one of the most powerful learning experiences they had seen for their students. Not only did service learning have impact for the students with ELN around their IEP goals, the impact on heart for the students with ELN, their peers, school, and community at-large provided one of those moments when educators reflect and realize the difference they can make. "This is the difference I can make as a teacher when my students are empowered to take responsibility for learning and making a positive impact."

Final Thoughts

"I teach in hopes of turning content, into rocket ships – Tribulations into telescopes, so a child can see their potential from right where they stand" (Livingston, 2016). The work of an educator is life changing. Service learning, when done well, has the potential to bridge learning and service in a powerful way (Billig, 2009). *Alex, Dariann, and Victoria lived this transformation with their students. When teachers and students talk about service learning and one hears phrases such as "Can we do more?", "I love this work", "This is hard, but I can do it", "You have made a difference at our school", "I am proud…..", "I can't believe we are in the newspaper!"* one realizes that this is the bridge to engagement, empowerment, integration, and learning for all.

References

Abernathy, T. V., & Obenchain, K. M. (2001). Student ownership of service-learning projects: Including ourselves in our community. *Intervention in School & Clinic, 37*(2), 86-95.

Bamber P., & Hankin L. (2011). Transformative learning through service-learning: No passport required. *Education and Training, 53*(2/3), 190-206.

Billig, S. H. (2000). Research on K-12 school-based service-learning: the evidence builds. *Phi Delta Kappan, 81*(9), 658-664.

Billig, S.H. (2009). Does quality really matter? Testing the new K-12 service-learning standards for quality practice in B.E. Moely, S.H. Billig, & B.A. Holland (Eds.), *Advances in Service-Learning Research: Vol. 9. Creating Our Identities In Service-Learning and Community Engagement* (pp. 131-157). Charlotte, NC: Information Age.

Billig, S. H. (2011). Making the Most of Your Time: Implementing the K-12 Service-Learning Standards for Quality Practice. *Prevention Researcher, 18*(1), 8-13.

Burgess, D. (2012). *Teach like a pirate: Increase student engagement, boost your creativity, and transform your life as an educator*. San Diego, CA: Dave Burgess Consulting, Inc.

Carter, E., Swedeen, B., & Moss, C. K. (2012). Engaging Youth With and Without Significant Disabilities in Inclusive Service Learning. *Teaching Exceptional Children, 44*(5), 46-54.

Desrochers C. (2006). Educating pre-service teachers for diversity: Perspectives on the possibilities and limitations of service learning. *The Journal of Educational Thought, 40*(2), 63-280.

Dewey, J. (1933). How we think. Boston, MA: D.C. Heath & Co.

Dymond, S. K., Renzaglia, A., & Slagor, M. T. (2011). Trends in the use of service learning with students with disabilities. *Remedial and Special Education, 32*(3), 219-229. doi:10.1177/0741932510362173

Eyler, J., Giles, D.E., & Schmiede, A. (1996). A practitioner's guide to reflection in service-learning: Student voices and reflections. Nashville, TN: Vanderbilt University.

Friend, M. (2014). Special education contemporary perspectives for school professionals, Upper Saddle River, NJ: Pearson Education, Inc.

Galvan C., & Parker M. (2011). Investigating the reciprocal nature of service-learning in physical education teacher education. *Journal of Experiential Education, 34*(1), 55-70.

Gent, P.J., & Gurecka, L.E. (1998). Service learning: A creative strategy for inclusive classrooms. *Journal of the Association for Persons with Severe Handicaps, 23*(3), 262-271.

Gent, P.J., & Gurecka, L.E. (2001). Service-learning: A disservice to people with disabilities? *Michigan Journal of Community Service Learning, 8*(1), 36-43.

Giles D. E., & Eyler J. (1994). The impact of a college community service laboratory on students' personal, social, and cognitive outcomes. *Journal of Adolescence, 17*, 327-339.

Harrison L. M. (2013). Service learning and its impact on middle level preservice teachers' learning from field experiences. *Middle Grades Research Journal, 8*(3), 23-38.

Higher Education Opportunity Act. (2008). Retrieved from http://www.udlcenter.org/advocacy/referencestoUDL/HEOA.

Hildenbrand, S. M., & Schultz, S. M. (2015). Implementing service learning in pre-service teacher coursework. *Journal of Experiential Education, 38*(3), 262-279. doi:10.1177/1053825915571748

Jacoby, B. (1996). Service-learning in today's higher education. In B. Jacoby (Ed.), Service-learning in higher education (pp. 3-25). San Francisco, CA: Jossey-Bass.

Jennings, P.A., Frank, J.L., Snowberg, K.E., Coccia, M.A., & Greenberg, M.T. (2013). Improving classroom learning environments by cultivating awareness and resilience in education (CARE): Results of a randomized controlled trial. *School Psychology Quarterly, 28*, 374-390. doi: 10.1037/spq0000035

Lee, S., Palmer, S. B., & Wehmeyer, M. L. (2004). Goal setting and self-monitoring of students with disabilities: Practical tips and ideas for teachers. *Intervention in School and Clinic*, 44, 139-145. doi: 10.1177/1053451208326053

Livingston, D. (2016, May 30). Lift off. Harvard School of Education Convocation. Retrieved from http://www.gse.harvard.edu/news/16/05/lift.

Muscott, H. S. (2000). A review and analysis of service-learning programs involving students with emotional/behavioral disorders. *Education & Treatment of Children, 23*(3), 346-368.

National Service Learning Clearinghouse (2016, August 31). What is service learning or community engagement? Retrieved from https://cft.vanderbilt.edu/guides-sub-pages/teaching-through-community-engagement/.

National Youth Leadership Council (2016, May 30). K-12 service-learning standards for quality practice. Retrieved from https://nylc.org/standards/.

O'Connor, M. P. (2009). Service works! Promoting transition success for students with disabilities through participation in service learning. *Teaching Exceptional Children, 41*(6), 12-17.

Parsons, S.A., Didman, S.L., & Cohen Burrowbridge, S. (2013). Broadening the view of differentiated instruction. *Phi Delta Kappan, 95*(1), 38-42.

Scott, V. G. (2006). Incorporating service learning into your special education classroom. *Intervention in School and Clinic, 42*(1), 25-29.

Shen, B., McCaughtry, N., Martin, J., Garn, A., Kulik, N., & Fahlman, M. (2015). The relationship between teacher burnout and student motivation. *British Journal of Educational Psychology*. Advance online publication. doi: 10.1111/bjep.12089

Shogren, K.A., & Shaw, L.A. (2016). The role of autonomy, self-realization, and psychological empowerment in predicting outcomes for youth with disabilities. *Remedial and Special Education, 37*(1), 55-62. doi: 10.1177/0741932515585003

Tomlinson, (2001). *How to differentiate instruction in mixed ability classrooms (2nd. Ed.)*. Alexandria, VA: Association for Supervision and Curriculum Development.

Ward, M. J. (2005). An Historical Perspective of Self-Determination in Special Education: Accomplishments and Challenges. *Research & Practice for Persons with Severe Disabilities, 30*(3), 108-112.

Wehmeyer, M. L. (2006). Self-determination and individuals with severe disabilities: Re-examining meanings and misinterpretations. *Research and Practice for Persons with Severe Disabilities*, 30, 113–120. doi:10.2511/rpsd.30.3.113

Wolfensberger, W. (1983). Social role, valorization: A proposed new term for the principle of normalization. *Mental Retardation, 21*, 234-239.

Wolfensberger, W. (2000). A brief overview of social role valorization: *Mental Retardation, 38*(2), 105-123.

Figure 1: K-12 Service-Learning Standards for Quality Practice

1. **Meaningful Service** - actively engages participants in meaningful and personally-relevant service activities.
2. **Link to Curriculum** - an instructional strategy to meet learning goals and/or content standards.
3. **Reflection** - incorporates multiple challenging reflection activities that are ongoing and that prompt deep thinking and analysis about oneself and one's relationship to society.
4. **Diversity** - promotes understanding of diversity and mutual respect among all participants.
5. **Youth Voice** - provides youth with a strong voice in planning, implementing, and evaluating service-learning experiences with guidance from adults.
6. **Partnerships** - are collaborative, mutually beneficial, and address community needs.
7. **Progress Monitoring** - engages participants in an ongoing process to assess the quality of implementation and progress toward meeting specified goals, and uses results for improvement and sustainability.
8. **Duration and Intensity** - has sufficient duration and intensity to address community needs and meet specific outcomes.

National Youth Leadership Council (2016, May 30). K-12 service-learning standards for quality practice. Retrieved from https://nylc.org/standards/

Figure 2: Service-Learning: The Bridge to Engagement, Empowerment, Integration and Learning

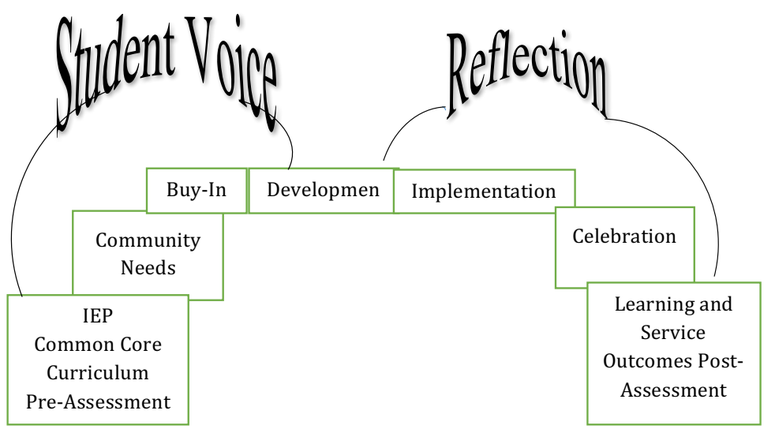

Table 1: Service-Learning (SL) Bridge Components

SL Component	Respect-Recycle 5th grade inclusion – 7 students with IEPs	Go-Grow high school science severe disabilities – 5 students	Bow-Wow, Wow! 1st graders with occupational therapy goals – 2 students
IEP/ Common Core/ Curriculum	Persuasive writing Oral speaking	Math- measurement Science	Fine motor Occupational therapy
Pre-assessment	Baseline data recent persuasive writing rubric and oral speaking rubric	Baseline data measurement and science content knowledge	Baseline observational data scissor use and braiding
Community Need	School need to increase recycling to match community goals	Support sustainability	Animal shelter support
Buy-In	All 5th grade teachers Principal	Science Team Leader Principal	Occupational therapist Principal Animal Shelter Contact
Development	Recycle research Persuasive script	Awareness hydroponics Materials	How to make dog toys Materials
Implementation	Finalize persuasive script Present respect-recycle at school assembly	Plant Monitor Measure	Make dog toys Take to shelter
Post-assessment	Rubrics on final persuasive script and oral speaking	Rubrics rating measurement accuracy and science knowledge	Observational data on scissor use and fine motor skills of braiding
Celebration	Principal Spotlight – Announcement of thanks Peer recognition	Photos of teachers and students eating the vegetables	Photos of dogs at shelter with toys. Made the local newspaper!
Student Voice	Students lead the way. Decided service and learning.		
Reflection	Student reflection every day determined the direction of each lesson.		

Websites Related to Teaching and Learning

— Kayla Beman

" Currents Clips and Links" is a list of links to interesting, non-commercial websites related to teaching and learning, compiled by Kayla Beman. Currents invites reader recommendations of similar sites that they've found useful.

Landmark College Institute for Research and Training (LCIRT) is based out of Landmark College in Putney, VT. The LCIRT is dedicated to researching and pioneering new techniques for teaching students with learning disabilities. The LCIRT also works to help faculty to increase learning outcomes for students. The LCIRT website features multiple teaching resources for professors, including an FAQ section that serves to provide professors with an understanding of learning disabilities and the different ways that students learn. In addition, the LCIRT website also has a blog that contains current posts regarding ongoing research at the LCIRT.
https://www.landmark.edu/research-training

The University of Rhode Island: Disability Services for Students Office is based out of the University of Rhode Island. The Office website provides resources for faculty working with students with disabilities. The website has several links that provide information for faculty regarding classroom and educational accommodations. In addition, the website has a section with links to information on different disorders, such as autism spectrum disorder and attention deficit disorder/attention deficit hyperactive disorder.
http://web.uri.edu/disability/ctc/

Center for Teaching, Learning, and Research is based out of Middlebury College in Middlebury, VT. On the Center's website, there are numerous resources for faculty pertaining to teaching writing, teaching methods, and learning disabilities in the classroom. In the section on learning disabilities, the Center outlines some guidelines to follow when designing a syllabus and creating class activities to make courses more accessible to students with disabilities.
http://www.middlebury.edu/academics/resources/ctlr/faculty/teach/teaching-students-with-learning-disabilities

Williams College: Disability Support Services is based out of Williams College in Wiliamstown, MA. On their website, they include a section for faculty that provides information regarding academic accommodations for students with disabilities. The section outlines definitions of specific accommodations, such as extended time for completing exams, separate rooms for examinations, enlarged print text, and preferential seating.
https://academic-resources.williams.edu/disabilities/information_accommodations/

Student and Employee Accessibility Services (SEAS) is based out of Brown University in Providence, RI. The Student and Employee Accessibility Services organize and implement accommodations for students at Brown University. They also provide support to faculty and staff when working with students with disabilities. On their website, they include a section on Supporting Students with Disabilities for faculty. Within this section, they provide information on specific disabilities and include ways that faculty can support students with disabilities.
https://www.brown.edu/campus-life/support/accessibility-services/supporting-students-disabilities

College for Students with Disabilities: We Do Belong. Eds. Pavan John Antony and Stephen M. Shore. Jessica Kingsley Publishers, 2015.

— Nicole Lopez-Jantzen, PhD is an Assistant Professor of History at Borough of Manhattan Community College.

Antony and Shore's book is a collection of eleven essays by scholars and individuals with disabilities discussing the experiences of students with disabilities in higher education, along with an introduction and conclusion by the editors. Both Dr. Antony and Dr. Shore are professors of Special Education at Adelphi University, New York, a university that has developed a model support program, the Bridges to Adelphi Program, for students with autism spectrum disorder (ASD) and other non-verbal learning disorders. Moreover, both Dr. Shore and Ehrin McHenry are scholars who share their personal experience as individuals with disabilities working in higher education. Several chapters highlight the resources at Adelphi and the experience of students with ASD in higher education, although some chapters analyze the experiences of students with other physical, intellectual, and learning disabilities. While the book is divided into two parts, both are concerned with sharing the stories of students with disabilities, either as part of case studies on particular disabilities in the first part or as standalone autobiographical essays by individuals with disabilities in the second. This is a conscious decision on the part of the editors, who assert in their introduction that they "felt the need to incorporate this ideology based on the philosophy that all voices need to be heard" (p. 11). As the title of their book affirms, a major idea present in the volume is that students with disabilities belong in college, and thus the book advocates for these students' inclusion and ability to succeed in higher education and offers practical advice for students, professors, and administrators to help these students reach their goals.

After a brief introduction, chapters two through eight are by scholars discussing the challenges, support needed, and, in many cases, the successes of students with different types of disabilities in higher education. In chapter two, Antony analyzes the daily life experiences of nine students with cerebral palsy who attended different colleges. A major theme that emerged from interviews with the students with cerebral palsy, which is echoed in the autobiographical chapters by students with different types of disabilities in the second part of the book, is that most students with disabilities do not know about their legal rights regarding accommodation before beginning college. Under the 1990 Individuals with Disabilities Education Act, K-12 students receive an Individualized Education Plan (IEP), tailored to a student's individual needs and designed for the student to complete successfully elementary and secondary school. Although students in college are covered by the Americans with Disabilities Act, which is designed to ensure equal access, students must self-identify to the college's office for students with disabilities, provide proper documentation to obtain accommodations, and then self-identify to a professor in order to use them. Many of the students that Antony discusses only found out about certain rights via networking with other students with disabilities. In his autobiographical essay "College Dreams," Kerry Magro argues that colleges should have peer-mentoring programs for disabled students. Indeed, as part of the Bridges to Adelphi Program (BAP) for students with ASD, discussed in chapter eight by Mitchell Nagel, et al., space is provided for BAP students to interact with each other while the program office is open, and BAP students are encouraged to attend social group meetings during the week, which also provide opportunities to socialize. BAP students can also meet with peer mentors, students from

the larger Adelphi community who have received specialized training.

For college professors without training in special education, the sections explaining how accommodations work in secondary education and what students have access to, know, and do not know are particularly useful. As many essays highlight, first semester students with disabilities have to learn to navigate all of the new aspects of college while self-identifying as students with disability and advocating for their own accommodations. Professors can help by not only including an ADA compliance statement on their syllabus, but also mentioning that students need to self-identify and arrange for accommodations with the office of students with disabilities on the first day of class and telling them where to find it. Many of the students with disabilities stated that supportive teachers and professors were instrumental in getting them the support they needed to reach their potential. Reading accounts by individuals with disabilities about their college experiences underscores the variety of challenges that the students can face and the possible solutions that allow them to thrive in higher education. Therefore this book helps college professors to begin to think of ways to designing (or re-designing) their course materials to be inclusive instead of adapting them to accommodate students later on, which can be difficult for both students with disabilities and professors.

Several authors stated that, despite the inclusion of transition services, many young adults with disabilities are not informed about opportunities to seek higher education and in many cases are discouraged from doing so. In addition to higher education, transition plans can include vocational skills training or support with employment, and too often students with disabilities are not considered "college material." Karleen Haines argues in chapter five that individuals with mild intellectual and developmental disabilities can attend some higher education institutions, and that families, counselors, administrators and teachers should not outright dismiss higher education for these students. Like other authors, she also states that professors and college administrators need to understand the needs of students with disabilities as well as to encourage and assist them in developing their potential. In the conclusion, Antony and Shore urge teachers and transition specialists to consider higher education as a viable post-secondary option and work with students with disabilities and their parents/guardians to develop appropriate transition plans tailored to the students' individual needs. Indeed, in their conclusion they cite research which shows that students with disabilities are enrolling in college in increasing numbers, with 88 percent of degree-granting postsecondary institutions, and 100 percent of public ones, reporting enrollment of students with disabilities in 2008/9. Furthermore, 60 percent of students with disabilities enroll in community colleges. The essays in this collection, unlike previous scholarship, emphasize the daily experience of those students who go through higher education and after graduation. Some of the students in the study, such as Shore himself, Kerry Magro, and George and Matthew, students with learning disabilities discussed in the case study in chapter six, have gone on to have meaningful careers after graduating college. However, many students face challenges in obtaining work, including discrimination, despite being highly qualified and able to perform essential job functions. In chapter seven, Ehrin McHenry details her struggles first in field work placements in graduate school and then in the job market. McHenry relates that one would not let her take home and type an application even though she has spastic quadriplegia, a type of cerebral palsy, and another did not have an elevator, which effectively ruled her out.

Most of the scholars in this collection work at Adelphi, and thus its innovative program is highlights. Regarding the Bridges to Adelphi Program, Nagler (p. 156) states that one of the challenges to building such a program is that a college's administration "must understand and accept the fiscal and physical challenges and commitments needed to build a successful ASD program." The students profiled in the various studies and autobiographical accounts had both positive and negative experiences in college and faced different challenges depending on the institutions that they attended. Students described social problems, such as being bullied, issues with getting accommodations in the classroom, and physical problems in getting to and around campus. This collection highlights many issues facing the increasing number of students with disabilities who are attending higher education and advocates for programs such as BAP that will allow them to be successful.

College for Students with Disabilities: We Do Belong is an important text for students with disabilities as well as their parents/guardians, teachers, and counselors to read as they are planning to transition out of secondary education. In addition to personal accounts by students with disabilities sharing their successes and challenges, most of the chapters have useful advice to help students begin college more easily and advocate for themselves while there. It concludes with a checklist for promoting student success, divided into what to do in high school, how to choose a college, how to succeed in college, and how to navigate campus life more generally. Antony and Shore's collection of essays should be read by students and professionals who are interested in higher education for students with disabilities as an introduction to the topic. Due to the variety of topics covered and the mix of case studies and personal accounts, it might not be as useful for scholars conducting specialized research, except perhaps regarding the BAP program and students with ASD, which are major topics. That said, as an introduction to the topic of students with disabilities in higher education, it makes an important contribution by emphasizing the experiences of students with disabilities in higher education.

Enacting Change from Within: Disability Studies Meets Teaching and Teacher Education. Eds. Meghan Cosier & Christine Ashby. Peter Lang, 2016.

— Alyssa Hillary, M.S., is an Autistic doctorate student in the Interdisciplinary Neuroscience Program at the University of Rhode Island.

The editors promise to provide a practical guide for educators who want to apply disability studies, more specifically disability studies in education (DSE), to their work as teachers, even if they work at schools which do not support inclusive education. While *Enacting Change from Within* is aimed primarily at K-12 educators, it is relevant for educators at any level. Specific policies affecting K-12 students may differ from those affecting college students, but broad discussions about the value of education for people with disabilities are not so affected by the age of the students, nor are methods of ensuring accessibility. Similarly, classroom practices that focus on the strengths and abilities of students remain effective for all age groups.

The main text begins with an all-too-common story: an educator who wants to be inclusive finds her efforts frustrated at every turn. Eventually, the educator returns to school, where she learns about disability studies. This

story leads into an introduction of disability studies geared towards teachers who may not have heard of the medical or social models of disability. They mention the hierarchy of disability, where physical and visible disabilities are given representation over cognitive or invisible disabilities. Understanding this hierarchy is paramount for special educators, as many students in special education have learning disabilities. The introduction to disability studies focuses on applications to education and on tensions between disability studies (in education) and special education, with the former tending towards a social model approach where environments are disabling and the latter attempting to "fix" individual "deficits" within a medical model framework. Also part of their historical introduction is an explanation of how two separate educational systems are supported: one for students with disability labels and one for students without. General education teachers may presume they are not responsible for disability related issues, even if they have disabled students in their classrooms. These assumptions remain in colleges, where some educators feel accommodating students with disabilities is not their job, but purely the responsibility of disability services. Alongside this background is an explanation of how the rest of the text is organized. The chapters are organized, albeit loosely, into sections by theme: the work of special education, the daily and weekly processes involved, student empowerment, and professional development, including collaboration.

The next several chapters introduce the work of special educators in practice. We find an historical introduction to the development of special educational systems. While the account is generally strong, the role of people with disabilities in the fight for rights and departure from institutions is not mentioned. Also in this section, differences between standardized, quantitative data about students' weaknesses and the contextual, qualitative observations of a student's strengths are discussed. While the first is used in selecting accommodations and supports, the second ensures teachers believe their students belong in the classroom.

"Three Ways to Use the Common Core State Standards to Increase Access to General Education Contexts for Students with Disabilities" provides a strong example of how all educators can support their students. Rather than focusing purely on a "deficit" in the student to "fix," the authors suggest attending both to what the student can do and to what is needed to ensure the student can do it. Given that a college professor is unlikely to know their students' specific difficulties, instead being told what the needed accommodations are, these two areas must be the focus.

The next section covers the day-to-day work of providing supports and services, complete with navigation of rules and regulations, which may contradict with inclusive ideals or the philosophy of disability studies. The Individualized Education Program, a legally required cornerstone of special education, is discussed heavily. While this document does not exist in the university, some functions must be replicated. Academic accommodations, including supports used in the classroom and appropriate modifications of assessments, are still documented in higher education, through a disability services office. Considerations of power dynamics in IEP meetings, where students and parents are often silenced, apply as the power dynamics remain in effect for student meetings with disability services. McLaughlin's textual analysis of the IEP as a document may also be used as a guide for analyzing disability services documents.

Also in this section is a comparison of two transitions, one where the student continues on to post-secondary education and one where this does not occur. In addition to providing insight on which students make it to college classrooms, Cowley's tale poses questions of access that remain relevant even after a student enters college. Financial aid is a concern for most college students, regardless of disability status, and some students with disabilities may require support in navigating that process. Many will work with disability services at their university, and some will need help in navigating the accommodations process.

Another chapter focuses on communication supports. One of the chapter authors, Quin Delia, has autism and types to communicate and therefore has first-hand experience from the side of the student with a disability in addition to her broader expertise on communication. Given the volume's claim to Disability Studies, which depends on disabled perspectives, it is good to see at least one contributor disclose her disability. Delia, along with her co-authors, describe communication as a basic human right, and as a means of self-expression, self-advocacy, agency, engagement with peers, and engagement with academic content. They note that, even in the classroom, engagement with academic content is not the sole purpose of communication and that a student must always have access to their communication methods, even if a response is not expected.

As an Autistic part-time Alternative and Augmentative Communication (AAC) user in graduate school, this chapter was of particular interest for me. As more students who use AAC attend college, the contents of this chapter will become increasingly relevant for university educators. While many of the examples provided are most relevant in the K-12 classroom, most advice remains applicable in college classrooms. It is still important to allow time for students to write or type answers, which is slower than speaking. From the perspective of the student I've been, it still feels good to see classmates, or even the professor, using the method of communication that I do. (There is one professor who tends to write to me rather than speak to me when I cannot speak.) Recognizing non-linguistic communication as valid rather than demanding it be re-expressed in text continues to make communication more accessible. (The given example of a student with autism who has his hands over his ears is familiar to me. One of my major professors helped me exit an overwhelming environment when my hands were over my ears.) Strategies for making social engagement accessible will change as the environment does, but providing multiple means remains effective. Providing information in advance and allowing additional preparation time for AAC users will continue to make classroom engagement more effective. The table, "Strategies at a Glance," provides useful advice for all educators who have (or may have) a student who uses AAC in their classroom.

The final section of the volume focuses on collaborations and professional development. The first chapter of the section focuses on co-teaching. The chapter is geared primarily towards teaching situations with one special educator and one general educator, which is more likely to occur in the K-12 environment than in colleges or universities. However, most challenges addressed in the chapter are not unique to primary or secondary education, and the strategies provided may be useful. A later chapter focuses on joint lesson development, starting from curriculum standards. In between these two, the reader finds information on collaboration with families, written by a special educator who is also the parent of a child with a disability. While parents are officially uninvolved in the college classroom, nearly every assumption about families or communication barrier discussed in the chapter applies as well to the students themselves.

Enacting Change from Within ends with the message that making changes is complicated and messy, that there is no one right answer, but that creatively pushing for change and inclusion is possible. It requires putting oneself out there and not accepting the deeper structures of how things have always been, but it can be done. This is the challenge Cosier and Ashby extend to the reader with the knowledge in the chapters as a guide.

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