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Universal Design for Learning in Physical Education: Overview and Critical Reflection

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Abstract

Universal Design for Learning (UDL) has been advocated for by adapted physical education scholars as a panacea to the challenges associated with teaching disabled and nondisabled students together in physical education. So much so that UDL currently occupies a privileged and largely unquestioned position in adapted physical education scholarship and practice, until now. To move scholarship forward, this article draws on published theoretical and empirical work relating to UDL generally and in physical education in particular to critically discuss the scientific research supporting, or not, the use of UDL as a so-called ‘inclusive’ approach. We end this article with a call to action for scholars in this field, ourselves included, to conduct theoretically-guided and empirically-informed research relating to UDL in physical education, which adheres to established hallmarks of research quality that are tied to the ontological and epistemological assumptions of researchers because, at present, it is conspicuous by its absence.

Introduction

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) (2005) articulates the position that disability of any kind cannot disqualify students from general education. In alignment with UNESCO's position, education scholars have called for the dismantling or phasing out of homogenous educational spaces in favour of integrated spaces (Slee, 2018) because educating all students together is 'a moral absolute' (Kauffman et al., 2020: 5) and 'the right thing to do' (Yell, 1995: 389) while separating disabled students 'is unnecessary and could prevent [disabled students] from achieving their full potential' (Dowling, 2008: xii). These assertions have had considerable consequences, where more disabled students are being educated in integrated settings than ever before. For example, the percentage of disabled students¹ spending 80% or more of their school day in integrated settings² has more than doubled in the past 20 years in the US (US Department of Education, 2018). Similarly, in Norway, special education and, more notably, the segregation of students are perceived to be barriers to full educational participation (Gøranson et al., 2021) and preference is given to educating disabled students in general education classrooms (Halvorsrud, 2017) that 'promotes health, well-being and learning for all' (Utdanningsdirektoratet, 2022: 6). While there has been a notable increase in the number of disabled children and young people educated in integrated settings in England since the 1970s, it is noteworthy that the number of pupils placed in segregated special schools increased between January 2021 and January 2022, a trend that is likely to continue (Department for Education, 2022).

Like other educational spaces, trends toward integrated education are reflected in physical education (PE), which has been identified as being among the first classes where disabled and nondisabled students are educated together (Alquarini and Gut, 2012). As such,

scholars suggest that most disabled students today are being educated in integrated PE spaces with their nondisabled peers (Heck and Block, 2020; Obrusnikova and Block, 2020). As integrated PE has grown, so has the dissemination of practices that claim to support the inclusiveness³ of experiences in these educational spaces (Haegele, 2019; Maher and Haegele, 2022). For example, a multitude of articles published over the past decade in practical application journals, such as *Journal of Physical Education, Recreation and Dance* (e.g. Gilbert, 2019; Iannacchino et al., 2022; Sammon et al., 2020), *Palaestra* (e.g. Hersman & Hodge, 2015), and *Strategies* (e.g. Mulrine and Flores-Marti, 2014; Wilson and Colombo-Dougovito, 2015), suggest the adoption of various pedagogical practices to enhance the inclusiveness of PE.

One specific pedagogical practice that has received considerable attention and appears to fit this description is Universal Design for Learning (UDL), which, according to Gilbert (2019) and Lieberman and Grenier (2019), can and should play a role in enhancing the inclusiveness of PE. Over the course of the past decade especially, a flurry of practitioner-based articles have suggested the adoption of UDL to guide inclusive practice in PE (Brian et al., 2017; Gilbert, 2019; Grenier et al., 2017; Kennedy and Yun, 2019; Lieberman and Grenier, 2019). These articles largely illustrate how practitioners could ‘utilise multiple means for (a) recognizing the content and the tasks addressed during practice, (b) expressing knowledge while engaging in sport tasks, and (c) enhancing motivation, and eventually adherence’ (Hutzler, 2020: 105-106) to support inclusion in PE. According to Lieberman and colleagues (2020), UDL ‘employs an array of instructional strategies and activities that allow learning goals to be attained by individuals with wide differences in their abilities to see, hear, speak, move, read, write, and engage with peers’ (viii). Further, UDL principles suggest that it is through equipment, instruction, and

environmental variations students are helped to learn intended skills and knowledge in PE spaces (Lieberman et al., 2020).

Despite the proliferation of practice-based resources that promote UDL in PE spaces, the taken-for-granted assertions made within those resources are largely unquestioned and untested. Goodwin and Rossow-Kimball (2012) identify this type of behaviour as a common practice in PE spaces in which taken-for-granted beliefs are often promoted and assumed beneficial for disabled people without having been philosophically or ethically debated or contested. Taken-for-granted beliefs like these have been problematized throughout the history of the fields of PE and adapted physical activity (Goodwin and Connolly, 2023; Maher and Haegele, 2022; Reid, 2000; Standal, 2014) and the need to confront and challenge seemingly common sense and well-intentioned practices has been noted as being long overdue (Connolly, 2023). Regardless of this, largely missing from the collection of existing scholarship focused on UDL in PE are critical reflections that question or challenge the hypothesized benefits of this pedagogical practice or ideology. Without critical discussions like these, Giese and colleagues (2023) suggest that we are in danger of engaging in practices that are ineffective or, even worse, unintentionally and unknowingly harmful to disabled people. By critically reflecting on UDL as a pedagogical practice, we can help to guide the development of future scholarship and professional practice within PE (Giese et al., 2023), while also testing the conceptual, empirical and/or theoretical rigor of the practice to determine if it should be disseminated to in-service and pre-service teachers, or if it is perhaps premature for PE teacher education faculty to champion UDL as a useful pedagogical paradigm. As such, and to move scholarship on UDL forward, this article aims to critically reflect on the position that UDL plays within PE instruction and research by problematizing how UDL promises to contribute to the education of disabled students in

integrated PE settings. Prior to this critical reflection, we will provide a brief conceptual overview of UDL and its application to PE.

Universal design for learning: a brief overview

Universal design, a predecessor to UDL, originated outside the field of education in the design of architecture and consumer goods, such as household appliances and kitchen tools (Williamson, 2012). Spurred on by the passage of the Rehabilitation Act of 1973 in the US (and later through the Americans with Disabilities Act of 1990), architects and industrial designers began to consider ‘the extremes of the human body...as a starting point for new designs’ of built environments and products associated with work and tasks of daily living (Williamson, 2012: 213). These concepts were further refined by architect Ron Mace, who coined the term ‘universal design’ in 1985 and introduced a set of core principles to guide the design process: (1) equitable use, (2) flexibility in use, (3) simple and intuitive use, (4) perceptible information, (5) tolerance for error, (6) low physical effort, and (7) size and space for approach and use (Story, 2011). Essentially, human-centred design philosophies, including universal design, hold that environments and products should be pre-planned and include universal features that accommodate all users’ needs, including disabled people (Preiser and Smith, 2011). Since its inception in the architectural design space, the basic premise of universal design has been translated to a variety of different disciplines, including teaching and learning (Story, 2011). According to Novak and Bracken (2019), UDL can now be found in higher education institutions, and, in particular, within institutions that offer teacher education programmes, across the world, including much of Europe.

Conceptually, UDL attempts to apply principles of universal design in architecture and product development to the field of education. Thus, the UDL approach is based on the premise

that educators should not wait to serve the needs of learners through adaptations, but rather engage in *a priori* preparations of learning environments to support inclusive and enabling class settings for all students (Gargiulo and Metcalf, 2013; Hutzler, 2020). According to UDL, the physical environment and activities conducted within it should be designed such that all individuals within that environment can engage in activities without adaptations or specially designed equipment (Janney and Snell, 2013). This assertion is supported by Bowe (1999), who suggested that the presentation of material in multiple ways is a far more realistic expectation for teachers than to ask them to individualise instruction for the variety of diverse learners that exist in a classroom setting. On these grounds, Webb and Hoover (2015: 539) suggest that ‘by constructing curriculum with UDL in mind, educators cast a larger net that catches students regardless of disability or learning preferences’. In addition, scholars have claimed that by reducing barriers and impediments, individual students would no longer need to self-identify as disabled or require accommodations, as they would inherently be available (Kennette and Wilson, 2019). That is, no one student would be “singled out” in that educational space (Burgstahler, 2015).

Over the years, the Centre for Applied Special Technology (CAST) has emerged in the US as an acclaimed national leader in providing UDL-related resources (Story, 2011). For example, CAST (2018) publishes UDL guidelines that, as they assert, provide a set of concrete suggestions to be applied to any discipline or domain to ensure that learners can access and participate in meaningful learning opportunities. These guidelines, which suggest that teachers provide multiple means of engagement, representation, and action/expression to address the *whys*, *whats*, and *hows* of student learning (CAST, 2018), are used in many countries across the world, including those in Europe (Novak and Bracken, 2019). Instructors may use these

guidelines to craft lessons or courses that support the needs of all students, by providing materials in a variety of formats, allowing flexibility in how students demonstrate learning, and motivating students to become active agents in their own learning (Kennette and Wilson, 2019). Proponents of UDL suggest that by simply designing a flexible curriculum that takes into consideration multiple means of engagement, representation, and action/expression, educators can (a) address common barriers and shift the focus in regard to what needs to be *fixed* from the student to the curriculum and (b) support student learning and achievement through a variety of instructional methods and learning modalities.

Shaky ground: criticisms of universal design and UDL

Generally, scholars in the architecture and design fields have criticised universal design for the dearth of empirical support and lack of operationalization of its principles for practical use (e.g. Imrie, 2012; Sandhu, 2011). For example, Sandhu (2011) argues that the conceptual principles of universal design are too vague and uninformative to form a foundation for design that can actually improve access for most people. In the absence of clear guidelines for implementation, attempts at universal design raise ‘false hopes and expectations, expectations that UD [universal design] is in no position to fill’ (Sandhu, 2011: 44). While these criticisms were levelled at larger concepts of universal design and not UDL per se, scholars in the field of education have raised similar concerns about insufficient evidence for its effectiveness.

A systematic review of research articles centred on UDL-based instruction in schools across all content areas found 13 research articles published between 2000 and 2014 (Ok et al., 2017). While this review presents a larger body of empirical research than that found in PE alone, Ok and colleagues (2017) noted several problems with the articles included therein. First, while all studies purported to use UDL to guide their interventions, six did not specify which

particular guidelines they used to ground their approach within the model. While the authors did note that some of the studies did offer support for the efficacy of UDL, they advised readers to interpret the results with caution both because of the limited number of studies examined and because the operationalization of the framework was frequently ill-defined. More recently, scholars in the areas of instructional design and teaching and learning have called for increased scrutiny and testing of UDL. Murphy (2021:10), for example, stated that ‘it would be premature to reject UDL, just as it is premature to unquestioningly embrace it,’ due to insufficient evidence of its effectiveness.

Problematizing UDL in PE

Given the perceived value of UDL in educational contexts, it is not surprising that it has gained considerable attention in PE circles (Hutzler et al., 2020; Lieberman et al., 2020) and is starting to branch into other related contexts like outdoor recreation (Kelly et al., 2022). Though UDL’s position is most firmly established in PE practice and scholarship in the US, it also features and is advocated for in many European countries as part of calls for better ‘inclusion,’ including England, Ireland, Luxembourg, France, Netherlands, Scotland, Slovakia, and Spain, as evidenced by Marron et al. (2021). While this scholarship may have utility, the unbridled application of UDL to PE contexts is concerning, as matters associated with UDL have largely gone unquestioned in the body of PE literature including its recommendations for best practices. For example, rudimentary concerns, such as understanding “what UDL is,” are important to address, as it has been described as ‘a concept, set of principles, framework, and mindset’ (Brian et al., 2017: 33) in the PE literature. The use of flexible guiding principles may be useful for teachers because it can enable them to use their agency to shape curriculum decisions and pedagogical actions that are appropriate to the education contexts and situations they are faced

with, and can be tailored to the needs and abilities of the students they teach. However, it can also be problematic since there is no concrete idea of how UDL is interpreted within PE literature. Hence, it is difficult for practitioners to make research- or evidence-informed decisions about *how*, *why*, or even *if* they should use UDL. As such, we spend the rest of this article describing some potential issues that may emerge alongside scholars' interpretations of and suggestions for the application of UDL to PE. In this paper, we do not intend to suggest that we *throw the baby out with the bathwater* through a wholesale rejection of UDL. Rather, for the first time in research, we intend to engage in critical discourse about UDL and its application to PE, and PE teacher education, to understand what challenges may be present.

Limited scientific evidence

In accordance with federal legislation in the US, such as the No Child Left Behind Act, schools are increasingly focused on improving the quality of education by implementing pedagogical practices that have been demonstrated to be effective through scientific evidence (Kalef et al., 2013). This view aligns with the Department for Education in England's stance on the importance of evidence informed practice and policy in education (Coldwell et al., 2017). That is, schools and teachers need to become research engaged and can be considered engaged if their practices, particularly their teaching, is 'influenced by robust research' (Coldwell et al., 2017: 5). While being far from exhausted as an area of research in and of itself, the relationship between research and practice in education generally, and teacher education specifically, has been explored in France, the Netherlands, Finland, Russia, Canada, and Brazil, to name a few (see Flores 2017; Hökkä and Eteläpelto, 2014; Lapostolle and Chevaillier, 2011; Marcondes et al., 2017; Snoek et al., 2017; Valeeva and Gafurov, 2017; Van Nuland, 2011). This position has permeated scholarship in the fields of PE and adapted PE, where the planning and

implementation of pedagogical practices that are based on scientific evidence have gained support as a common-sense ideal that can improve the education of disabled and nondisabled students (Bouffard and Reid, 2012; Hutzler, 2011, 2020; Jin and Yun, 2010). For example, Bouffard and Reid (2012: 1) propose that ‘to request that, whenever feasible, service providers use the best research evidence about the likely benefits of an intervention is a sensible request that can be justified on both ethical and financial grounds’. Further, Jin and Yun (2010) note that PE teachers who use evidence-based practices may feel confident in their decision-making and critical thinking skills because they are built upon a foundation of research findings. Saying that, while discussions about the relationship between pedagogical practice and scientific evidence are (and should continue to be) grounded in epistemological and ontological perspectives, it should be noted that a hierarchy exists relating to the types of research philosophies, knowledge and methods that are promoted and rejected (Bouffard and Reid, 2012). That is not to say, of course, that research cannot and should not be used by teachers to shape their curriculum decisions and pedagogy. Rather, teachers should engage critically with the research that they use to inform their practice.

Despite movement toward the use of research evidence to guide pedagogical practice, it does not appear that scholars disseminating recommendations to adopt UDL in PE are concerned with grounding recommendations in such evidence. That is, while scholarship pertaining to UDL in these contexts has emerged in the past few years, the majority of this literature is comprised of practical application manuscripts (Brian et al., 2017; Gilbert, 2019; Grenier et al., 2017; Kennedy and Yun, 2019; Lieberman and Grenier, 2019; Lieberman et al., 2008) or text books (Lieberman and Houston-Wilson, 2018; Lieberman et al., 2020), which ‘merely cite examples rather than present data or scientific evidence recommending this model as an approach to including

[disabled students] in the context of [PE]' (van Munster et al., 2019: 361). Highlighting this, Lieberman and colleagues (2020) recently asserted that 'UDL's effectiveness in PE has yet to be extensively studied' (9). Indeed, the lack of evidence to support UDL in PE has been discussed by several scholars (Block et al., 2021; Hutzler, 2020; Maher and Haegele, 2022) who have also noted that, while the concept of UDL may have merit, we know little from an empirical standpoint about its application.

The promotion of a pedagogical practice, particularly at the magnitude of the preference seen for UDL in the past few years, is problematic. That is, a recommendation for pedagogical practices without scientific evidence appears to gain its legitimacy or authority through social capital associated with trusted 'experts' or highly valued practitioners (Davies, 1999) rather than scientific evidence. As such, recommendations are largely made based on the opinions of academics who are perpetuating those ideas, and are adopted by those who trust these academics, without regard to understanding the effectiveness of such practices. Despite the attention UDL has received in the literature (Brian et al., 2017; Gilbert, 2019; Grenier et al., 2017), just one study to our knowledge has examined UDL in PE contexts. In this case study, van Munster and colleagues (2019) noted that elements of UDL were present in an integrated elementary PE class; however, they did not discuss how these elements were planned or implemented in any notable detail. While a second study by Taunton and colleagues (2017) was touted by Lieberman and colleagues (2020: 52) as 'the first research on the effectiveness of UDL in PE', this statement is misleading as the research, and a similar and more recent 'integrative design' study (Miedema et al., 2021), were conducted in an early childhood centre serving 3- to 5-year-old children. These settings are generally incongruent with public school education and are not representative of PE, as understood in the US where the study took place. As such, while this study may have

implications for early childhood centres in the US, referring to this motor skill intervention as “PE” is fallacious, and utilizing the findings from this study to inform PE practices would be inappropriate.

Given this distinct lack of scientific evidence to support UDL and its implementation in PE, Block and colleagues (2021) recommend several notable areas of inquiry for future research specific to UDL that must be addressed prior to confidently recommending it as a pedagogical practice. These recommendations include examining what physical educators know about UDL and reasons why they are, or are not, implementing this strategy in their classes, how professional preparation programs are training pre-service teachers on UDL, and how disabled and nondisabled students view UDL in PE in terms of creating an environment that meets the needs of all. Like Murphy’s (2021) note pertaining to education in general, within the current literature base, it would be premature for researchers to recommend UDL as a pedagogical practice in PE until more evidence demonstrates its effectiveness.

UDL practices erase disability

A brief history of universal design was offered at the outset of this paper to familiarise the reader with the design principle; however, understanding the history and evolution of universal design as it relates to disabled individuals may help us to better understand and critique UDL. Hamraie (2016: 286) stated that ‘while most proponents acknowledge Universal Design’s origins in the work of disabled designers and activities, very few offer reflexive historical analyses of the phenomenon as an evolving, value-laden discourse’. Prior to universal design, accessible ‘barrier-free design’ was prioritised to address barriers disabled individuals faced in accessing the built environment (Hamraie, 2016). This was often viewed through a capitalist perspective focused on creating productive members of ‘normal’ society but evolved to address

and prioritise the concerns of disabled individuals in accessing society in a meaningful way (Hamraie, 2013). Eventually, universal design was coined and continues to dominate this area of design today; the term is often used colloquially in a way that abandons or ignores its disability roots and values in favour of ‘design for all’ mantras and understandings (Iwarsson and Ståhl, 2003).

This shift away from disability-centred, accessible design principles to ‘design for all’ post-disability ideology occurred systematically as broader user groups (e.g. everyone, all) were used in new definitions and principles (Hamraie, 2013). Providing additional information about this shift, Iwarsson and Ståhl (2003) claimed that ‘barrier-free design’ was ‘perceived more negatively [than universal design] since it is closely related to the needs of people with disabilities, still having a close connection to accessibility issues’ (61). This post-disability ideology in universal design ‘presumes that disability-based discrimination in built environments is inconsequential or nonexistent’ (Hamraie, 2016: 302), and privileges nondisabled consumers and users instead of holding designers accountable to meeting the accessibility needs of disabled individuals as required by law (Hamraie, 2013).

The current critiques and understandings of universal design, at large, help illuminate potential issues and concerns about UDL, particularly in the presence (or absence) of ensuring that disabled students’ needs are met. As described earlier, CAST (2018) provides a framework and guidelines for UDL focused on the *why*, *what*, and *how* of learning, while, noticeably, excluding *who*. However, proponents of UDL carry the torch in communicating that UDL is designed ‘for all people’ (Lieberman, 2017: 5), ‘for all students’ (Gilbert, 2019: 16), or ‘to create “expert learners”’ (Kennedy and Yun, 2019: 26). These assumptions are incompatible with findings that illustrate that when UDL principles are applied, new barriers may be created for

some disabled students that did not exist prior (Griful-Freixenet et al., 2017) or fail to adhere to known, prescribed accommodations (Black et al., 2015), thus failing to meet the needs of all students despite a ‘design for all.’ Further, this approach may be in direct contradiction with federal statutes and laws of various countries that require educational solutions to be provided based on individual needs. For example, in the US, a disabled student has a right to a free appropriate public education (FAPE) and ‘specially designed instruction, at no cost to parents, to meet the[ir] unique needs’ (Individuals with Disabilities Education Act, 2004, 20 U.S.C. § 1401.29), which may not be met, or become hindered, through a UDL-based curriculum.

Although the potential failure to specifically and categorically meet the individual needs of disabled students is alarming, an equally concerning aspect of UDL may be the stigmatization and erasure that may occur through the concept and phrase. The post-disability ideology of universal design, and, as an extension, the application of UDL to PE described herein relies on design for all and the use of ‘inclusive’ language meant to capture the needs of, or be of benefit to, all people. However, in failing to address and design curricula and learning for disabled students, we may perpetuate ‘classrooms and curricula designed for a mythical “able-bodied,” neurotypical, white, male, middle-class “norm” (Wilson, 2017: para. 9), or design curricula from a ‘design for the ego’ perspective that privileges the teacher’s assumptions about skill, importance, values, and needs (Molenbroek and de Bruin, 2006).

Such outcomes – intended or not – are perhaps unsurprising given that ableism permeates all social systems, including education, teacher education and PE (Goodley et al., 2017). While the concept of ableism has been unpacked elsewhere (Campbell, 2019) and applied to PE by others (e.g. Giese et al., 2023; Maher et al., 2022), we take ableism to refer to those networks of ideologies, values, discourses, traditions, rituals, and behaviours (in society, school, and PE) that

(re)produce a hegemonic, normative mind-body-self that is projected and celebrated as perfect, species typical, and therefore essential to being considered fully human (Campbell, 2019). In this regard, Braidotti (2013) suggests that the normative mind-body-self is anchored to European Enlightenment period ideas about the human, best captured by Leonardo di Vinci's white, non-disabled, Western European Vitruvian Man. As such, disability is considered a 'diminished state[s] of being human' (Campbell, 2001: 44) because it is perceived as not conforming to ableist expectations about how the mind-body-self should think, look, and move (in PE). Accordingly, our concerns about UDL, with its focus on 'all students,' is that it may be a(nother) mechanism that perpetuates ableist modes of thinking and doing in PE.

While UDL may help PE teachers prepare and plan lessons that meet the needs of most students, caution should be used in describing curricula that meet the needs of *all* students. Further, as a field, we should determine if a framework that may further promote curricula and teaching based on able-bodied, neurotypical, White, heterosexual, male students is one we want to promote and use in the next iteration of PE that aims to address diversity and celebrate student difference. This *what's good for the goose is good for the gander* approach may continue to replicate a 'disability-neutral position that Universal Design should respond to "diverse populations" without naming these populations or considering the degrees of marginalization that separate them' (Hamraie, 2016: 302).

The teacher and UDL: an achievable partnership or an act of hubris?

In this section, we explore concerns about the feasibility of physical educators attempting to create a UDL-aligned environment by examining the socio-political realities of working in schools. To understand the fervour surrounding UDL in PE, and its implications for teachers, it is helpful to reflect upon the inclusion movement, which has become increasingly popular among

scholars since the 1990s (Wilson, Haegele et al., 2020). This movement's absolute preference for integrated settings alone has been criticised and evidenced as perpetuating negative PE experiences (e.g. bullying, isolation, marginalization) for many disabled students (Haegele, 2019). To this end, attempts of inclusive practice in such settings, especially for students with more extensive support needs, have been shown to be challenging for teachers, and may result in the adoption of anti-integration practices (Wilson, Theriot et al., 2020). This notion appears consistent with recent research that has demonstrated the importance of school culture in supporting physical educators' roles in the creation of more inclusive environments (Holland and Haegele, 2020; Park and Curtner-Smith, 2018). However, when other school personnel such as special educators, paraprofessionals, and administrators do not tangibly support physical educators, the likelihood for inclusive practices to even be attempted seems to greatly diminish (Wilson and Richards, 2019; Wilson, Theriot et al., 2020).

In school cultures like those described above, teachers who provide PE for disabled students may not have the social capital to effect change in the social construction of the school (Trad et al., 2021). That is, they may feel as if they do not have the ability to change a school culture that tends to disallow the acceptance of innovative practices that may support experiences of inclusiveness of PE. While an unsupportive school culture could certainly complicate any attempts to implement UDL, expectations exceeding what a teacher can reasonably give could further exacerbate the teachers' workplace experiences (Conley and You, 2009). Statements such as, 'As a teacher, you have control over the curriculum you provide, and you can make modifications to promote the success of all students, which in turn minimises negative behaviours of peers' or 'When teachers fail to create a UDL environment and are unwilling to differentiate instruction, students suffer' (Lieberman and Houston-Wilson, 2018: 78-79) not only

exacerbate such a situation, but morally implicate teachers in student suffering. Considering many teachers providing PE services to disabled students will also have to endure hardship with scheduling, high caseloads, and facility usage (Holland and Haegele, 2020), it seems reasonable to question how UDL implementation could further contribute to overloading role expectations in the workplace. Taken together, available evidence of how ‘inclusion’ has been practiced among practitioners, particularly within school cultures that do not value physical educators, gives us pause as to the feasibility of implementing UDL. With that, it appears the implementation of UDL will be largely similar to that of how inclusion is typically positioned in PE, where lip-service is paid to the concept but little actionable change is made to existing curricula (Maher and Haegele, 2022).

Proponents of UDL will likely point to teacher education programs as a means to transform the thinking and practice of pre-service teachers (Lieberman and Grenier, 2019). While a standard refrain of many practitioner-based articles, the likelihood of such programs’ widespread adoption of UDL training, which must achieve the quality and quantity necessary to be meaningful, is low. Many PE teacher education programs in the US, for example, only offer one course that focuses on teaching disabled students, which tends to heavily emphasise learning about disabilities and modifying instruction (Piletic and Davis, 2010). Even among master’s-level adapted PE preparation in the US, there appears to be variability in outcome expectations and course requirements (Nichols et al., 2018). While there has been an increased focus on issues relating to disability and inclusion in PE teacher education programmes in England over a 15-year period, coverage is still limited, patchy, and inconsistent (Morley et al., 2021). Where and how UDL content will fit into existing programs of study, and more problematically, how useful that training will be without research to inform what UDL is in PE and how students experience

it is of concern. Moreover, even if we are able to answer these fundamental questions, how can we then ensure fidelity of implementation once pre-service teachers are inducted into their first positions, where they may have little social capital within a school culture that does not tangibly support such innovation (Park and Curtner-Smith, 2018)? Thus, this discussion has left us wondering if attempts to provide UDL in PE are simply an act of hubris, particularly when empirical evidence demonstrates that teachers may not be able to navigate the socio-politics of their workplaces to even effectively implement inclusive education (e.g. Wilson, Theriot et al., 2020).

Concluding thoughts

In this article, we challenge taken-for-granted assertions about the value of UDL in PE by exploring some critical shortcomings in scholarship and theory supporting this ideal. For some, the shortcomings that we have identified in this paper may appear to be ‘low hanging fruit,’ or easily derived challenges to those seeking to promote UDL. But, for us, this may be part of the problem, where the existence of seemingly easy to identify issues or concerns about UDL have not done much to hasten the promotion or adoption of this ideology within PE circles. We view this as further encouragement to shine a spotlight on potential issues or challenges with UDL within PE. For far too long PE and adapted PE scholars have advocated for UDL as a panacea to the curriculum and pedagogical challenges associated with teaching disabled and nondisabled students together, despite there being a distinct lack of supporting scientific evidence. The lack of evidence is so stark that, in this article, we have not even had to tighten the parameters regarding what may or may not constitute quality research and credible evidence according to differing ontological and epistemological assumptions. Due to this lack of scientific evidence, we are generally unsure if the positive outcomes of UDL promised by some are a reality, or even a

possibility, or if calls to promote UDL within PE are an act of academic hubris that may promote the erasure of disability rather than support disabled people.

Hence, we end this article with a call to action for scholars in this field, ourselves included, to conduct theoretically-guided and empirically-informed research relating to UDL in PE, which adheres to established hallmarks of research quality that are (explicitly) tied to the ontological and epistemological assumptions of researchers. Indeed, there is an urgent need for scholars to develop the scientific evidence base relating to UDL and PE so that PE teachers can make research-informed, rather than purely ideological- and practice-informed, decisions about *how*, *why* and even *if* they should use UDL to teach disabled and nondisabled students together in the same physical and social space. This is a minimum expectation that we are placing on our scholarly community who should, among other things, be making novel and significant contributions to the development of knowledge and practice relating to, in this instance, UDL's utility in PE. Without establishing this baseline evidence, we contend that the promotion or adoption of UDL within PE is premature, and that perhaps scholars, and, as a result, in-service teachers should look elsewhere toward more established pedagogical practices to adopt and implement to help to educate their disabled (and nondisabled) students.

Notes

¹Throughout this manuscript, we use identity-first language that is aligned with the social model of disability discourse and is compatible with language used by disability self-advocates who view disability as an integral aspect of individual and collective identity.

²The term *integrated* is used purposely here to represent a placement or setting in which all students, regardless of unique educational needs, are educated in the same physical and social space (Haegele, 2019) and remains closer to the UN's original language.

³To be sure, such evidence from 'inclusive' PE, as told by the subjective experiences of disabled students, has also not justified the wholesale adoption of 'inclusion' in such spaces. While we feel it is important to explore and report the challenges of attempting inclusive practice from teachers' perspectives to better understand the dynamic environment in which feelings of belonging, acceptance, and value may occur, this should not be done in substitution of or prioritised over the voices of the students themselves.

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