



INCLUSION'S FINAL FRONTIER: UNIVERSAL DESIGN FOR LEARNING – ICT AND INNOVATION IN TRANSFORMATIVE EDUCATION

Alan Bruce, Universal Learning Systems, Ireland

Overview: differential access and learning

The last two decades have produced ample evidence of the extent and degree to which ICT permeates social structures, economy and the generation and transmission of knowledge itself. While much research has concentrated on the ways in which ICT has initiated, facilitated or accelerated key processes of social change, it is also true to say that social change is shaping our understanding of the social role and potential of ICT. To put it simply, ICT based knowledge generation and transmission systems may play a powerful role in an emerging emancipatory dialectic. Or, on the other hand, they may serve increasingly to restrict human choice and freedom, monitor 'unacceptable' behaviours or beliefs and gradually target the intimacy and freedom of human thought and opinion forming. All this poses a fundamental challenge to our understanding of ethics, critical dissent, objective inquiry and the possibility to assert the primacy of human rights and choice in shaping a viable social system within an economic framework many commentators now regard as increasingly restrictive and inegalitarian.

Historically, the linearity and recurrence of the written word underpinned the emergence of educational bodies, schools, instructional techniques, scientific method and the very organization of official, legally registered and sanctioned schools and academies (Graff, 1979; Goody, 1990). Knowledge itself became a message – to be repeated and conveyed to far greater numbers of people. The process of conveying knowledge and information depended increasingly on more books being printed – with the assumption recipients were able to read. People with access to standard writing systems had the possibility not only to use but also produce knowledge. They also had competitive advantage. However, admission to knowledge production levels was restricted. Different normative and institutional strategies were organized to select those perceived as capable of producing innovative breakthroughs, validated by accepted scientific communities. This entailed hierarchic, controlled and mediated knowledge ownership and transmission systems.

Formal education systems transmitted and propagated accepted scientific doctrine – knowledge produced by means of curricula that selected ideas and skills that learners required for subsequent application to their professions. As a result, education placed emphasis on

teaching and instruction. The teacher played a major part in this framework, given that these were the people who taught those that did not know. This 'banking conception' of education was one in which the student was an empty container that had to be filled with content, opposed to a candle to be lit (Freire, 1973). On the whole, traditional learning systems in the Western World were modelled around the idea of differential access to learning and knowledge, reflecting surrounding existing differences in stratified social systems. Classrooms were structured in strictly didactic ways in terms of pedagogy. In addition, classrooms were located in fixed places – the architecture itself reflecting notions of hierarchy, order and control (Bruce, 2009)

Shaping Inclusive Discourse

Traditional economic systems and market driven learning policies have undergone a fundamental challenge in terms of relevance and ability to meet the needs of individuals and communities alike. The crisis since 2008 has placed a new focus on the innovation imperative – not just to solve problems but also to ensure that understanding exists on why the crisis occurred and what is necessary to stop it happening again.

All European countries have seen the impact of this change or are in the middle of addressing the policy, social and economic issues that arise from it. These changes produce many benefits but also have created a number of challenges and difficulties. The nature and scale of this has a direct impact on learning for those working in inclusive education or specialized sectors, in particular regarding disability. In addition to new challenges in equality related employment issues, old issues have re-asserted themselves:

- Ethnic demographics;
- Discrimination regarding disability;
- National frameworks and Socio-cultural structures;
- Flexibility and adaptability;
- Educational systems and the ownership of learning.

One of the central questions informing the emerging dimensions of innovative learning in international contexts is how to work with the needs of specific communities to create a new matrix of opportunities for inclusion, mutual benefit and intercultural encounter. This has specific implications for learning specialists and educators in terms of professional training, best practice and standards in approaching community diversity.

The centrality of the concept of lifelong learning to new EU initiatives requires attention. This reflected the Commission's concerns that Europe should display a constant emphasis on best practice if it is to keep up with the needs of all its citizens. The nature of lifelong learning is responsiveness to the needs of the learner. This has particular relevance for those with disabilities. The issues posed by the experience of disability (and the consequent marginalization and discrimination in most European societies) have a strong organic link to the themes and topics addressed by lifelong learning.

Inclusion is not necessarily a neutral concept, although it is universally valued in academic literature and policy statements. Social inclusion and educational provision can provide a dynamic synergy of perspectives and possibilities. But the challenges should not be underestimated. Inclusion cannot be tacked on as a well-meaning cosmetic aspect to otherwise stratified course provision. Inclusion needs to move beyond token gestures on social responsibility to being the foundation of all course provision where inclusive thinking, methodology and principles inform all aspects of learning design, access and deployment.

Part of this inclusionary dynamic is to find newer and more innovative ways to include those normally excluded from educational provision. Another is to ensure that all courses reflect an understanding of the inequalities and disparities present in our society from the outset. Closely connected to this should be an ever-deepening awareness of the nature and extent of diversity in society.

The experience of disability

The removal of barriers to participation and the enhancement of embedded equality approaches are about asserting strategic policy vision. Since the *Salamanca Statement* of 1994 and the UN *Convention on the Rights of Persons with Disabilities* (2008), there is a political aim within EU countries that all people with disabilities have the same right to inclusion as everyone else. Although there are many efforts to reach this goal, there is still a long way ahead before reaching a society where equal opportunities are guaranteed for all.

There is no unified definition of inclusive participation. The common factor to all definitions of inclusion is that they stem from the principle of human rights (UNESCO, 2001; UNESCO, 2003) and are therefore defined more broadly as they relate to social inclusion and do not merely include the educational dimension of inclusion.

The European Union's involvement in disability issues had originally been primarily as a resource for the European Social Fund activities in relation to vocational training. In the 1980s, however, it began to promote a wider consideration of social measures and instruments to secure the rights, responsibilities and inclusion of disabled citizens. While recognizing the widely different approaches, understandings, mechanisms and policies of Member States in relation to disability, the EU began to promote some common initiatives. First among these was the Helios Programme, which ran until 1996. This influenced the EU Council of Ministers to adopt a report, *A New European Community Disability Strategy*, which endorsed and expanded the United Nations' Standard Rules. Specifically, this report re-asserted the principles of employment and non-discrimination as key elements in developing social inclusion for people with disabilities over the longer term.

The European perspective stressed linkage of inclusion for people with disabilities with enhanced equality of opportunity. In its Resolution on the *Equality of Opportunity for People with Disabilities* published in 1997, the European Commission, while recognizing that the primary responsibility for action lay with individual Member States, nonetheless laid out a set

of key guiding principles. The principles on education asserted the need to overcome segregated systems where restricted access to mainstream resources affected quality education for all.

Universal Design for Learning – origins and impact

The roots of UDL (*Universal Design for Learning*) are in the early civil rights and special education legislation that emphasized the right of all students to a free, appropriate public education in the least restrictive environment. The UDL framework was conceived by researchers in the United States who subsequently established the *Center for Applied Special Technologies* (CAST) in the late 1980s as the result of three conceptual shifts:

- Advancements in architectural design
- Developments in education technology
- Discoveries from brain research and neuropsychology.

Influenced by architectural Universal Design principles, the accessibility and flexibility offered by digitized text, and the conceptualization of three learning networks, CAST innovators developed “*Universal Design for Learning*”. CAST defines *Universal Design for Learning* as “a set of principles for curriculum development that gives all individuals equal opportunities to learn”. The existence of ever more advanced technologies and the definition of the needs and requirements of a specialized group (those with disabilities) created a powerful synergy of creativity and innovation that began to question traditional curriculum design itself as being potentially discriminatory.

UDL provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone – not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs. UDL embraces the concept of improved access for everyone and applies it to curriculum materials and teaching methods. Rather than rely on Assistive Technologies (AT) to bridge gaps between materials and student learning needs, materials designed using UDL concepts have built-in accommodations. Add-on technology is less often needed to translate the material into a mode that enables learning. One central idea of UDL is that as new materials and technologies are developed, they should be designed *from the beginning* to be flexible enough to accommodate the unique learning styles of a wide range of individuals, including those with disabilities. Some examples of UDL include: accessible web pages; captioned and/or narrated videos; word processors with word prediction; speaking spell checkers; talking dialogue boxes; voice recognition; picture menus.

UDL does not eliminate the need for assistive technology. Learners with disabilities will continue to need AT devices (e.g. communication aids, visual aids, wheelchairs, orthoses and adapted toys) in order to interact more fully with their environment. However, building accessibility into new technologies and curricular materials *as they are developed* helps to

ensure maximum inclusion of learners with disabilities into the full array of learning opportunities that are available to all.

Traditional economic systems and market-driven learning policies have undergone a fundamental challenge in terms of ability to meet needs of individuals and communities. The crisis since September 2008 has placed a new focus on the innovation imperative, thus raising the agenda of how innovation and creativity can meet human and social needs effectively. UDL uses advanced ICT to create an educational environment that allows all students, including those with learning disabilities, to succeed in general education with minimal use of assistive technology.

UDL extended to all learners

The concept of diversity suggests that each individual is unique, while recognizing individual differences. Diversity management is a set of conscious practices and skills around understanding and appreciating interdependence of people, cultures, and the natural environment, practicing mutual respect for qualities and experiences, and understanding that diversity includes not only ways of being but also ways of knowing. In UDL diversity has its origins in the field of disability and rehabilitation for a wide range of disabilities – sensory (visual and auditory), physical, neurological, developmental/intellectual and psychiatric. But the diversity also includes those other dimensions around gender, ethnic origin, religious belief, migrant status, sexual orientation and a host of other situations.

At the Center for Universal Design in the University of North Carolina, a group of architects, product designers, engineers and environmental design researchers established seven principles of UD to provide guidance in the design of products and environments. The CUD principles of UD are:

1. *Equitable use.* The design is useful and marketable to people with diverse abilities. For example, websites designed to be accessible to everyone, including people who are blind and use screen reader technology.
2. *Flexibility in Use.* The design accommodates a wide range of individual preferences and abilities.
3. *Simple and intuitive.* Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
4. *Perceptible information.* The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
5. *Tolerance for error.* The design minimizes hazards and the adverse consequences of accidental or unintended actions.
6. *Low physical effort.* The design can be used efficiently, comfortably, and with a minimum of fatigue.

7. *Size and space for approach and use.* Appropriate size and space is provided for approach, reach, manipulation, and use regardless of the user's body size, posture, or mobility.

The *Center for the Implementing Technology in Education* has highlighted the increasing emphasis on use of technology in education. While many schools have made significant technology purchases, these purchases are driven because of community pressure, because new technology has received positive attention or is perceived as attractive. These types of technology purchases may languish on shelves, never to be used by more than a handful of teachers because they were not made with the curriculum in mind. CITED instituted a set of *Technology Innovation Partnerships* (TIP) in the United States in 2006. TIP schools increased teachers' use of technology tools by making sure the tools and training were relevant and directly linked to the curriculum and that teachers had time to practice the technology. In this way, teachers increasingly integrated technology into other learning activities. The Universal Design concept has roots in three areas:

1. Design of physical environments (residential and commercial space);
2. Web development;
3. Teaching and learning (Universal Design for Learning).

UDL aims to create barrier-free environments that enable today's teachers to apply universal design concepts in ways that support the needs of the widest range of learner differences. With the learning needs of today's student populations becoming increasingly diverse, an enhanced understanding and application of UDL is essential. UDL is a field of inquiry and practice that considers ways of developing course content in a manner that is proactively accessible to as wide of an audience as possible.

A critical aspect of UDL is that the initial effort and expense of designing for a non-standard or non-traditional population ends up benefitting wider populations in sometimes-unexpected ways. Ease of access for one group has intended and unintended benefits for all. This is UDL at its best. Universal Design for Learning (UDL) proactively designs course content in a manner intended to be as accessible to as wide an audience as possible. The instructor pre-emptively addresses course content, structure and delivery that targets defined (or undefined) accessibility issues. In this way benefits of improved accessibility are available to the entire class cohort rather than just those seeking the specific accommodation.

UDL has as its basis the idea that designing in a way that is more accessible to a target group is also likely increasing the accessibility for others. One of the challenges for UDL is that innovations introduced to improve accessibility for one group may actually impede accessibility for another group. As a transdisciplinary approach that synthesizes insights from various academic fields (developmental psychology, neuropsychology, neuroscience, sociology, education theory and practice), UDL is well positioned to serve as a catalyst to spark deeper connections between research, practice, and policy. CAST itself has been pursuing several areas in research on UDL applications. These include Supports and Scaffolds

in UDL; Learning Analytics and Progress Monitoring; Authoring Platforms; UDL in Literacy, Science and Math; Smart Images; Online Learning; Implementation of UDL to Improve Teacher Effectiveness.

Understanding the potential of UDL is seductively easy. Its exponential growth indicates that it may be the right idea at the right time. However, it has proven far easier to help the various stakeholders understand the potential of UDL than to implement UDL on a large scale.

In Europe the UDL Network (*UDLnet*) project commenced in 2014. *UDLnet* aims to collect and create best practices under the framework of UDL from a wide range (generic guidelines down to more specific ones) of four envisaged themes: inclusive learning environments, accessible resources, teachers' and school leaders' competences, examination of barriers and identification of opportunities. Moreover, it is investigating current needs related to the use of mobile devices in UDL practice, along with the application of the UDL framework in real inclusive educational practices. *UDLnet* targets 3,500 users in seven countries across Europe (Greece, Ireland, Cyprus, Finland, Netherlands, Germany, Spain) and in six languages.

In general, *UDLnet* aims to improve teachers' practice in all areas of their work, combining ICT skills with UDL-based innovations in pedagogy, curriculum, and institutional organization. It is also aimed at in-service and pre-service teachers' use of ICT skills and resources to improve their teaching, to collaborate with colleagues, and perhaps ultimately to become innovation leaders in their institutions.

This shift in emphasis – from access to learning environments to learning itself – is a key tenet of UDL. In a sense, it is the bridge between special education and general education: a concern that all learners get a high-quality education. One of the challenges faced in education is to reach students who have not traditionally done well in the education system, including students with disabilities, migrants, language learners, and children from lower deprived socioeconomic backgrounds. Currently, most learning environments and curricula are too restrictive to support effective and efficient learning for all students. UDL creates a framework to reduce the barriers in education, anticipate the diversity in everyday mainstream classrooms, and embed support into national curricula. The implementation of a UDL framework has the potential to open doors in education to all students, especially those not effectively served by current systems and structures. This embeds inclusion as both a method and valued outcome, a critical resource in times of significant structural transformation.

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