

Educational Technologists, Universal Design and Transforming Higher Education

Larry McNutt, Ed.D

Technological University Dublin-Blanchardstown Campus
Dublin, Ireland

The field of educational technology continues to develop and grow in an era of unprecedented demand for the fruits of the higher education orchard. However, the persistent inequalities in relation to access and transfer opportunities remain. In parallel the field of universal design has evolved as a framework that allows us to reframe the ambition of enabling full participation for all citizens by adopting a whole systems approach. Educational technologists have articulated their desire to have an impact on all aspects of the higher education system – however current HE structures often relegate their work to marginalised or subsidiary roles with the HE hierarchy. Previous research capturing the values and beliefs of educational technologists resonates strongly with the emerging universal design for learning agenda. This paper will propose that personal and collective ambitions of educational technologists can be further realised by adopting the principles of universal design.

Keywords: Educational technologist, universal design, digital transformation, values and beliefs

Introduction

The purpose of this paper is to propose that the future development of the practices, capital and doxa associated with the field of educational technology should be premised on the underpinning values and beliefs that each social agent embodies. Bourdieu has demonstrated that to understand our practices we need to understand both the evolving fields within which we are situated and the evolving habitus which social agent brings to that field. In this sense a field “...is a social arena within which struggles or manoeuvres take place over specific resources or stakes and access to them.” (Jenkins R. 2002, p.84)

The path proposed is aligned to developments in an allied field also struggling to re-position itself in the wider context of education reform i.e. the field of universal design. A community whose identity has been shaped by decades of advocating for the rights of students with disabilities. It is at the nexus of these intersecting fields that I believe a future evolution of the field of educational technology can emerge. Universal Design is firmly linked to how services and processes can become more inclusive and open, how the design and composition of an environment can be accessed, understood and used to the greatest extent possible, by all people regardless of their age, size, ability or disability. These ambitions are shared in many respects by educational technologists (McNutt,2018) who describe their main motivation as driven by the needs of the learner. The Seven Principles of Universal Design (Table 1) define the overarching requirements in delivering a quality inclusive educational environment for all learners and staff⁵.

Table 1: The Seven Principles of Universal Design

1. Equitable use. 2. Flexibility in use. 3. Simple and intuitive use. 4. Perceptible information.	5. Tolerance for error. 6. Low physical effort. 7. Size and space for approach and use.
--	--

However, the field of Universal Design has recognised that it must move from the periphery to mainstream and one key strategy in this endeavour has been the emergence of UDL – Universal Design for Learning.

The Universal Design graphic (Craddock & McNutt,2017) presents all users of ICT equipment and services on a pyramid with human abilities along the vertical axis, with a wide base representing those who can access all services and devices directly. At the apex of the pyramid are users who can only access services and devices with the assistance of another person. The goal of Universal design is to extend the boundary between end-users “*who*

⁵ <http://universaldesign.ie/what-is-universal-design/the-7-principles/the-7-principles.html>

can use all” and those only “with adaptation”. Technology has transformed the lives of many people and now represents one of the few areas in which the interests of people with disabilities and able-bodied people intersect.

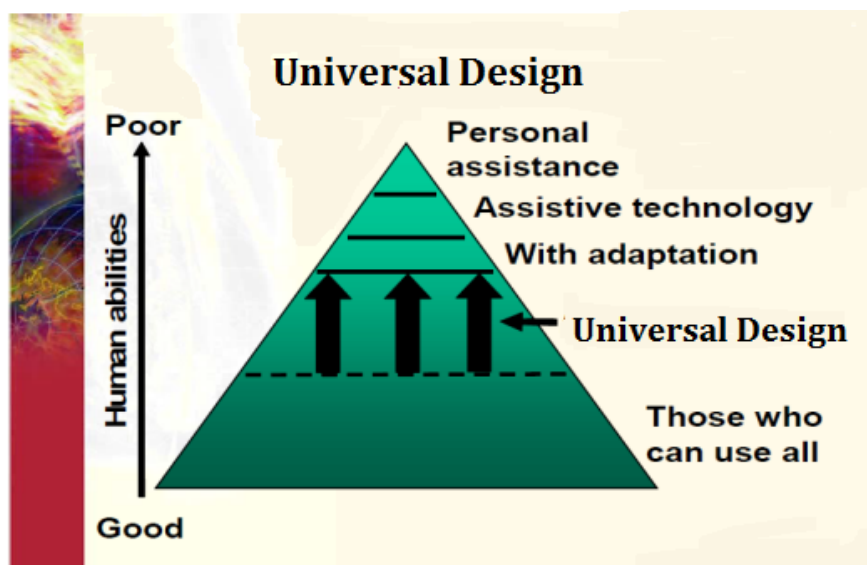


Figure 1: Universal Design Pyramid

However, there is often an assumption within the field of educational technology – that technology is inherently good design. A presumption that also presents in other professions for example it has been argued that conventional architectural education allows students to disengage from intensive understanding of diverse human experiences. To counteract this scenario, it has been suggested that consideration must extend beyond generalized notions of the “user” and emphatically engage specific embodiments in the design process. (Gunawan and Jamrozik, 2018). This is also echoed by Edyburn who offers an interesting insight into how we as educational technologists can address this challenge:

I believe that there must be a priori evidence that the instructional designer understands academic diversity and is proactively building supports that will ensure that individual differences do not mitigate access and engagement. Otherwise, the result is simply a happy coincidence between the use of technology and new tools that students enjoy. UDL is more than simply integrating the latest technology tools into the curriculum.

Burgstahler (2015) (see Table 2) provides a useful illustration of how the seven principles of universal design can be applied but also advises that “UD is a goal that puts a high value on both diversity and inclusiveness. It is also a process.” (p.9)

Table 2: Example of application of the principles of universal design

Equitable use	The design is useful and marketable to people with diverse abilities. A website that is designed so that it is accessible to everyone, including people who are blind, employs this principle
Flexibility in use.	The design accommodates a wide range of individual preferences and abilities. A museum that allows a visitor to choose to read or listen to a description of the contents of a display case employs this principle.
Simple and intuitive	Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level. Science lab equipment with control buttons that are clear and intuitive employs this principle.
Perceptible information.	The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities. Video captioning employs this principle.
Tolerance for error.	The design minimizes hazards and the adverse consequences of accidental or unintended actions. An educational software program that provides guidance when the user makes an inappropriate selection employs this principle

Low physical effort.	The design can be used efficiently and comfortably, and with a minimum of fatigue. Doors that open automatically employ this principle.
Size and space for approach and use.	The design provides appropriate size and space for approach, reach, manipulation, and use, regardless of the user's body size, posture, or mobility. A science lab with adjustable tables employs this principle.

It must always be remembered that at the heart of universal design is the opportunity to mainstream accessibility for people with disabilities. Bringa (2018) reminds us that “universal design is a wanted but demanding concept” – however in the Norwegian context there are clear indications that the concept when used supports social and economic sustainability.

The major implications resulting from this study were teachers' perceptions of the impact on students with exceptionalities and the effect that these teaching methods have on the classroom learning environment.

This challenge has been addressed in relation to ICT Professionals and emerged from a CEN workshop in 2011 that there was an urgent need to promote Universal Design amongst ICT professionals (Rice et al, 2011). There is also significant research that demonstrates that accessibility barriers in learning platforms and associated learning materials has an impact on students fully participating in higher education (Seale, 2013). Chen et al (2018) undertook a qualitative study to determine the attitudes of faculty members towards students with disabilities and universal design in education. They have reported that “*The faculty members had generally positive attitudes towards accommodating diverse students in their teaching and making digital learning materials accessible if necessary. Most were aware of the laws and regulations related to accessibility. However, many lacked experience with student diversity and utilised inadequate terminology when discussing diverse students.*” This scenario is also described by Rydeman et al (2018) who claims that the importance of attitudes, from both teachers, students and the organisation as a whole, was a key component, recognising that it will not be easy to change existing attitudes and will require new approaches as well as patience and time (p.104). One promising solution is co-operation between units at different parts and levels at the university and joining forces with each other in a more efficient way. (p.105). Also adopting more innovative approaches as suggested by Hughes et. Al (2018) where “maker pedagogies encourage students to take ownership of their learning in a way that is both supported by the curriculum as well as the classroom teacher.”

To embrace universal design as a unifying framework to transform higher education I will argue that the unique skills, experiences and attitudes of educational technologists is the optimal combination required to lead this endeavour.

Educational technologists as universal design champions

In a recent discussion paper published by the Irish Higher Education Authority titled “*Digital Transformation and Empowering Technologies in Higher Education*”⁶ they refer to Orr (2018) who contends that

Better use of digital tools in learning environments can offer personalised education options according to diverse prior knowledge and personal needs.

This is seen as a game-changer for students with different learning styles, special needs and students who prefer to learn at their own pace. The expectation is that the educational technology centres in each higher education institution will be charged with realising this agenda. However, what is not recognised is that the scenario presented “*personalised learning*” can only be realised if the principles of universal design are adopted.

Bringolf (2018) describes this symbiotic relationship between universal design and digital transformation when she states that

Universal design of itself does not target a specific disadvantaged group even though its outcomes do. Rather, it targets those who have the power to change their design processes to be more inclusive.

⁶ https://hea.ie/assets/uploads/2017/04/190212_FutureFocus_Digital-Transformation_Discussion-Paper.pdf

An earlier study (McNutt, 2010) to explore the habitus of educational technologists provided a useful insight into values and beliefs that underpinned their work. It could be seen from the data that the participants *own personal motivation* was very much learner centered.

I think it's the match and that you use technology based on what you think the learner gets out of it or gets most out of it.

it would be the learner I would be most focused on

For me it's the learner. Otherwise the technology does nothing. The learner has to be the starting point.

But the main consensus was that for all the flaws that may exist a key assumption was that educational technology has the potential to radically change higher education:

It does have the potential of the radically change the way we deliver and manage education

Yeah, my assumption is that it's got potential, I suppose I'm still at the point where I'd say it's got potential, and we haven't seen its full potential

The data illustrated that educational technologists have a broad and varied range of views and opinions on the current profile of the higher education sector. The main topics that dominated the discussion were the changing profile of students and their associated behaviours; the dominant economic drivers in relation to course development and provision; the priority of the research agenda and the impact of quality assurance. Educational technologists may be viewed as “technies” operating in an educational domain, but the data captured and presented here offered a very different perspective. Educational technologists have the knowledge, skills, motivation and beliefs to influence the design processes that define the educational environmental and experiences of all our learners.

This process can be transformative for the designer and the learner - Edyburn & Edyburn (2011) have described how anticipating differences can reduce or eliminate the need for accommodations and modifications. Whilst Poore-Pariseau (2011) describe a changed perspective (2011, p.54)

I learned that the more one knows about the principles of universal design, the more one tends to proactively consider the needs of students

Conclusion

It is these shared beliefs on the potential of technology to deliver real change and the personal motivation to ensure that the learner is central to all initiatives that underpins my proposal that the community best suited to seize the opportunity afforded by the adoption of the principles of universal design reside within the field of educational technology. UD is not a euphemism for accessibility, as access features such as ramps and lifts are “potent symbols of separateness” (Welch, 1995, p. 2). Rather, UD is a “process of exploring how a politically mandated and socially desirable value can be embodied by the design disciplines” (Welch, 1995, p. 262).

So, what are we waiting for? I am reminded of Seneca's observation 2000 years ago:

Putting things off is the biggest waste of life – it denies the present by promising the future

Time to grasp the opportunity to re-define the field of educational technology by applying the concept Universal Design to our endeavours as Meyer and Rose (2000) defines it

where all students' needs are taken into account during the curriculum planning stages, to design an egalitarian and accessible content delivery system for all learners

References

Bourdieu P. 1986c. "The Production of Belief: Contribution to an Economy of Symbolic Goods". In Media, Culture and Society: A Critical Reader, R. Collins et al (eds). London, Sage.

- Bringolf, J. (2018). From the Ground Up: Establishing a Centre for Universal Design in Australia, Transforming our World Through Design, Diversity and Education, Craddock G. et al. (Eds.) IOS Press, 2018, 457-463.
- Burgstahler, S. (2015). Preface. In S. Burgstahler (Ed.). Universal design in higher education: Promising practices. Seattle: DO-IT, University of Washington. Retrieved from www.uw.edu/doi/UDHE-promisingpractices/preface.html
- Chen, W. Sanderson N.C. & Kessel S. (2018). "Making Learning Materials Accessible in Higher Education-Attitudes among Technology Faculty Members" in Transforming our World Through Design, Diversity and Education, Craddock G. et al. (Eds.) IOS Press, 87-97.
- Craddock G., McNutt L. (2017). "Universal Design as a Transformative Agent in Education for All Learners". Proceedings of AAATE Conf. 2017: 977-984
- Craddock G, Doran C, McNutt L, Rice D (Eds) (2018). Preface. Studies in Health Technology and Informatics Volume 256: Transforming our World Through Design, Diversity and Education; pp. - xvi.
- Edyburn D.L. (2010), Would you recognise Universal Design for Learning if you saw it? Ten propositions for new directions for the second decade of UDL, Learning Disability, Volume 33, Winter 2010 <https://doi.org/10.1177/073194871003300103>
- Edyburn, Dave L. and Edyburn, Keith D. Tools for Creating Accessible, Tiered, and Multilingual Web-Based Curricula, Intervention in School and Clinic published online 24 October 2011 <https://doi.org/10.1177/1053451211424603>
- Hughes, J. Fridman, L. Robb, J. (2018) Exploring Maker Cultures and Pedagogies to Bridge the Gaps for Students with Special Needs, in Transforming our World Through Design, Diversity and Education, Craddock G. et al. (Eds.) IOS Press, 393-399.
- Jenkins, R. (2002). Pierre Bourdieu. Abingdon, Oxon, UK: Routledge. (Original work published 1992).
- Mendelsohn, S. & Fox, H. (2002). Evolving Legislation and Public Policy Related to Disability and Assistive Technology in Assistive Technology: Matching Device and Consumer for Successful Rehabilitation. Edited Marcia Scherer (ed.), American Psychological Association, Washington. <https://doi.org/10.1037/10420-001>
- Meyer, A., & Rose, D. H. (2000). Universal design for individual differences. Educational Leadership, 58(3), 39-44.
- McNutt, L. (2010) "Tension, Frustration and Compromise in the Field" An Exploratory Study of the Habitus of Educational Technologists. PhD thesis, National University of Ireland Maynooth.
- McNutt, L. (2013). "A Critical Discourse on the Role, Motivations and Beliefs of the Educational Technologist in Irish Higher Education", In O'Farrell C., & Farrell A. (Eds.), Emerging Issues in Higher Education III: From capacity building to sustainability. Athlone: EDIN. (pp.113-126).
- McNutt, L. (2018). Reclaiming the field of educational technology: Seeds for discussion. In M. Campbell, J. Willems, C. Adachi, D. Blake, I. Doherty, S. Krishnan, S. Macfarlane, L. Ngo, M. O'Donnell, S.Palmer, L. Riddell, I. Story, H. Suri & J. Tai (Eds.),
- Poore-Pariseau, C. (2013). Universal Design in Assessments. In S. Burgstahler (Ed.). Universal design in higher education: Promising practices. Seattle: DO-IT, University of Washington. Retrieved from www.uw.edu/doi/UDHE-promisingpractices/ud_assessments.html
- Rice, D., Craddock, G., O' Ferrall, E. & Schmidt-Belz, B. (2011). "Curriculum for Training ICT Professionals in Universal Design European Committee for Standardisation (CEN) CWA 16266:2011 D/E/F". CEN Workshop Agreement CWA 16266
- Rao, K. (2013). Universal instructional design of online courses: Strategies to support non-traditional learners in postsecondary environments. In S. Burgstahler (Ed.). Universal design in higher education: promising practices. Seattle: DO-IT, University of Washington. Retrieved from www.uw.edu/doi/UDHEpromisingpractices/uid_online.html <https://doi.org/10.1109/ICTEE.2012.6208664>
- Seale, J. (2013). "When digital capital is not enough: reconsidering the lives of disabled university students" Learning Media and Technology, 38(3), 256-269. <https://doi.org/10.1080/17439884.2012.670644>
- Rydeman B. Efring, H, & Hedvall, P.O. (2018). Towards a more Inclusive University - supporting teachers through Universal Design for Learning, in Transforming our World Through Design, Diversity and Education, Craddock G. et al. (Eds.) IOS Press,98-105.
- Welch, P. (Ed.). (1995). Strategies for teaching universal design. Boston: Adaptive Environments.

Please cite as: McNutt, L. (2019). Educational Technologists, Universal Design and Transforming Higher Education. In Y. W. Chew, K. M. Chan, and A. Alphonso (Eds.), *Personalised Learning. Diverse Goals. One Heart. ASCILITE 2019 Singapore* (pp. 509-513).