

Using Diffusion of Innovation Theory to Promote Universally Designed College Instruction

Sally Scott

*Association on Higher Education
and Disability*

Joan McGuire

University of Connecticut

Universal Design applied to college instruction has evolved and rapidly spread on an international scale. Diffusion of Innovation theory is described and used to identify patterns of change in this trend. Implications and strategies are discussed for promoting this inclusive approach to teaching in higher education.

Forty years have passed since the gateway to higher education broadened for students with disabilities through passage of the Rehabilitation Act of 1973. Four decades have yielded significant changes, many the result of advocacy efforts by students and their parents, disability service providers, and incremental civil rights decisions by the courts and the federal Office for Civil Rights. A consequential paradigm shift now reframes the analysis of disability away from the medical model where disability is inherent to the individual. In the current social model, disability “stems from the failure of society to adjust to meet the needs of disabled people” (Loewen & Pollard, 2010, p. 9). Society is responsible to adapt and create environments that are inclusive and flexible. Equal access, preferably achieved by design, not by accommodations, is the goal.

Access and inclusion, inherent values in the social model of disability, are key elements of universal design (UD), a concept familiar to the field of disability. Since UD’s genesis in the architectural field contiguous with the implementation of Section 504, the concept has followed a trajectory of change not unlike many novel ideas. As its applications in one field have gathered widespread support, other disciplines have adapted the concept to their contexts, in part because of UD’s overall appeal and generalizability. In higher education the application of UD to teaching has been the focus of intensive work and exploration. As described in this manuscript, examples of UD’s adoption and its applications are numerous. But what do we know about the progression of UD in college teaching? Has it evolved according to identifiable patterns of change? If so, what are the implications for promoting and sustaining this approach to inclusive higher education? In sum, does the movement for infusing inclusive instructional strategies in college teaching reflect characteristics of a model of change? To address this query, this manuscript examines two distinct concepts: universal design (UD) as applied to teaching, and diffusion of innovation (DOI), a theory of change proposed and studied by Rogers (2003). The intent is to explore elements of the DOI theory that

offer substantive points to ponder about the process of change and the potential for UD to permeate postsecondary instruction.

The Evolution of Universal Design and Its Applications

In the early 1970s, the idea of universal design germinated from the efforts of Ronald Mace, an architect, and his colleagues at the Center for Universal Design (CUD) at North Carolina State University. They articulated a value system for the architectural and design fields that assumes human diversity as the norm. UD is defined as the design of products and environments to be usable by all people to the greatest extent possible without having to retrofit accommodations to assure access (Welch, 1995).

With its intuitive appeal – who could disagree with the notion of design for inclusion? – the extension of UD to education has sparked creative applications subsumed in several models. At the K-12 level, discussions in the early 1980s explored ways to adapt the curriculum including the emerging role of technology to enhance learning for students with learning disabilities. In 1984, the Center for Applied Special Technology (CAST) initiated its work in creating Universal Design for Learning (UDL), “a set of principles for curriculum development that give all individuals equal opportunities to learn” (National Center on Universal Design for Learning, n.d.). In the past decade, CAST’s efforts have expanded to include UDL based professional development activities at the postsecondary level. Another application is seen in the model, Universal Design in Education (UDE), defined by Bowe as “the preparation of curricula, materials, and environments so that they may be used, appropriately and with ease, by a wide variety of people” (2000, p. 45). Bowe described the application of the seven principles of UD articulated by the Center for Universal Design with examples from K-postsecondary educational settings.

Extending the application of UD solely to postsecondary settings, Silver, Bourke, and Strehorn

(1998) conducted a pilot study to explore faculty ideas about universal instructional design (UID) and its implementation within a university setting. Through a government funded UID initiative at the University of Guelph (n.d.), faculty training and instructional materials incorporated the seven UD principles. Multiple teaching methods created by faculty offered approaches to accommodate diverse students. Higbee (2003) spearheaded another project based on UID at the University of Minnesota, however, widespread efforts to implement the UID model are not reflected in the literature due in part, as is so often the case, to lack of funding.

Scott, McGuire, and Foley (2003) described Universal Design for Instruction (UDI), a framework for three federally funded projects at the University of Connecticut based on the seven principles from the CUD and two drawn from literature sources on effective instruction and college teaching. Focusing exclusively at the postsecondary level, project activities included development of two web sites, faculty training and implementation activities at partner colleges and universities, and publications. The UDI framework also guided a faculty development curriculum project at Longwood University to assist faculty in the Modern Languages program in designing strategies for inclusive pedagogy (Scott & Edwards, 2012). Finally, Burgstahler (2007) has used the descriptor Universal Design of Instruction, an approach that draws on the CUD principles and underlies numerous initiatives of the DO-IT Center at the University of Washington.

What unifies these different applications of UD is the notion of diversity and ways to proactively plan for instructional access for students with disabilities and other diverse learners. Within a relatively short period of time, UD applied to instruction has spawned numerous initiatives extending to the international level. Activities range from professional development training for K-12 teachers, postsecondary faculty, and disability service providers to funding to operationalize the concept and begin to gather data on implementation results and a few research studies. These developments affirm the appeal of universal design for advancing instructional access and inclusion and underscore a pattern of change worthy of analysis if adoption is to become more widespread. Everett Rogers, a communications scholar, studied the spread of innovations by means of social systems. His work is relevant as it addresses elements of change that influence the rate by which a novel idea germinates and is widely adopted. Its application to the UD movement in postsecondary education is intriguing.

Diffusion of Innovation: A Theory of Change

The idea of diffusion, or the spread of new ideas and products, has been studied since the beginning of

the 20th century. Rogers (2003) is credited with observing a series of general, common elements across early diffusion studies from a variety of disciplines including seminal work in his own field of rural sociology. Pioneers in diffusion study, Ryan and Gross (1943) and others, were examining the spread and adoption of agricultural techniques in the cultivation of hybrid corn and use of weed killers in Midwest farming communities. Rogers and his colleagues built upon a growing understanding of generalizable change processes. They recognized the influence of select factors on the rate of adoption of new farming techniques in local Midwest communities. Communication channels, interpersonal networks, and social modeling were particularly powerful elements in the change process. Across broader cultural and disciplinary contexts, Rogers identified general patterns and similarities in the change process. In his 1962 seminal work on the topic entitled *Diffusion of Innovations*, Rogers first proposed significant and universal factors that help explain how social change occurs. His observations and propositions on the diffusion of ideas and products have undergone multiple iterations and expansions as DOI theory has evolved and grown (as cited in Rogers, 2003).

Rogers (2003) defined Diffusion of Innovation as “the process by which an innovation is communicated through certain channels over time among the members of a social system” (p. 3). The functional value and applicability of DOI theory to many disciplines are documented by its use in empirical research over the past several decades. Educators examining adult education practices (Cervero & Rottet, 1984), medical researchers interested in the adoption and use of new drugs by medical doctors (Leslie & Rosenheck, 2002), and scholars of public health policy (Bradley, Webster, & Baker, 2004) all have applied the theory to their work. An additional testament to the validity and usefulness of the theory is its ability to evolve and continue to be applicable to emerging innovations and social issues (Dearing, 2009). More current applications reflect contemporary social issues not under discussion when the commonalities of social change and DOI theory were first proposed. For example, DOI theory has been used to inform AIDS outreach and prevention practices (Barker, 2004), understand terrorist social networks (Rogers, 2003), and examine the public adoption of the Apple iPhone (Vaccaro, Ahlawat, & Cohn, 2010). Notably, the substantive questions that DOI theory attempts to explain including how, why, and at what rate new ideas spread through cultures remain current and timely.

Components of DOI Theory

As a framework for examining the process of change, DOI theory incorporates four overarching

components that characterize the spread of ideas that are perceived as new: (a) the innovation itself, (b) the communication channels used for education and outreach, (c) the time involved in adoption of an idea, and (d) the social system being introduced to the innovation (Rogers, 2003). Within these four elements of the framework, there are growing numbers of sub theories and concepts as DOI theory is applied and continues to evolve. Each main component is highlighted as a backdrop for considering the diffusion of UD in postsecondary instruction.

The innovation. In DOI theory, innovation refers to “an idea, practice, or object that is perceived as new” (Rogers, 2003, p.12). Innovations may include, for example, anything from a new form of technology, to educational policy, to emerging medical practices. Certain attributes of innovations relate to the likelihood and rate of their adoption. Individuals are more likely to adopt an innovation that (a) is perceived as having some relative advantage over current practice, (b) is compatible with existing values and needs, (c) is not too complex, (d) can be tested for a limited time before adoption, and (e) has observable results and outcomes. When an innovation offers some flexibility, such as allowing the user to modify or adapt it to fit his or her needs, the likelihood of adoption increases. Diffusion scholars also have found that this process of “re-inventing” or customizing by the user, strengthens the likelihood of sustained use of the innovation.

Communication channels. Distributing or disseminating information about an innovation is viewed as a social and dynamic process within DOI theory. Different methods of communication are effective at different times in the adoption process. *Mass media* channels, including newspapers, television, radio, and now the Internet, for example, are quick and efficient means of reaching a large audience of potential adopters. Mass media are most effectively used to increase general knowledge and broad awareness of the innovation. In contrast, *interpersonal communication* channels involve face-to-face communication with two or more individuals including outreach in such venues as technical assistance structures, professional conferences, workshops, classes, and so forth. This form of communication is more persuasive in encouraging individual adopters to embrace the innovation. Diffusion studies also indicate that *near peers* or individuals who are most similar to the potential adopters along such lines as education levels comprise the most effective communication channels in promoting adoption of the innovation.

Time. There are a number of aspects of DOI theory that involve the consideration of time in the adoption of an innovation. Three relevant sub theories are described.

The innovation-decision process. Diffusion scholars have found that the decision to adopt an

innovation occurs in five progressive stages. Beginning with initial *knowledge and awareness*, adopters must first learn about the innovation. The need to know its elements as well as how and why it works is often addressed through mass media communication channels. This is followed by *persuasion* of the value of the new practice, and a *decision* to adopt it. Interpersonal networks and peers are often the best source of information on the advantages and disadvantages of the innovation that inform these stages. Adopters then *implement* the innovation including possible customization to meet specific needs and then *confirm* their decision. The length of time required to move through the innovation-decision process can vary widely across individuals and circumstances.

Individual innovativeness. Some individuals adopt a new idea much more readily than others. Rogers (2003) described this quality as innovativeness, or earliness in relation to others in adopting an innovation. Adopter categories range from *innovators* (the small number of risk-takers who are first to adopt) to *laggards* (the small number who are the last to adopt or never adopt an innovation). In between these two extremes are the *early adopters* who follow the lead of innovators and play an important role by adopting the innovation and furthering dissemination to peers in their local network. They are often viewed as *opinion leaders* in the system to whom others look for advice and information. Soon to follow are the *early majority* who adopt new ideas but are not typically viewed as opinion leaders in the group. Finally, the *late majority* approach innovation with skepticism and caution waiting until most of their peers have adopted the innovation and there is substantial proof of its merits.

Rate of adoption. While the quality of innovativeness pertains to individual adoption decisions, the rate of adoption provides a measure of the cumulative number of adopters in a field or social system. When plotting this cumulative number over time, the resulting distribution reflects an S-shaped curve. Beginning with a few innovators, the practice or technology is next embraced by the early adopters and the early majority, and the trajectory of the S-curve climbs. Numbers increase rapidly as the influence of early adopters and the early majority persuades the later majority. At this point, cumulative numbers begin to level off with the final adoption of the innovation by the remaining few laggards. Although patterns are consistent across diffusion studies, the rate of diffusion may vary widely, and this is reflected by the slope of the S-curve. A steeper S-curve represents a more rapid diffusion process. As described above, the perceived attributes of the innovation, the innovativeness of individual adopters, and the sources and channels of

communication all play a role in how rapidly an innovation is diffused over time.

Social systems. Diffusion of an innovation occurs within a social system comprised of members who share a common objective. The system may be made up of individuals, informal groups, subgroups, or professional organizations. Social structures within the system that influence diffusion are often both *formal* (e.g., the bureaucratic hierarchy of a government agency) and *informal* (e.g., interpersonal linkages between a system's members). Members of the system have been found to function in some predictable ways. Communication structures often reveal that members who are most alike (i.e., near peers) communicate most readily with each other. Early adopters within the system who are also connected with interpersonal networks may serve as *opinion leaders* who can be quite influential in promoting the adoption of an innovation within a social system. *Change agents* who actively work to promote an innovation within a system often capitalize on the influence of opinion leaders.

The Movement for UD Based Pedagogy: Is DOI Theory Relevant?

As colleges examine ways to produce student learning (Hutchings, Huber, & Ciccone, 2011), several trends illustrate a growing movement as Universal Design (UD) based instruction expands access for an increasingly diverse student population. Diffusion of Innovation (DOI) theory offers a provocative lens for analyzing the progress and trajectory of this pedagogical change. An examination of two types of dissemination efforts follows.

Dispersion of UD Awareness

A quick scan of the higher education landscape confirms widespread interest and applications. Discussions of UD and inclusive teaching now extend to national and international audiences, illustrating the role communication channels play in the transmission of a new idea from one individual or community to another. In the culture of higher education, conferences and grass roots efforts comprise formal, large scale, and informal interpersonal communication networks for proposing innovative ideas and sharing practices.

A relatively short amount of time has transpired from initial conversations about UD as an instructional framework to articulated implementation guidelines. Despite this, numerous higher education institutions and professional organizations in the U. S. have sponsored workshops and conference sessions about UD based inclusive teaching strategies. Some efforts emanate from disability related professional groups offering intensive conference workshops as well as

single session presentations (e.g., Association on Higher Education and Disability [<http://www.ahead.org/>]; Center on Postsecondary Education and Disability [<http://cped.uconn.edu/>]; and University of Hawaii Center on Disability Studies [<http://www.pacrim.hawaii.edu/about/>]). Other sources support conferences and websites exploring UD and inclusive instructional techniques for students with disabilities (e.g., Educause [<http://www.educause.edu/>]; Merlot [<http://www.merlot.org/merlot/index.htm>]) (McGuire, 2014).

International conferences with sessions about UD and inclusive teaching are drawing participants from numerous countries who comprise networks of disability professionals, higher education administrators, and faculty. The Association for Higher Education Access & Disability in Ireland (<http://www.ahead.ie/>), an independent non-profit organization working to promote full access to and participation in further and higher education for students with disabilities, is continuing its efforts to promote inclusive instruction through annual themed conferences showcasing UD frameworks (e.g., <http://www.ahead.ie/conference2015>). Since 1992, the University of New Orleans and the University of Innsbruck have collaborated to cosponsor a conference every three years (<http://www.uno.edu/trac/international-conference.aspx>). The eighth annual conference held in 2013 included numerous presentations based on UD with presenters from 20 countries and 4 continents (http://www.ahead.ie/newsletter_winter13_innsbruck). Several examples from Canada include the University of New Brunswick which recently sponsored a symposium, "Universal Design in Post-Secondary Teaching: Reality or Utopia?" (<http://www.unb.ca/conferences/udlconference/english/index.html>) and McGill University which sponsored a conference in 2015 (<http://www.mcgill.ca/osd/udl-conference-2015>). As a result of conference presentations, the spread of UD has also occurred within subgroups of professional social systems. An example from Ireland is informative (A. Heelan, personal communication, November 4, 2014). In the summer of 2013, through a partnership between AHEAD and the School of Nursing, University College Dublin, a summer school program enrolled 25 academics from nursing, medicine, and physiotherapy. Participants collectively explored the application of UD in instruction and the interface with disciplinary performance standards for students in clinical placements. There was unanimous agreement that certain non-negotiable tasks (i.e., essential standards) were not flexible and could not be waived within a clinical setting. The importance of customizing and adapting an innovation such as UD to disciplinary

needs and professional standards underscores a critical component of the change process, its context.

Widespread dissemination is also advanced through communication channels which have become more complex and at the same time more widely accessible since initial research studies on DOI in the 1950s and 1960s. Technology facilitates connections among professionals beyond national boundaries to encompass global communities and networks that provide valuable forums for idea sharing. These communication channels and social systems are increasing general knowledge about UD, as well as providing opportunities for modeling by peers that Rogers (2003) described as “the heart of the diffusion process” (p. 19). Two examples are illustrative. The European Association on International Education (EAIE) (<http://www.eaie.org/home/about-EAIE/who-we-are.html>) was formed in 1989 to promote training, conferences, knowledge acquisition, and sharing focused on efforts to promote international study programs with diverse student participants in Europe and across the world. One of its 15 expert communities is ACCESS, a network of professionals involved in disability services. Through training focused on UD frameworks, its members seek to increase the participation and improve the experience of students and staff with disabilities in international higher education. Another powerful example of a focused global communication channel is the Learning Inclusively Network + Know-How (LINK), “a network of organisations, educational institutions, disability professionals, academics, students and interested individuals who all share the same ultimate goal, the full inclusion of students with disabilities in higher education” (<http://www.thelinknetwork.eu/>). Founded in 2008, countries with partners sponsoring the network include Belgium, Ireland, the Netherlands, Norway, Slovenia, and Sweden. In addition to assisting students with disabilities who are seeking to study in other countries, LINK activities include a discussion forum for sharing innovative ideas and practices, annual conferences, and a shared library. At its 2014 annual conference held in Stockholm, sessions addressed inclusive learning environments in higher education based on UD frameworks for instruction (<http://www.universell.no/english/building-bridges-2014/>).

These examples depict the rapid spread of UD in college instruction and the role of different communication sources at various stages in the innovation-decision process. Conferences promote awareness and the spread of innovative ideas by knowledge dissemination. They also can generate a powerful connection, a growing network of attendees who are persuaded by the content of presentations to explore in more depth UD based classroom teaching.

Implementation of UD Based Instruction

Another vantage point for viewing the diffusion of UD based instructional practices is to look at

initiatives focused on systemic campus-wide change. While many application efforts are underway, two examples are highlighted and examined for elements that reflect DOI.

Project ShIFT. Project ShIFT (Shaping Inclusion through Foundational Transformation) was a three-year demonstration project, one of 23 funded by the U.S. Department of Education, Office of Postsecondary Education (U.S. Department of Education, 2015) during the 2008-2011 funding cycle. ShIFT was designed to bring UD and the related social model of disability to individual college campuses across the country. At the outset, disability resource professionals from 25 college campuses were selected for training and support. Their role in the project was to “serve as leaders for faculty in the redesign of curriculum, the use of UD instructional strategies, and the infusion of disability into course content” (Refocus, n.d.). As campus change agents, each disability resource professional identified one faculty member to join them in Year 2 of the project. Activities included intensive training and the development of a plan for infusing UD into instructional practices in the faculty member’s teaching. In DOI terms, these faculty members might be viewed as early adopters who were to bring observable UD practices to campus and their network of faculty colleagues and peers. In Year 3, each campus was charged with exploring how to best “increase institutional capacity” (Refocus, n.d.) through additional diffusion of UD. Strategies for additional campus implementation are varied (e.g., Meyer, Tanner, & Camp, 2014; Refocus, n.d.; Staeger-Wilson & Sampson, 2012). For example, one disability resource professional and faculty colleague returned to campus to develop a faculty partners program for training for a small core of faculty colleagues who in turn were available to work with their faculty peers and share inclusive teaching practices (Smith & Buchannan, 2012). Strategic change on this campus clearly involved peer-to-peer communication and development of a network of early adopters who could continue to support and spread UD instructional practices. Another example from Project ShIFT included participants returning to campus to partner with the institution’s faculty development center and the online support team to offer varied inclusive design workshops in both face-to-face and online learning environments. Faculty participants in the training are asked to incorporate some aspect of the workshops into a course they are teaching (A. Meyers, personal communication, January 12, 2015). Promoting change on this campus was approached by aligning with other professionals with compatible values for inclusive teaching. In both examples strategic change included highlighting

the trialability of UD or the ability of faculty to design, adopt, and apply UD to their own instruction.

McGill University. Change efforts at McGill University provide another example of diffusion and adoption of UD in college instruction. The Disability Services (DS) office implemented an intentional plan to bring UD to instruction beginning in September 2011. First identifying campus partners with mutual goals and values, the DS office collaborated with the Social Equity and Diversity Education office (SEDE) and the Teaching and Learning Services (TLS) based on a “happy conjuncture where our missions meet and our expertise is mutually beneficial” (Fovet & Mole, 2013). They offered workshops and video resources as well as individual consultation for implementing UD. Over an 18-month period of collaborative training, qualitative feedback and reactions were monitored to better understand “stressors” and “facilitators” for campus constituents considering implementation of UD. Faculty responded positively to the framework and saw the linkage between UD and the development of long-term teaching practices. Challenges included lack of time and lack of support from faculty leadership. Administrators responded most positively to the rationale of UD as a sustainable approach to managing disability access (Fovet, 2012). The Disability Services office was recently awarded a three-year government grant in collaboration with other Canadian institutions to develop an online toolkit to support faculty in implementing UDL (Office for Students with Disabilities, n.d.). The work at McGill illustrates diffusion efforts that make notable use of formal social structures including collaboration with peer support offices (SEDE and CTL) and advocacy to include UD in campus conversations about the value of sustainable practices. The strategies used for training faculty by modeling UD practices and providing “grab and run tools” (Fovet & Mole, 2013) provide observable practices that address faculty time concerns.

Discussion

DOI theory offers a new lens for examining the appeal and rapid spread of an innovation, UD based approaches to inclusive college teaching. From our vantage point as early adopters and research faculty who teach undergraduate and graduate courses, DOI theory provides provocative perspectives on the future of this innovation. As change agents working to promote UD based instruction through a variety of professional development and training initiatives for more than 16 years, we find features of this theory of change to be intriguing. Elements of DOI theory suggest some predictable patterns and supports for diffusion that have not yet been fully explored. We identify and discuss four components that are promising

areas of focus for strategic planning: the impact of time, communication channels, social systems, and the innovation itself. Each component is discussed as it relates to advancing UD informed college teaching.

Time and decision-making. While efforts to promote this idea are widespread and impressive, we speculate that its diffusion is in the early stages of decision-making and adoption. The rapid expansion of knowledge about UD with examples at a global level reflect the work of innovators, early adopters, and change agents sharing early adoption initiatives. Knowledge of UD and persuasion based on concrete applications to college teaching represent the current status of the innovation-decision process. On a global level there is continued need for broad awareness initiatives and strategies. Professional forums for faculty in discipline specific conferences such as health sciences, modern languages, and STEM education, appear particularly apropos. Elements of state higher education systems including outreach and professional development resources for two-year or community college faculty are another promising outlet for advancing knowledge and awareness of UD. Individual institutions that are farther along in the decision-making process represent a potential cadre of leaders who can serve as models for the field by providing examples of success and failure as well as concrete outcomes.

Time and individual innovativeness. Innovativeness is a continuous variable and relates to individuals and their choice of whether and when to adopt a new idea. Early adopters, those who readily embrace new ideas, are adventuresome and risk takers. How this plays out in the culture and values of different higher education settings bears consideration. On one hand, if research and publications in refereed journals are the gold standard for promotion and tenure, faculty at research intensive universities in early stages of their careers may be reluctant or unable to engage in activities that are heavily focused on pedagogy. Yet, as societal conversations swirl around the cost and outcomes of college enrollment, accountability and institutional commitment to instructional excellence are sharpening the focus on learning and student competence. As the idea of UD based college teaching diffuses, leaders in the movement can take on a role of change agents who explore reasons some individuals are early adopters using that information to inform efforts that address potential barriers to diffusion. Early adopters are more interconnected by means of interpersonal networks in their social systems than later adopters (Rogers, 2003). They may be prime candidates to assume leadership roles in promoting this inclusive approach to teaching. Sharing their creativity in adapting and reinventing UD in their disciplines could generate excellent vignettes/case studies about implementation, its challenges, and its benefits.

Concrete examples providing clear applications and outcomes are important tools for persuading the next group of potential adopters, the early majority whom Rogers describes as pragmatists who are intrigued with change but require proof.

Another area for exploration centers upon institutional innovativeness. Within a college or university, are there programs or disciplines with a propensity for experimenting with innovation? Are there clusters of faculty across or within disciplines who are receptive to “taking the lead” in innovative and creative thinking and actions targeted on teaching for diversity? Campus centers for teaching and learning might serve as the nexus for showcasing innovative teaching practices through institutional awards centered on instructional excellence. Faculty who distinguish themselves by pedagogical creativity in their disciplines are a valuable resource who might form a core for faculty learning communities. Presentations by faculty at professional conferences and in scholarly publications about their ideas and outcomes of inclusive instruction can address unique disciplinary elements with which their colleagues can identify. Opportunities for peer-to-peer communication via interpersonal communication channels are important in advancing the change process from knowledge to persuasion and adoption.

Time and rate of adoption by the field. Diffusion studies typically describe the adoption of innovation as slow and gradual at the beginning with more rapid growth as the concept takes hold. Peer networks become more important in accelerating the decision-making process over time. Alignment of the innovation with existing value systems is apparent on campuses where UD adoption is underway. Tapping in to the variety of campus values and priorities ranging from diversity, to retention and graduation, to social justice, to sustainability initiatives, can provide fruitful linkages. Technology in the classroom has become the norm in higher education. With the expanding presence of blended and online classes, there is prime opportunity to anchor these learning environments in UD and inclusive instruction. Another accelerant for diffusion is the strategic collaboration with faculty opinion leaders on campus. In addition to serving as role models described previously, these faculty are typically well connected with a variety of colleagues. Their insights into how to design outreach and supports for colleagues who are perhaps less innovative in teaching are opportune. Examples from Project SHIFT participants illustrate the importance of considering campus culture for the evolving needs of the next adopter group. Peer training, online workshops, and faculty book clubs are a few of the activities that were successful in engaging faculty peers.

Communication channels and social systems. Different communication channels serve different roles at each stage of the innovation-decision process. To

expand knowledge about an innovation, mass media channels are more effective. Potential opportunities abound to expand global awareness of universal design via conversations about adoption of the *International Convention on the Rights of Persons with Disabilities* (United Nations, 2006), a treaty now signed by 159 nations and ratified by 152 (United Nations, 2015). This document including a definition of universal design comprises 50 articles delineating goals of full inclusion to protect the rights of persons with disabilities in the civil, political, economic, educational, social, and cultural spheres. By capitalizing on widespread discussion and advocacy surrounding this treaty, mass communication channels hold promise of rapidly spreading information about UD based instruction to reach a worldwide audience (Powell, 2013).

As early adopters of this instructional framework multiply, a challenge emerges about effective methods for moving beyond the awareness and persuasion stages to decision making about adoption. The importance of communication via near peers and both formal and informal structures on individual campuses cannot be overemphasized including open and constructive dialog about challenges of implementation and examples of reinvention or “fine-tuning” disciplinary based UD instructional strategies.

Closely aligned with communication channels are the social systems within which diffusion occurs. Within the hierarchy of higher education, organizational structures include senior administration, academic and student affairs units, and information and communication technologies (ICT) services, among others. As illustrated by the example of McGill University, opportunities for collaboration across units around shared institutional values may represent an untapped resource. In general, initial efforts to diffuse the notion of UD based instruction have emanated from campus disability services personnel. In her analysis of literature dealing with the diffusion of innovative teaching and learning practices in higher education, Smith (2012) found that strong senior level management support is a critical variable in the effective spread of an innovation. At a micro level, if the idea is to become systemic, conversations about implementation across relevant units of the system must expand beyond a disability context. Is this a role for a change agent, someone external to the system with expertise about systems change and the process of garnering institutional support for inclusive teaching? With the burgeoning role ICTs are playing in instruction, faculty and instructional design professionals working together could unleash dynamic synergy and create powerful alliances. Another challenge centers on extending the idea at a macro level, moving the dialog about inclusive instruction to a national and international audience of faculty.

Innovative opinion leaders within a discipline, those who can influence attitudes and behaviors of colleagues, could play a significant role by their leadership in social systems important to faculty such as professional associations and organizations. Within the context of research on the scholarship of teaching, a renewed emphasis on student learning has placed a spotlight on pedagogy (Hutchings et al., 2011). Drawing on emerging research about the benefits and outcomes of UD based instruction, intentional strategizing about approaches to systemic change that address diversity of learners could foster collaboration across higher education systems.

The innovation of UD. How do we maximize the already appealing attributes of UD applied to instruction? Diffusion research studies underscore the importance of intentionally showcasing the relative advantages of an innovation. Universally designed instruction is compatible with existing values and practices in higher education and flexible for faculty adaptation to fit their individual teaching styles and contexts. As the field prepares for later adopter groups of faculty, moving along a continuum from innovators, to early adopters, to early and late majority, the growing collection of observable strategies and outcomes will become essential tools for encouraging diffusion of UD with new faculty groups. Case studies of UD applications by faculty in varying career stages, disciplines, and campus settings can prove to be powerful tools for professional development (Scott & McGuire, 2015). Emerging strategies such as the UD Toolkit being developed by McGill University and informed “leader” colleagues are promising supports for reducing complexity in learning new skills or knowledge about inclusive approaches to teaching. Research in DOI has demonstrated that as an idea is implemented, reinvention often occurs as adopters customize its use to meet specific situations. An intriguing line of inquiry revolves around essential elements of various academic disciplines and whether reinvention occurs differentially in different fields of study. If UD is to thrive in college instruction, it is essential that adaptations and modifications over time keep pace with other pedagogical innovations that are a hallmark of college teaching and learning. Rogers (2003) stated that a higher degree of reinvention leads to a higher degree of sustainability, defined as “the degree to which an innovation continues to be used over time...” (p. 183). This clearly sets the stage for longitudinal research on anticipated and unanticipated results of this movement to promote instructional access and inclusion.

Conclusion

Viewing initiatives to infuse UD into college teaching through the lens of DOI theory offers a perspective on change that may alert proponents of the

movement to limitations that may impede its progress. Concerns about the DOI theory and factors affecting implementation of a UD innovation are relevant. Rogers pointed out that change agents and diffusion scholars have often overlooked the importance of studying an innovation’s consequences, a limitation that could be parlayed into an action agenda. For example, there is limited evidence about the consequences of infusing inclusive instructional strategies into college curricula, a critical fact that reflects the relative recency of the movement. There have been sporadic attempts to document outcomes, and scholars examining the efficacy of this approach are generating a small but growing research based literature (McGuire, 2014). This type of “proof” resonates with faculty and administrative audiences. Rogers also discussed pro-innovation bias, the assumption that an innovation should be adopted. Given the intuitive appeal of UD in general, this caution remains timely. Since the articulation of DOI theory, communication channels, an integral component of the change process, have been transformed by technology, particularly the World Wide Web. Messaging can occur across multiple audiences in widely disparate locations nearly instantaneously. The impact of this phenomenon as it relates to the knowledge and persuasion stages and rate of decision making remains to be examined. Limitations related to UD based instructional strategies and the process of adopting them also warrant attention. Smith (2012) found that challenges to successful adoption of a teaching and learning innovation can include support of high level administration, a sustainability plan, time commitment, faculty supports, contextual relevance, and institutional infrastructure. When viewed in conjunction with DOI theory, these factors may be particularly relevant at the decision and implementation stages. Other constraints on use of the theory include systematic ways to monitor implementation efforts. With a now global interest in this new idea, significant challenges exist to forging connections among multinational researchers. In what ways is the World Wide Web an agent of diffusion? Will implementation be sustainable? What factors affect sustainability? As articulated by Rogers, “The growth and development of a research field are a gradual puzzle solving process by which important research questions are identified and eventually answered” (2003, p. 106). Refining and investigating hypotheses will be instrumental in addressing limitations and objectively documenting intended and unintended consequences of this movement.

Despite these challenges, insights gained from DOI theory prompt the field to be intentional, reflective, and strategic in how we approach the spread and adoption of UD in college instruction. How far have we advanced along the innovation decision-making

continuum? Who is next in line for considering the adoption of inclusive teaching practices, and what does this mean for how we conduct outreach and support? Are there new ways to work through our communication channels and social systems to address some of the inherent and emerging challenges? How do we continue to reinvent UD in college instruction and document outcomes that make a difference? DOI theory gives us a lens for examining these and other provocative questions in ongoing efforts to understand and promote inclusive college instruction.

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- SALLY S. SCOTT, Ph.D., is Director of Research and Information Services at the Association on Higher Education and Disability (AHEAD). Three decades of work in the field of postsecondary disability have included positions as a faculty member, research associate, and administrator of disability resource offices. She has served as coordinator and principal investigator on three federal grants focused on the development of universal design for instruction (UDI). Research interests include applications of universal design in postsecondary environments, inclusive college teaching, and evidence-based practice in the field of postsecondary disability.
- JOAN M. MCGUIRE, Ph.D., is Professor Emerita, Educational Psychology, and Senior Research Scholar at the University of Connecticut's Center on Postsecondary Education and Disability. In addition to more than 80 refereed journal articles, \$2.7 million in external funding, and editorship of the *Journal of Postsecondary Education and Disability*, she has received awards from the University's AAUP (Excellence Award for Teaching Mentorship), the Council for Exceptional Children, and the Association on Higher Education and Disability. Professional interests include universal design for instruction (UDI); faculty training in inclusive teaching strategies; and postsecondary disability program development, administration.