Toward an Inclusive Pedagogy Through Universal Design for Learning in Higher Education: A Review of the Literature

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Abstract

The presence of Universal Design for Learning (UDL) has gained traction in K-12 and postsecondary settings over the past two decades as educators have sought to reframe traditional means of teaching and learning. In the realm of higher education, UDL-related research is somewhat limited, hampered by competing definitions, aims, and constructs. The purpose of this paper is to review literature on UDL in postsecondary settings to understand how faculty and researchers conceptualize and operationalize UDL. This review extends the work of previous research by focusing solely on UDL, as developed by researchers at the Center for Applied Special Technology (CAST) and including research that is both empirical and descriptive. Our findings suggest that ambiguity still exists as to UDL's application as an intervention, or framework; this has implications for its use in advancing inclusive pedagogy and in disrupting a discourse of normalcy that is pervasive in postsecondary settings. Implications for future research are offered.

Keywords: universal design for learning, postsecondary education, higher education, disability studies

The image of a large lecture hall filled with hundreds of students as the archetypical college classroom may still be prevalent on some campuses, but by and large this conception is misrepresentative of many institutions of higher education (IHEs). As is the case in K-12 settings, a range of class sizes, instructional methods, and learning environments are represented across and within postsecondary settings; smaller instructor-student ratios, advances in technology, and other emerging innovations continue to transform the landscape for both faculty and students.

The presence of Universal Design for Learning (UDL) in IHEs has gained traction over the past nearly two decades as educators have sought to reframe traditional means of teaching and learning. Developed by the Center for Applied Special Technology (CAST) and derived from Universal Design (UD) in architecture, UDL focuses on purposeful design that considers the diverse needs of a wide variety of individuals (Dolmage, 2017; McGuire et al., 2006; Meyer et al., 2014; Rose & Meyer, 2002). UDL is focused specifically on the proactive design of learning environments (including K-12 and higher education classrooms) and is distinguished from other similar offshoots of UD (e.g., Universal Instructional Design, Universal Design for Instruction) by its grounding in the neuroscientific aspects of learning (Schreiner et al., 2013).

CAST founders maintain that UDL is an integrative framework that combines understandings from neuroscience, architecture, and technology to design instruction and learning environments (Meyer et al., 2014; Rose & Meyer, 2002). Furthermore, CAST defines UDL as a "framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn" (CAST, 2018). The framework is built on the premises that (a) there is systematic variability among learners, (b) learning is equal parts cognitive and emotive, and (c) the networks of the brains engage, process, and represent information in different ways for different people (Meyer et al., 2014; Rose & Meyer, 2002). In conjunction with brain research, UDL continues to evolve as educational research related to different methods of instruction and curriculum design advances.

Federal education laws, including the Individuals with Disabilities Education Act (IDEA), and the Every Student Succeeds Act (ESSA), have signaled support

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for UDL in elementary and secondary schools. The 1997 reauthorization of IDEA pushed the boundaries of educational access, requiring that students with labeled disabilities be educated in the least restrictive environment to the greatest extent possible, and provided with assistive technology. This law represented a (theoretical if not practical) union between special and general education (Hehir, 2009). According to CAST researchers, IDEA effectively opened the door for a UDL approach in K-12 classrooms; however, UDL has undergone much theoretical revision since that time (Meyer et al., 2014).

An unintended consequence of linking UDL with policies related to students with labeled disabilities is the conflation of UDL and special education. UDL is often misinterpreted as a special education initiative, or a framework only for students with labeled disabilities. The 2015 passage of ESSA may have somewhat assuaged this confusion—for the first time, UDL as a practice was endorsed by federal general education legislation (Gravel, 2017). While UDL's founding organization, CAST, has historical connections with special education, UDL focuses on learner variability rather than disability. Furthermore, the UDL framework can be applied to settings outside the confines of K-12 education, as evidenced by its definition in the 2008 reauthorization of the Higher Education Opportunity Act.

This extension of UDL into higher education will be explored in this paper. Despite the prevalence of UDL in statewide educational initiatives, federal legislation, and even preservice teacher education coursework (Scott et al., 2017), research on the experiences of UDL implementation by educators at multiple levels is limited (Gravel, 2017). In the realm of higher education, UDL-related research is not only limited, but ambiguous—hampered by competing definitions and interpretations. While guidelines for implementation exist (CAST, 2018), many UDL scholars are reluctant to identify strict definitions or criteria. UDL is intended neither as a program, nor as something to implement with fidelity. Thus, there are multiple interpretations of UDL; in a sense, its dynamic and flexible nature can also be interpreted as its greatest source of elusiveness.

Despite this ambiguity, UDL has had successful forays into higher education, both in research and in practice. A 2011 literature review synthesized empirical work in postsecondary education related to UDL; however, included publications drew on other UD models as well (Roberts et al., 2011). Universal Design for Instruction (UDI) was once considered the version of UD most applicable to higher education, as it was specifically developed for use in postsecond-

ary settings (McGuire et al., 2006). A primary reason the review by Roberts and colleagues is centered on UDI rather than on UDL may very well be that the use of UDL outside of K-12 settings was especially limited at that time. Recently however, it appears that UDL has been more widely accepted as a relevant framework for designing postsecondary learning experiences and/or environments (UDL on Campus, n.d.). As such, UDL has also become a more familiar term across educational age spans with a multitude of theoretical and practical interpretations.

Nevertheless, Roberts and colleagues' 2011 review detailed several noteworthy findings. First, the authors found very little research that explored the effectiveness of UD models on student outcomes (GPA, retention rates, etc.). In addition, these authors emphasized that empirical work exploring UD in higher education would benefit from more quantitative and mixed methods approaches. The authors expressed concern that three-fourths of the pieces in their review employed qualitative methods, which substantially limited the generalizability of their findings.

Since the publication of Roberts et al.'s review there have been four subsequent reviews of UDL-related literature. While some of these have incorporated UDL applications in higher education, none have concentrated solely on postsecondary settings. Rather, these have varied in focus, examining UDL in PK-12 environments (Ok et al., 2017), Universal Design or UDL as an educational intervention (Capp, 2017; Rao et al., 2014), and UDL as an educational framework (Al-Azawei et al., 2016). Each of these reviews makes a distinct contribution to the literature. Analyses by both and Capp (2017), and Rao and colleagues (2014) highlight the outcomes of UDL as an intervention; both note the generally positive effects of UDL implementation at various educational levels. Capp's meta-analysis is theoretically situated within an inclusive education framework and examines the outcomes of UDL implementation in empirical studies between 2013 and 2016 (N=18). Rao et al. captured a somewhat broader sense of the terrain of Universal Design, examining the efficacy of multiple models of UD (e.g., Universal Design for Instruction, Universal Instructional Design, UDL) across primary, secondary, and higher educational settings. The authors included only empirical research in their review (*N*=14), with the goal of understanding how researchers are employing different models of UD as an intervention.

Al-Azawei and colleagues' (2016) review aimed to pick up where Rao et al. (2014) left off; however, they analyzed only those empirical studies that utilized the UDL framework (CAST, 2018; Rose &

Meyer, 2002). The authors of this review concluded that while the literature suggested that UDL holds promise as a pedagogical framework across grade spans and formats (online, hybrid, etc.), the ways in which researchers interpret and comply with UDL principles remain ambiguous. No clear answers about the validity of UDL as a framework were realized.

This review is distinctly different from prior reviews for several reasons. While our aim is to gain a sense of the scope of Universal Design research in higher education like Roberts and colleagues (2011), we have elected to look beyond empirical work that emphasizes outcomes and seeks validity. We are interested in the application of UDL that advances and sustains inclusive pedagogy as an end in itself. By analyzing empirical and descriptive pieces, we hope to gain a clearer understanding of the various ways researchers in higher education are operationalizing and conceptualizing UDL. Due to its continued iteration and development in the years since its inception, we have elected to focus solely on the UDL framework (CAST, 2018; Meyer et al., 2014; Rose & Meyer, 2002) to the exclusion of other UD models. Additionally, because UDL specifically has been addressed in higher educational policy and practice, it has demonstrated its sustainability in an educational climate that is constantly in flux. The questions guiding this review are as follows:

1. In what ways is the UDL framework operationalized in postsecondary contexts?
2. In what ways is UDL conceptualized as a framework for inclusive pedagogy in higher education, attending to notions of disability, ability, and variability in theory and practice?

Conceptual Framework

The conceptual framework for this review attends to the ways UDL functions to support inclusive pedagogy in higher education. Yet the concept of inclusivity always brings with it a myriad of complexities of placement, belonging, and the rights of individuals with disabilities. As alluded to in the introduction, UDL has deep connections with special education, and is sometimes viewed as a special education initiative. Yet theoretically, UDL appears to be more closely aligned with Disability Studies in Education (DSE). DSE is concerned with problems and issues in education related to exclusion and/or oppression of individuals with disabilities. DSE conceptualizes disability as a social, political, and cultural construct that plays out in complex ways in educational settings (Cosier & Ashby, 2016). UDL scholars have consciously shifted their interpretations of disability away from individual deficits to disabling environments (Gravel, Edwards, Buttimer, & Rose, 2015; Meyer et al., 2014), which is somewhat consistent with a DSE framework. DSE supports the notion that individuals with certain types of bodily (cognitive, behavioral, linguistic, etc.) impairments are disabled by inhospitable environments and social systems that privilege able bodies, often resulting in discrimination or exclusion (Gabel, 2005). Likewise in K-12 settings, the expectation is that students with disabilities should somehow be normalized; the teacher's role is to remediate students with individual education programs (IEPs) in order to make them more like their "typical" peers. Ironically, this often happens by removing these students from the classroom and attempting to raise them to a "normally" performing level before readmitting them in the general classroom (Hehir, 2002; Taylor, 1988).

The UDL framework can disrupt the narrative of achieving readiness as a gateway to inclusion (Taylor, 1988), as it recognizes learner variability as an educational norm, and rejects the "myth of the normal child" as the central, organizing feature of schools (Baglieri, Bejoian et al., 2011, p. 2124). Yet due to its complicated history and development, UDL continues to be positioned in research, as this paper will illustrate, as a solution for dealing with disability or difference. A number of descriptive and empirical publications included in this review begin by framing their pieces as a response to increased diversity in IHEs, which, while admirable, runs the risk of positioning non-dominant (non-white, disabled, etc.) groups of students as (1) homogeneous, and (2) deviants in need of assimilating to heteronormative standards that define typicality in higher education.

This paper critically questions the suitability of framing UDL as an intervention for improving outcomes for certain groups of students in the increasingly diverse realm of postsecondary education. Instead, we argue that UDL is a process-based framework for inclusive pedagogy that moves "beyond assimilationist and compensatory measures of support with a view to advancing inclusive forms of pedagogy to meet learner diversity in non-discriminatory and socially just ways" (Liasidou, 2014, p.127). In other words, rather than conceptualizing inclusion in higher education as accommodating students with disabilities, UDL as inclusive pedagogy takes up the task of transforming teaching and learning at the postsecondary level for all students. This is a task made more complex by the fact that many faculty are content experts with limited pedagogical experience, other than their own as a student (McGuire

et al., 2006). Thus, a further goal of this paper is to propose avenues for future research. This will be explored further in the discussion.

Methods

Criteria for Locating and Selecting Publications

In order to locate high-quality publications, we conducted a search of the Education Resources Information Center (ERIC) database using the following key terms: "Universal Design for Learning" or "UDL," combined with either "higher education" or "postsecondary education." This initial search yielded 247 articles. The abstracts of these articles were read and applied the following criteria for inclusion in this review:

1. Articles must be published in a peer reviewed journal.
2. Articles must be published between 2002 and 2018. The 2002 date reflects the publication of *Teaching Every Student in the Digital Age: Universal Design for Learning* (Rose & Meyer, 2002), which introduced principles of UDL.
3. Publications must explicitly address our research questions; thus, they need to explore how UDL is operationalized and/or conceptualized in a postsecondary setting.
   a. Operationalize refers to publications that explore the process of drawing on and implementing UDL in some aspect of pedagogy, coursework, or operations (e.g., Disability Services Office). Publications in this group asked questions about the process and/or outcomes of designing a course, system, or learning task within the context of the UDL framework.
   b. Conceptualize refers to publications that draw on UDL theory to consider ways to improve teaching and learning in higher education. These pieces explored questions about how faculty and students consider the possibilities of UDL in a postsecondary setting, including how faculty might take up UDL in the interest of improving their pedagogy.
4. Publications must focus specifically on Universal Design for Learning. Articles that focused on other UD models (e.g., Universal Design for Instruction) to the exclusion of UDL were not reviewed.
5. Publications must display evidence of drawing on UDL principles in a postsecondary context; pieces that incorporated UDL as content within a course (for example, teaching pre-service teachers about UDL) were excluded (e.g., Pearson, 2015).

Analysis

The resultant set of 38 publications spanned the years 2006 to 2018 and included empirical research studies and descriptive articles. After reading the articles, each one was logged into a spreadsheet in which we recorded the abstract, purpose, research questions, methods, data sources, and findings. The first author coded each article to identify those that dealt with operationalizing UDL, and those that explored its conceptualization. Upon reviewing the first author's provided definitions specific to the operationalization and conceptualization of UDL, the second author also coded each article. The authors were in agreement on 82% of the articles, and discrepancies were resolved together; several articles could be interpreted as involving both the operationalization and conceptualization of UDL (e.g., Black et al., 2014; Hutson & Downs, 2015). In these cases, the authors revisited the publication's stated purpose and when explicitly identified by the authors, the research questions. Definitions of operationalize and conceptualize were consulted to determine which category most clearly aligned with the article's stated purposes. A list of articles in this review, organized by category, is provided in Table 1.

Findings

Almost all of the publications in this review began by addressing UDL in relation to increasing student diversity, broadly defined, in higher education. While many pieces explicitly linked UDL to the teaching and learning of students with disabilities, others framed UDL as a way to address the needs of a diverse population of students, including variability in age, social and cultural backgrounds, and learning preferences. We will review findings in this section, focusing first on how UDL has been operationalized, and then on its conceptualization in higher education settings.

Operationalizing UDL

Recall the first research question: In what ways is the UDL framework operationalized in postsecondary contexts? A total of 27 articles in this review attended to operationalizing UDL principles through some type of implementation in instruction, assessment, or design. Two themes emerged from analysis of these articles: (a) use of UDL in

response to a specific problem, and (b) achieving philosophical "buy-in" from faculty, stakeholders, and students in order to move forward with scaling UDL across the institution.

A recent study of UDL implementation across six IHEs in the US (Moore et al., 2018) provides a model that can be used as a heuristic for understanding the themes in this subgroup of the literature. Moore and colleagues aimed to identify similarities and differences in implementation strategies, and to use this information to inform the scaling of UDL research and practice. Through interviews with faculty across selected IHEs, the authors found that UDL was often addressed most systematically in response to a particular problem or line of inquiry, such as inequity or student attrition, which parallels theme (a) in our review. This targeted use of UDL to address a particular problem may have been the result of greater "buy-in" from certain administrative areas or departments concerned with that issue, which corresponds to theme (b). Drawing on their collected data, Moore et al. developed a four-phase model to help identify the developmental arc of UDL implementation in higher education: small, often individual-level implementation; traces of growth through the department level; securing of funding; and institutional implementation and adoption of UDL as policy. We will refer to this model and examples from the review literature to illustrate the two themes.

UDL: Responding to Problems. Looking across these studies, several publications did in fact frame UDL as a potential solution to a problem or issue in higher education. In many cases, the "problem" in need of attention was the success (or lack thereof) of students with labeled disabilities. For example, some studies examined aspects of equity and access in college or university coursework. In other cases, instructors identified common challenges within their courses or departments. Moore and colleagues (2018) noted that in some IHEs, the emphasis on UDL is at a faculty level, where concerns tend to reflect those of individual faculty members and a commitment to students and promising pedagogy. At a systems (university) level, there tends to be interest in addressing larger issues such as student attrition, racial tension, or access to disability-related services.

Several studies found that attending to faculty's instructional practices might enable access to learning for a variety of diverse students, including those with disabilities, and facilitate inclusive classrooms (Bernacchio et al., 2007; Gradel & Edson, 2010; Heelan et al., 2015). Similarly, one study assessed faculty perceptions of UDL, and subsequently designed a professional learning program aimed at creating an inclusive climate specifically geared toward students with disabilities (Izzo et al., 2008). These studies suggest that use of UDL principles may mitigate faculty concern about teaching students with labeled disabilities, who may be perceived as having fundamentally different learning needs.

True to UDL's emphasis on student learning, several publications focused on postsecondary students' perceptions of UDL implementation. Dean et al. (2017) zeroed in on the student outcomes of perceived learning (e.g., whether students were positively engaged) and actual learning (knowledge gains). The faculty researchers investigated the impact of using multiple forms of representation in a large lecture course. These resources including PowerPoint slides, lecture notes, an audience response system, and an online learning app. Notably, the problems under investigation (lack of engagement and limited opportunities to learn in large lecture) are environmental and curricular; the authors do not situate problems within students.

In general, research that examined student perspectives tended to focus more on systemic or curricular barriers that UDL might address, rather than attempting to overcome deficits in learning ascribed to disability. Two studies looked at student perspectives on instruction before and after a UDL intervention with members of the faculty (Davies et al., 2013; Schelly et al., 2011). Researchers saw a shift in student perceptions about how their instructors shared information and attempted to engage and assess them. These researchers attempted to measure UDL effectiveness through students' eyes and offer an interesting glimpse into the perceived positive impact of even a small amount (semester's worth) of faculty professional learning on student outcomes.

Several publications in this subgroup took up the work of connecting UDL with student wellness, empowerment, and identity development in college classes. Nielsen (2013) examined how UDL might be integrated into a composition course for first-year college students to foster positive identity development (knowing oneself as a learner) and engagement. The author focused specifically on highlighting UDL as a useful framework for design for all students, not only those who might struggle in a composition course. This piece highlights how instructors can proactively address variability in the classroom, an approach consistent with the principles of UDL. In addition, student empowerment was highlighted across content areas in one study exploring UDL as a means to minimize the barrier of student stress, and foster an inclusive climate (Miller & Lang, 2016), and another to increase student-centered learning and engagement

(Kumar, 2011). Again, this is approached by proactive design and faculty training, not only in pedagogy, but in identifying and removing barriers to learning (Meyer et al., 2014).

Because UDL is defined as a pedagogical framework, it is increasingly being used in teacher education programs, both to prepare teachers for diverse classrooms, and as a set of promising instructional practice (Pearson, 2015). Studies focused on the use and introduction of UDL in teacher education also highlighted its use in online or hybrid course formats. While the use of faculty modeling as a way to introduce UDL was employed in one study (Evans et al., 2010), the focus of these pieces tended to be on how well preservice teachers understood UDL after not only learning about it, but participating in UDL-designed courses (Evmenova, 2018; Scott et al., 2015). While results indicate that preservice teachers were generally able to recognize and apply UDL principles, we must note two important points. First, participants in these studies tended to be preservice special education teachers, highlighting again the connection between UDL and special education. Second, we were unable to locate studies that explored the use of UDL with preservice teachers in clinical placements, indicating a possible gap in research.

Investigating UDL as a vehicle for improving online or technology-enhanced postsecondary courses was a popular topic in this subgroup. While UDL neither requires the use of technology nor relies solely on it to enhance pedagogy, implementation is certainly facilitated by the use of electronic media, assistive technology, and accessible educational materials (Meyer et al., 2014). Several recent articles emphasize these links between UDL and technology, particularly as a tool for designing engaging online courses or communication platforms (Basham et al., 2010; Lohmann et al., 2018). Others explored increasing accessibility of online courses (Scott & Temple, 2017) or tutorials (Webb & Hoover, 2015), and decreasing attrition in these courses (Tobin, 2014). Despite the prevalence of online coursework, barriers within them continue to arise, and instructors must attend to the preferences of students. For example, a case study by Rao and Tanners (2011) examined not only the design of courses using UDL to mitigate these problems, but also evaluated which elements of UDL design were perceived as most useful by students. The authors found that interaction among students and instructors increased engagement, and that providing options for expression of learning also yielded positive perceptions. Rao and Tanner's piece is an important one, as it highlights the fact that merely using technology does not mean UDL is being employed; rather, UDL should be used to intentionally and proactively design courses that facilitate learning that allows for variability in expression, representation, and engagement.

On a somewhat larger scale, UDL implementation has been explored at a macro-level, across academic departments. Several studies took up the problematic nature of how disability is typically handled on campus – that it is a problem with which to deal. For example, a study by Beck et al. (2014) looked at how a Disability Services office on a large college campus could align its offerings within a UDL framework. The authors found that the office, although aimed at facilitating learning and accommodations for students with disabilities, in fact created a number of physical and modal barriers through their practices. They urged not only a practical change, but a philosophical, reflective, and continuous consideration of their model, and ways to move from intervention on behalf of students to intentional support of faculty and system design. A study by Fovet et al. (2014), analyzed the outcomes of an extended effort to implement UDL on a college campus. Faculty indicated that the process included a number of stressors, including budgetary concerns, depleted resources, and assumptions about an increase in workload. However, the researchers found that increased collaboration among staff eased some of these stressors, and that faculty appreciated the sense of ownership in redesign. An assessment of the College Supporting Transition, Access and Retention program (College STAR) found similarly positive results regarding faculty and staff collaboration and ownership (Hutson & Downs, 2015). These pieces suggest the development of a shift in mindset of teaching and learning in higher education, toward problematizing traditional views of disability. Rather than thinking about ways to "deal with disability," proactive approaches to inclusive design are fostered through UDL implementation at a systemic level.

Using UDL to address specific problems and act as a "catalyst for change" was referred to by one of Moore et al.'s participants as a "Trojan horse" (p. 42). Trojan horses refer to specific issues that might open the door for UDL as a solution. Such issues, whether systemic issues related to equity and inclusion, or more discrete pedagogical concerns of faculty (e.g., engagement), were evident across this subgroup of literature. Whether employed as a macro-level administrative solution or only within a sole instructor's classroom, these articles indicate the prevalence of UDL as a potential way to address a range of challenges in higher education settings.

Moving Forward: UDL Buy-In. Several publications focus on moving UDL implementation for-

ward in some way, which typically involves some type of scaling of UDL implementation. Moore and colleagues (2018), while laying out suggestions for levels and processes involved in scalability, make an important point that is particularly relevant to articles described here: "scaling up at its most fundamental level may be conceived as winning the hearts and minds of an ever-expanding group of individuals and providing the support structures necessary to sustain them" (p. 49). These publications recognize the necessity of some degree of philosophical buy-in on the part of faculty, students, and other stakeholders to recognize learner variability as the norm. In other words, because UDL is not a program, it cannot be treated like a checklist of strategies focused only on getting learners to access the curriculum. While it is conceivable that one could "do UDL," by implementing multiple means of engagement, representation, and action of expression into classroom practice, this approach lacks the intentionality that is characteristic of UDL, the connection with an instructional goal, and the focus on student variability in a particular context (Lowrey et al., 2017).

Several studies examined how students might buy in to UDL, as experienced through participation in a course where it was implemented by faculty. Kumar and Wideman (2014) examined implementation in a first-year undergraduate course, and student perceptions were generally positive. Students appreciated the flexibility in course design and assignments and felt that it contributed to their learning and higher grades than they would have otherwise had. Faculty reported that taking the time to consider multiple means of presentation gave them an appreciation for other ways of learning that would address learner variability. Likewise, Smith (2012) found that both faculty and students reported higher levels of engagement during a UDL-framed course, and the relationship was somewhat reciprocal; in other words, higher student engagement fostered more engagement on the part of the instructor to link practice with multiple means of motivation. Buy-in from both faculty and students may suggest opportunities for scaling UDL that would facilitate sustainability within a program or institution.

As noted in the previous section, instructors often draw on UDL in designing online courses to increase both access and engagement. Two publications, while focused on design of such courses, employed a UDL mindset not only as a means, but as a socially just end. This is an important shift. Rogers-Shaw et al. (2018) described their process of redesigning the syllabus, assessments, and communication, and offering choices in their course for adult learners that not only increase access, but also urged them to reflect on their own assumptions as they applied UDL principles. Likewise, Morra and Reynolds (2010) acknowledged similar shifts in their design of technology-enhanced courses, noting that practical shifts must be accompanied by philosophical changes in beliefs about learning. Only then, they argue, will UDL truly facilitate inclusion of students who have traditionally been marginalized on college campuses.

This subgroup of literature suggests that UDL is being operationalized in a variety of ways, in response to a range of challenges, and is doing so with varying degrees of support across postsecondary settings. While findings of this group of literature reflect a spectrum of reasons for implementing UDL, it is important to highlight the presence of the common thread also noted by Moore and colleagues (2018): human buy-in – from faculty, students, and stakeholders across the system – will ultimately determine not only the scale of implementation, but its success and sustainability.

Conceptualizing UDL

Our second research question sought to understand the ways in which faculty and researchers in higher education conceptualize UDL. This subgroup of literature includes conceptual, descriptive, and empirical pieces. Overall, across these articles, researchers conceptualize UDL as a framework for inclusive pedagogy or instructional design, often leveraging technological innovations to meet the needs of a diverse student population, including those with labeled disabilities.

Several publications examined philosophical underpinnings of UDL, either to disrupt the discourse of normalcy that tends to undergird instructional and pedagogical practices in higher education (Liasidou, 2014) or to conceptualize how the framework might address issues of inequity or exclusion in higher education. While issues of pedagogy, design, and equity were incorporated into studies addressed by the first research question, these pieces are distinct in that they are not focused on practical implementation of UDL. Rather, publications in this group focus on either faculty or student perceptions and understanding of UDL in postsecondary settings.

Some of this work appears to be situated within a critical or social model of disability. The social model was conceptualized by Oliver (2013) as an alternative to the dominant medical model, which defines disability as an individual deficit. Social models situate the dominant view of disability as one created by the economic and social forces that render certain types of bodies as deficient and subsequently less de-

sirable (Baglieri, 2019). Versions of the social model have been explored by educational scholars who have problematized the narrow understanding of individual disability in educational settings and attempted to deepen the impact of reframing teaching and learning within a more social framework (Baglieri, 2019; Linton, 1998). That said, viewing disability solely as a social phenomenon, and denying the experiences of disabled individuals is also problematic; Some researchers have suggested that UDL must be careful to acknowledge the reality of disability and the disablement process, without erasing disability as a positive element of identity (Dolmage, 2015).

The role of support services for students with identified disabilities complicates execution of a social model, as several of these pieces explore. Liasidou (2014), for example argues that such services, which often serve to ensure that students are receiving reasonable accommodations serve to further marginalize and stigmatize disabled students. Accommodations often involve retrofitting assignments or assessment, and do not consider the experience of the disabled individual at the outset. This function, she argues, upholds the discourse of normalcy requiring students to self-disclose potentially stigmatizing information that perpetuates the myth of disability as a deficit in need of remediation so that one can become normal. This finding was echoed by Fovet and Mole (2013), whose qualitative study found that UDL offered faculty a common language with which to approach a diverse student body, not solely as a vehicle for service delivery or accommodations related to disability. Thus, these two pieces offer a model for conceptualizing UDL beyond Disability Services or even in response to a "problem," and instead consider it as a way to transform higher education into a more inclusive and equitable space.

Several studies attempted to understand perceptions of UDL, and beliefs about disability or related accommodations. For example, Black et al. (2014) identified teaching practices consistent with UDL at a university, and also explored faculty attitudes toward students with disabilities. They found that faculty with limited or some training in UDL had no significant effect on the frequency of incorporating UDL principles, but those with more experience tended to incorporate UDL more consistently. Studies exploring student perceptions had slightly different findings. While a study from Belgium indicated that consistent application of UDL may actually create barriers for students without disabilities (Griful-Freixenet al., 2017), a study by Black et al. (2015) highlighted UDL's applicability for a variety of students, emphasizing that simply adding accommodations for disabled students does not go far enough to support them. These studies suggest that positive perceptions of UDL may require a shift in mindset in order to facilitate buy-in and sustainability. In other words, negative views toward students with disabilities or those requiring accommodations can act as a barrier for successful implementation of UDL. As with literature on operationalizing UDL, these attitudes tend be a key component of conceptualizing UDL as a positive force in higher education.

The remaining pieces we will discuss focused on the "why" behind UDL. These pieces, while conceptualizing UDL as a broad solution to poor learning outcomes in higher education, make the case for embracing UDL in a variety of ways. While several of these focused on facets of instructional design (Vininsky & Saxe, 2016; Williams et al., 2013) and neuroscience (Schreiner et al., 2013), others emphasized student learning as the conceptual focus of UDL. One of the earliest publications was a conceptual piece that essentially offered a primer for faculty on how to incorporate UDL into assessment (Ofiesh et al., 2006). Suggestions included backward design, so that instructors ensured they were teaching what they intended to assess, and a list of ways to make assessments themselves accessible through visual design of images and text, clear language, and layout. In addition, this piece, along with a seminal piece by CAST co-founder David Rose and colleagues, focuses on student learning (Rose et al., 2006). These publications get at the crux of why UDL is markedly different from accommodations: UDL theory proposes a more transformative approach to creating instructional environments that promote learning, over individualistic approaches traditionally associated with remediation of disability. Furthermore, an update of Rose and colleagues' (2006, 2008) piece published in 2015 highlights the changes made not only to course d esigns, but to UDL theory at large (Gravel et al., 2015). The iterative nature of UDL suggests that neither implementation nor conceptualization of UDL is a static event, but rather a process of continuing reflection and refinement as the landscape of postsecondary education continues to develop and change.

Discussion

The pieces included here represent a diverse field of research on the implementation and conceptualization of UDL in higher education. UDL's iterative nature suggests a willingness on the part of those who take it up to create and sustain inclusive environments, and in some cases to acknowledge established

norms of ability and access within higher education. While many cases can be made for the employment of UDL, either as a response to challenges or as an end in and of itself, the literature discussed here suggests that UDL is interpreted by many as a framework and by others as an intervention. In addition, its use as a way to facilitate inclusive pedagogy and disrupt the normative center of education, while evident in theory (e.g., Baglieri, Valle et al., 2011; Meyer et al., 2014), has yet to be consistently explored in UDL literature.

UDL: Intervention or Framework?

In many publications across the two subgroups of literature UDL was depicted as a response to a particular problem or line of inquiry. Recognizing that in some cases such an approach may result in wider buy-in from faculty and administration, or a more cohesive agenda for change (Moore et al., 2018), potential drawbacks also exist. UDL's use as an intervention to ameliorate a problem may further complicate productive use of UDL, as interventions are traditionally done *to* students *by* instructors, or *to* curriculum *by* faculty; the emphasis remains on the teacher rather than the learner, which gets away from the purpose and aims of UDL. Another possible drawback of framing studies in response to the problem of struggling students with disabilities, is that the notion that there is some internal deficit in the students that UDL can fix is perpetuated; issues of design are neglected.

This concern was echoed by CAST researchers in 2015. Revisiting Rose et al.'s (2006) work specific to UDL in higher education, Gravel and colleagues (2015) recognized that the previous piece had still situated problems with learning partially in the learner and partially in the environment; they amended this view in their conclusion. Stating their discomfort with emphasizing problems within individuals, Gravel et al. asserted that "It is our learning environments, first and foremost, that are disabled. Addressing the disabilities in the learning environment…will make courses that are better not just for students with disabilities, but for all students"(p. 99). This shift in framing disability suggests a move away from a deficit-based perspective and illustrates the continually evolving understandings of UDL. We agree with Gravel et al. and others (e.g., Waitoller & King Thorius, 2016) that UDL theory and research can and should do more to challenge existing notions of ability and normalcy across educational contexts.

We highlight Gravel et al.'s (2015) chapter here because it focuses on the process of conceptualizing and operationalizing UDL. Furthermore, we concur with scholars Disability Studies in Education (Dolmage, 2017; Mitchell et al., 2014) who argue that

UDL provides the opportunity to foreground disability in designing curriculum and pedagogy. In other words, UDL can compel faculty to consider a "systematic negotiation of needs across any assembly of student differences" as they design their courses and instructional materials (Mitchell et al., 2014, p. 309). Unpacking the history of Universal Design in higher education, Dolmage (2017) also emphasized this active part of UDL: the design process.

> This active dimension suggests that UD is a way to plan, to foresee, to imagine the future. The "Universal" of UD also suggests that disability is something that is always a part of our worldview. Thus, when UD is successful, it is hopeful and realistic – allowing teachers to structure space and pedagogy in the broadest possible manner, Universal Design is not about buildings, it is about building – building community, building better pedagogy, building opportunities for agency. It is a way to move. (p. 118)

Conceptualizing UDL as a response to problems caused by the presence of certain students is inherently limiting; it focuses only on particular groups of students. The promise of UDL in higher education is in its possibility; the process allows us to imagine not only making access universal, but learning as well.

Positioning UDL as a process-based framework rather than an intervention allows us to acknowledge disabling environments and center the lived experiences of students with disabilities in our design. Furthermore, IHEs can incorporate variation not only in perceived ability, but in language, race, gender, etc., without assuming the default position of a heteronormative, able-bodied individual as the standard toward which a UDL intervention could remediate students.

Disrupting the Discourse of Normalcy

Publications in both the operationalizing and conceptualizing strands address the philosophical shift raised by Moore and colleagues (2018) that mentioned winning the hearts and minds of faculty. Implementation within an institution cannot be a practical project alone, and in order to be effective will require some reconceptualization of ability, disability, and variability. These concepts, it seems, are murkier in higher education than in K-12, where notions of ability and disability are highly normed and regulated (for better or worse) and often discussed as a result of special education.

Still, winning hearts and minds does not seem to go far enough to yield a philosophical shift that would truly disrupt a discourse of normalcy and result in in-

clusive pedagogy. For example, Beck and colleagues (2014) considered that, as faculty are in positions of power within IHEs, attending to their re-conceptualizations of who is normal and able is critical; normalizing discourse is easily internalized by both faculty and students. As a result, critical elements need to be embedded into the process of UDL adoption (Liasidou, 2014). Some scholars have suggested that UDL must actively dismantle ability-centric practices that permeate formal education (Waitoller & King Thorius, 2016). In higher education, such practices are so deeply ingrained into institutions based on perceived levels of ability that it is taken-for-granted as normal. Instead of simply trying to remove barriers to learning for certain students (such as those with disabilities), the existence of the barriers must first be questioned, and the sources of their existence identified (Waitoller & King Thorius, 2016).

There is limited evidence from articles in this review that UDL in higher education is being conceptualized as an avenue for inclusive pedagogy that considers educating students with diverse abilities as a justifiable end, student variability at the outset of course design, and disability as an asset. This is not altogether surprising, as UDL research in general is still at an emerging stage with regard to both K-12 teachers and university faculty. Yet the variety of UDL research illustrated here suggests that there is growing interest in transforming access and pedagogy in postsecondary settings, and in disrupting limited interpretations of inclusion that rely solely on accommodations. It seems appropriate to consider what an inclusive pedagogy might look like within courses, programs, and departments, and how faculty might draw on elements of the UDL framework to design an intentional approach that continues to evolve with an ever-changing student body, and new developments in research.

Implications

There are several important implications here for further research. First, because UDL has been clearly defined through work from CAST, researchers drawing on CAST's framework should take care to be consistent in descriptions of UDL concepts, principles, and guidelines. Such consistency would serve to demonstrate the many ways UDL might be used across a number of different contexts, and further emphasize that UDL can be adapted to meet the needs of highly variable student populations. This means staying true to an emphasis on variability and inclusiveness, rather than disability and intervention. While, in the climate of accountability, there is a temptation as

well as a need to examine outcomes of UDL, focusing solely on the effects of UDL as an intervention compromise its intention as a framework.

Because UDL theory is consistent with elements of the social model of disability, further empirical research linking the fields of disability studies and UDL in higher education is warranted. The prevalence of ability as the central axis of teaching and learning within postsecondary settings must be critically examined and disrupted, and UDL offers a practical approach for taking up this work. Furthermore, the perspectives of scholars and students with disabilities need greater representation in order to understand how and if UDL can operate as a framework that acknowledges disability as an agentive and positive aspect of identity (Dolmage, 2015).

In addition, the research presented here suggests room for growth in the scope of UDL practice. Much of the work has been done within departments or colleges of education at the postsecondary level. This is unsurprising, given that faculty in education likely have the most experience with both pedagogy and student variability. That said, there is a great opportunity for UDL research in other disciplines, particularly those which may have historically prioritized content.

Lastly, the interpretation of UDL in higher education here is further limited by instructional methods and environments. And yet learning happens in so many settings in higher education: in meetings, at events, through operational systems. More research needs to be conducted at a systems level. In other words, how might we go from simply adopting the UDL framework to intentionally grounding our core beliefs in UDL theory and practice - as instructors, programs, department, and institutions? UDL should not be limited to the classroom, and its sustainability is dependent on those who embrace it, extending it into the broader social realm to increase inclusive pedagogies in both formal and informal ways.

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Table 1

Articles Exploring UDL in Postsecondary Education, Purpose, and Category, n=38

Publication	Purpose	Category
Ofiesh, Rojas, & Ward (2006)	To present recommendations from the field of universal design as they apply to assessment of students at the postsecondary level	Conceptualizing
Rose, Harbour, Johnston, Daley, & Abarbanell (2006)	To clarify the differences between applying universal design in built vs. learning environment (both the theory and techniques), and to illustrate the principles of UDL	Conceptualizing
Bernachhio, Ross, Washburn, Whitney, & Wood (2007)	To study process and results of engaging in a critical friends group that models reflective practice in establishing and maintaining access and inclusion in classes	Operationalizing
Izzo, Murray, & Novak (2008)	The study and development of training materials to improve the quality of postsecondary education for students with disabilities	Operationalizing
Basham, Lowrey, & deNoyelles (2010)	To explore an instructional design that used UDL to proactively plan for computer-mediated communication as a means of student engagement, representation, and expression through reflection on key issues in special education	Operationalizing
Evans, Williams, King, & Metcalf (2010)	To provide examples of how they integrate and model UDL in courses in assessment, classroom management, and instructional planning, and how preservice teachers demonstrate their knowledge of UDL in assignments with students in K-12 settings.	Operationalizing
Gradel & Edson (2010)	To identify beginning strategies and models for implementation of UDL in higher education, while also addressing challenges	Operationalizing
Morra & Reynolds (2010)	To explore how UDL principles and options influence technology-enhanced (hybrid and online) courses	Operationalizing
Kumar (2011)	To describe implementation of a mock conference model of instruction aligned with UDL and learner centered instruction	Operationalizing
Rao & Tanners (2011)	To examine how guidelines of two UD models can be considered during the instructional design process and applied in an online course, and to determine which elements of these models were most valued by and useful to students enrolled in the online course.	Operationalizing
Schelly, Davies, & Spooner (2011)	To measure the effectiveness of instructor training in UDL (as indicated by student perceptions)	Operationalizing

Publication	Purpose	Category
Smith (2012)	To examine the reflective practice of one faculty member as she applied the UDL framework to her graduate class	Operationalizing
Davies, Schelly, & Spooner (2013)	To compare student survey data about an intervention group of instructors who received UDL training to student survey data from a control group of instructors who did not receive UDL training. This study features a revised and expanded survey instrument	Operationalizing
Fovet & Mole (2013)	To offer a "methodological snapshot" of an IHE's process of UDL implementation, and consider the outcomes observed beyond the parameters of disability services (incorporating observations from faculty, administrators and students)	Conceptualizing
Nielson (2013)	To analyze the process and complications of incorporating UDL into a first-year composition course to foster independent student identity	Operationalizing
Schreiner, Rothenberger, & Scholtz (2013)	To summarize research in neuroscience, cognitive psychology, and education as related to universal design and to provide ideas for improving college teaching	Conceptualizing
Williams, Rice, Lauren, Morrison, Van Winkle, & Elliott (2013)	To reimagine both pedagogical and physical space of the traditional classroom by linking UDL and theories of problem-based learning	Conceptualizing
Beck, Diaz del Castillo, Fovet, Mole, & Noga (2014)	To explore the impact of UD implementation for Disability Service providers' users	Operationalizing
Black, Weinberg, & Brodwin (2014)	To determine if faculty were incorporating UDI/UDL into their instruction, and faculty attitudes toward students with disabilities	Conceptualizing
Fovet, Jarrett, Mole, & Syncox (2014)	To highlight how implementation of UDL requires increased collaboration among staff, including disability service providers, equity and diversity services, and teaching and learning support	Operationalizing
Kumar & Wideman (2014)	To understand the impact of integrating UDL principles into a postsecondary course	Operationalizing
Liasidou (2014)	To highlight the ways a social justice discourse needs to be incorporated into debates about widening participation in higher education on the grounds of disability. Emphasis on UDL as a vehicle for socially just change in higher education	Conceptualizing
Tobin (2014)	To offer strategies to create and convert courses to online format to increase access and engagement	Operationalizing
Black, Weinberg, & Brodwin (2015)	To evaluate perspectives of university students with disabilities on teaching methods that benefited their learning to evaluate whether these align with UDL or UDI	Conceptualizing

Publication	Purpose	Category
Heelan, Halligan, & Quirke (2015)	To provide examples and potential for UDL in health sciences	Operationalizing
Scott, L. A., Temple, P., & Marshall, D. (2015)	To examine perceptions of special education teachers enrolled in online courses as to whether courses were aligned with UDL principles, and whether the course design improved the teachers' preparation	Operationalizing
Hutson & Downs (2015)	To describe changes occur in use and knowledge of UDL principles among the faculty who participate in faculty learning communities	Operationalizing
Webb & Hoover (2015)	To examine effectiveness of a biology tutorial available by research librarians, drawing on UDL - for students w disabilities	Operationalizing
Miller & Lang (2016)	To provide an introduction to some of the specific mental health issues that students may face in a science lab context and to draw on UDL application in the lab to reduce student stress	Operationalizing
Vininsky & Saxe (2016)	To develop and propose an inclusive and accessible blended teacher education program guided by the Universal Design for Learning (UDL) framework.	Conceptualizing
Dean, Lee-Post, & Hapke (2017)	To address these pedagogical issues of large lecture courses by creating a learning environment that builds on the Universal Design for Learning (UDL) principles with the goal of providing diverse learners with options in representation, engagement, and expression	Operationalizing
Griful-Freixenet, Struyven, Verstichele, & Andries (2017)	To explore whether or not the needs of the students with disabilities, taught within the traditional higher education model, are addressed effectively by the UDL principles.	Conceptualizing
Scott, Thoma, Puglia, Temple, & D'Aguilar (2017)	To determine what is currently being done to prepare educators to implement a UDL framework, the extent to which a UDL framework is being incorporated into preservice courses in higher education, and how a UDL framework is being used to improve postschool outcomes for youth with ID.	Conceptualizing
Scott & Temple (2017)	To present ideas for consideration when designing online courses (particularly those in special education) for preservice teachers	Operationalizing
Evmenova (2018)	To extend previous research and explore how experiencing UDL firsthand in a graduate online course might help educators, including in-service general and special education teachers, learn about UDL framework and plan for its practical implementation	Operationalizing

Publication	Purpose	Category
Lohmann, Boothe, Hathcote, & Turpin (2018)	To explore the impact of implementing UDL to increase engagement with preservice teachers in online format	Operationalizing
Moore, Smith, Hollingshead, & Wojcik (2018)	To explore how UDL may improve teaching and learning in teacher education and to develop a model for implementation in IHEs	Operationalizing
Rogers-Shaw, Carr-Chellman, & Choi (2018)	To explain the history and philosophy of UDL, as well as practical application in building accessibility for all in online courses	Operationalizing