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Universal Design and Continuing Professional Development for Architects: An Irish Case Study

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Abstract. The Tomar Resolution urged that all occupations working in the built environment be educated in the principles and measures of Universal Design in order to facilitate all people playing a full role in society. For Architects and Architectural Technologists, under-graduate education will continue to have a major role to play. At the same time in the Republic of Ireland, and in an ever-growing number of other jurisdictions, Continuous Professional Development (CPD) is a requirement for all Architects and Architectural Technologists and can significantly affect knowledge, skill and competence in a number of subjects including Universal Design. This paper looks at the results of a recent survey of Architects and Architectural Technologists practising in Ireland, architectural educators, and client bodies that sought to assess the following:

1. How inherent is Universal Design knowledge to current building design practice?
2. What are the current Universal Design education and training needs of Architects and Architectural Technologists practising in Ireland?
3. Which Universal Design themes and topics are of most interest to Architects and Architectural Technologists practising in Ireland?
4. To what extent does existing CPD for Architects and Architectural Technologists practising in Ireland address Universal Design topics?
5. What can motivate Architects and Architectural Technologists practising in Ireland to access Universal Design CPD?
6. What are the most effective means by which to deliver Universal Design CPD to Architects and Architectural Technologists practising in Ireland?

The survey discussed in this paper is one phase of a longer study aimed at providing a research base for developing CPD in Universal Design for Architects and Architectural Technologists practising in Ireland.

Keywords. Universal Design, continuing professional development, architecture

1. Introduction

Universal Design (UD) is now established as a core strategy in establishing environments that are accessible, understandable and usable by everyone, regardless of

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age, size ability or disability. The United Nations Convention on the Rights of People with Disabilities (UNCRPD) firmly reset the idea of equality and human dignity as applicable to all people, regardless of their state of embodiment or their specific capabilities, and marked UD as the means for applying these ideas to the built environment. The Council of Europe's Tomar Resolution supports this by highlighting the need to, "ensur[e] that the education and training of all occupations working on the built environment be inspired by the principles of Universal Design." Although the role of undergraduate education is vital in normalising UD as being integral to architectural practice, approaches for educating practising Architects and Architectural Technologists also need to be actively explored. Continuing Professional Development (CPD) or Further Education (FE) aims at maintaining standards within key professions and is mandated in the European Union by the 2005 EU Professional Qualifications Directive (Directive 2005/36/EC). CPD offers an unparalleled opportunity for disseminating knowledge and skills in UD to current practitioners.

In an Irish context there are two bodies in particular that can have a critical role in integrating UD content into CPD for Architects and Architectural Technologists: the Royal Institute of the Architects of Ireland (RIAI) and the Centre of Excellence in Universal Design (CEUD) at the National Disability Authority.

The RIAI has provided CPD to its members for many years and since its designation as the Registration Body and Competent Authority for architects under the Building Control Act, 2009, registered architects are required to attain a minimum level of CPD points annually in order to lawfully continue using the title of "Architect". Architectural Technologists and Architectural Graduate members of the RIAI are also required to attain the same minimum level of CPD points to retain their membership. The *RIAI Standards of Knowledge Skill and Competence for Practice as an Architect* directs Architects to maintain "necessary design skills to meet building users' requirements", particularly as it relates to regulation and legislation pertinent to "universal access". According to the RIAI's *Standard of Knowledge, Skill and Competence for Practice as an Architectural Technologist*, there is a requirement to maintain a knowledge of UD both in the context of "knowledge of current societal concerns, their changing nature and their integration into architectural technology practice" and in relation to "understanding of core construction legislation, regulations and related codes and standards".

The second body with a key role in integrating UD in CPD is the Centre for Excellence in Universal Design (CEUD) at the National Disability Authority. The CEUD is a statutory organisation with a legislative mandate to promote awareness, education and professional development, and standards development in UD in all its applications, including the built environment. The CEUD is the primary advocate and source of funding for Irish-focused research and publications in this subject.

This paper describes the findings from the survey stage of a larger study that is being carried out on behalf of both of these bodies. The aim of the study is to assemble research to inform the development of CPD in UD for Architects and Architectural Technologists in the Republic of Ireland. To do so requires assessing the knowledge that is currently inherent within the architectural professions, and to understand the appetite for different subjects related to UD in order to better understand the most effective means to develop and deliver new CPD in UD for Irish Architects and Architectural Technologists. The following research questions summarise the parameters of the investigation for the survey phase of the research study:

1. How inherent is Universal Design knowledge to current building design practice?
2. What are the current Universal Design education and training needs of Architects and Architectural Technologists practising in Ireland?
3. Which Universal Design themes and topics are of most interest to Architects and Architectural Technologists practising in Ireland?
4. To what extent does existing CPD for Architects and Architectural Technologists practising in Ireland address Universal Design topics?
5. What can motivate Architects and Architectural Technologists practising in Ireland to access Universal Design CPD?
6. What are the most effective means by which to deliver Universal Design CPD to Architects and Architectural Technologists practising in Ireland?

2. Survey Sample

Three main groups were targeted for the online survey: Irish Architects and Architectural Technologists, clients, and architectural educators. The first group, Irish Architects and Architectural Technologists, included participants who were members of RIAI and who received regular member newsletters. A short article in the monthly RIAI newsletter describing the purpose of the research provided the survey link to newsletter subscribers. An additional follow up correspondence was distributed to the subscriber list via email approximately 2 weeks after the survey was first publicised.

In addition to Architects and Architectural Technologists, clients and members of client bodies as well as Irish and international architectural educators were also invited to participate in the survey. While the perspectives provided by clients and educators yielded valuable insight into the development of UD CPD for Irish Architects and Architectural Technologists, this paper will primarily focus on documenting the perspectives of Architects and Architectural Technologists who responded to the online survey.

3. Survey Instrument

The survey consisted of questions that sought both quantitative and qualitative data. Questions included multiple choice, rating scale, and open-ended answer styles, and covered five major content areas: 1) background information about the participant, 2) existing UD knowledge, 3) perceived importance of and existing knowledge of the needs of different populations, 4) desirability of and current availability of CPD in identified UD topics/themes, 5) perceived effectiveness of different CPD delivery methods and motivating factors for undertaking UD CPD.

The first content area asked participants to identify their relationship to UD and the built environment (Architect, Architectural Technologist, architectural educator, or client), which then guided them to 1 of 2 different versions of the survey based on their responses. While the general content areas were the same in each version of the survey, the way in which particular questions were phrased was altered based on the role of the respondent. Additional information was sought related to the respondent's location, employment type and sector, and architectural qualifications. The second content area asked respondents to provide insight into their current understanding of UD as well the

most influential contributing sources to their current UD knowledge. The third content area sought information related to respondents' perceptions of the importance of understanding the needs of different populations as well as the perceived current level of understanding of these populations amongst Architects and Architectural Technologists in Ireland. The fourth content area gathered information related to desirability of particular UD themes and topics for CPD as well as the perceived availability of existing CPD in those same themes and topics. Finally, the fifth content area asked participants to share their perceptions of the effectiveness of particular CPD delivery methods as well as to identify motivating factors to encourage participation in future UD CPD. The survey concluded by giving participants the opportunity to provide additional feedback pertaining to UD CPD and contact information for the research team if they were interested in participating in later phases of the study.

4. Data Analysis

SurveyMonkey, an online cloud-based company, was used to collect survey responses. Responses were downloaded into Microsoft Excel and the Statistical Package for the Social Sciences (SPSS). SurveyMonkey recorded no identifying information from participants.

Descriptive, comparative, and correlational analyses were used to provide answers to the six research questions regarding inherence of UD knowledge to current design practice, current education and training needs of Irish Architects and Architectural Technologists, UD themes and topics of most interest to Irish Architects and Architectural Technologists, existing UD CPD for Irish Architects and Architectural Technologists, motivating factors for undertaking UD CPD, and the most effective means to deliver UD CPD to Irish Architects and Architectural Technologists.

5. Survey Responses

Responses to the survey were obtained from 382 participants including 315 Architects and/or Architectural Technologists, 23 architectural educators, and 42 clients. Descriptions for each respondent type are found in the Table 1.

Table 1. Number of Participants by Relationship Type (n=382)

Relationship	Number of Participants	% of Total Survey Answers
Architect or Architectural Technologist engaged in the design and construction process as part of everyday practice (public or private).	283	74.1
Architect or Architectural Technologist qualified to engage in the design and construction process but not currently doing so.	32	8.4
Educator in the field of architecture that, although may spend some time in practice or other settings, is actively involved in teaching architecture related material.	23	6.0
Client or client representative with direct experience interacting with an Architect and/or Architectural Technologist for your own project or if you have been involved in the procurement process as part of job responsibilities. Client may also have architectural qualifications, but more often serves in the role of client working with other Architects or Architectural Technologists.	42	11.0
Other (disqualified from taking survey)	2	0.5

5.1. Demographic Information

For the purposes of analysis, the responses from both categories of Architects and Architectural Technologists identified in the table above (in practice and qualified to practice but not currently doing so), were combined to produce aggregated figures representing the professions. Findings from the survey showed that while over 56% of Architects and Architectural Technologists taking the survey identified themselves as residing in County Dublin, all counties in the Republic of Ireland were represented in survey responses with the exceptions of Laois, Longford, and Monaghan.

The Architects and Architectural Technologists who responded to the survey also demonstrated diversity in the type(s) of organisation(s) in which they identified themselves as being employed. Over 84% (259) of respondents stated they currently work in private practice, while much smaller numbers reported they work in education/third level institution (3.3%), a local authority (6.8%), government department/agency (4.9%), or other work place e.g. consultant, research institute, developer, or retired (4.9%). Of the 84% of respondents that identified themselves as working in private practice, over 62% (162) stated they worked in a firm of 5 people or less—almost half of which identified themselves as sole practitioners.

275 survey respondents identified themselves as holding a qualification in architecture, while 72 identified themselves as holding a qualification in architectural technology. Given that only 33 people described themselves only as Architectural Technologists or similar, it can be assumed that more than half of those holding a qualification in architectural technology hold both qualifications. Additionally, about half of the total number of Architects and Architectural Technologists responding to the survey identified themselves as having held their qualification for 20+ years.

5.2. Existing UD Understanding

Generally speaking, Architects and Architectural Technologists indicated they feel they have at least a good understanding of UD. Over 63% respondents (194) rated their understanding of Universal Design to be good and over 11% (34) identified their understanding as excellent. A little over 5% of respondents rated their level of understanding as little or none.

6. Select Findings

The findings from the online survey yielded valuable feedback for each of the six research questions. Additional unsolicited information not discussed in this report that fell outside of the original scope of work for this research project, including suggestions for changes to third level education, was also offered which provides another layer of valuable insight into the education and interests of Architects and Architectural Technologists.

6.1. Inherence of UD Knowledge to Current Building Design Practice

To begin to understand the inherence of UD knowledge to current building design practice, the survey asked respondents to rate the impact different knowledge sources

had on their existing understanding of UD. Responses indicated the most impactful sources of UD knowledge amongst survey participants to be "Personal Experience with a Construction/Design Project" and the Irish UD guidance documents "**BUILDING FOR EVERYONE** and/or **UNIVERSAL DESIGN GUIDELINES FOR HOMES IN IRELAND**" with over 67% and 48.0% (respectively) of respondents indicating these sources impacted their current level of UD knowledge significantly. Just over 30% of respondents indicated CPD as a significant contributor while only approximately 28% indicated post-graduate education as a significant contributor. One of the least salient sources of UD knowledge, as perceived by respondents, was third-level education, with only 9% identifying it as a significant contributor.

Responses were further examined in relation to number of years of experience of the respondent (number of years post-qualification) with four sub-groups identified: participants 0-5 years post qualification, 6-10 years post qualification, 11-20 years post qualification, and 20+ years post qualification. While "Personal Experience with a Construction/Design Project" and "The Publications **BUILDING FOR EVERYONE** and/or **UNIVERSAL DESIGN GUIDELINES FOR HOMES IN IRELAND**" were identified by all groups as having the most significant impact, respondents with 0-5 years post qualification also identified "Post-Graduate Education" (46%) as well as "Work Colleagues/Peers" (42%) as two significant contributors to their UD knowledge. This rating decreased as the number of years post qualification of respondents increased with only 27% and 24% of those with 20+ years post qualification rating "Post-Graduate Education" and "Work Colleagues/Peers" (respectively) as significant contributors.

In addition to gathering input on the most impactful sources of information on current UD knowledge, the survey also sought information related to the level of importance placed by respondents on five concerns as they relate to design projects: sustainable design concerns, UD concerns, aesthetic concerns, economic concerns, and construction quality. Over 82% of respondents indicated that construction quality is very important, while only 54% identified UD concerns as very important. Sustainable design concerns were found to be slightly less important to the respondent group with only 48% identifying these concerns as very important.

6.2. Current UD Education and Training Needs of Architects and Architectural Technologists Practising in Ireland

Respondents were asked to rate the importance of Architects and Architectural Technologists understanding the needs of different population groups on a five-point scale (from "not at all important" to "very important"). To follow up, respondents were also asked to indicate their perceptions on the current level of understanding of Architects and Architectural Technologists (from "no understanding" to "very good understanding"). Architects and Architectural Technologists responded strongly in terms of level of importance for understanding the needs of most populations. While over half of respondents indicated that 6 of the 10 populations presented were very important to understand, over 76.4% identified understanding the needs of people with mobility difficulties as very important, closely followed by the needs of people with seeing difficulties and older adults (67.8% and 64.8% respectively). On the opposite end of the spectrum, only 34.8% of respondents indicated they felt understanding the needs of people of different genders is very important.

Interestingly, significant differences emerged when looking at responses based on respondents' experience (number of years post-qualification). While almost three-quarters of respondents in each age group indicated they felt understanding the needs of people with mobility difficulties is at least very important for Architects and Architectural Technologists, just over a quarter (28%) of respondents 0-5 years post-qualification indicated they felt understanding the needs of people with mental health conditions is at least very important for Architects and Architectural Technologists. Yet almost 50% of respondents who indicated they were qualified more than 5 years indicated that this population is very important to understand.

Although respondents indicated a high level of importance for understanding the needs of most populations, their perceptions of current understanding amongst the profession were not as positive. According to responses, the highest level of current understanding is of the needs of people with mobility difficulties with almost 70% of respondents indicating Architects and Architectural Technologists have at least a fairly good understanding of this population. The lowest values for having at least a fairly good understanding were for the needs of people with mental health conditions (12.0%) and people with hearing difficulties (22.1%).

In comparing these responses to those indicating perceived level of importance of understanding, significant knowledge gaps were identified. As shown in Table 2, the top three gaps were found in mental health conditions, hearing difficulties, and cognitive difficulties.

Table 2. Importance of Understanding vs Current Understanding - Architects and Architectural Technologists

Population	**At least *moderately important* to understand (%)**	**At least *fairly good* current understanding (%)**	**Numerical difference**
People with mental health conditions	80.1	12.0	**68.1**
People with hearing difficulties	87.3	22.1	**65.2**
People with cognitive difficulties	88.0	24.3	**63.7**
Caregivers (of children, family member, etc.)	77.4	32.6	44.8
People of varied size and stature	72.5	27.8	44.7
People with seeing difficulties	92.4	48.0	44.4
Children	85.9	49.1	36.8
Older adults	92.7	59.7	33.0
People with mobility difficulties	94.9	69.6	25.3
People of different genders	63.7	47.1	16.6

Clients and architectural educators responded similarly indicating that Architects and Architectural Technologists need a deep understanding of the needs of diverse population groups including people with mobility difficulties, seeing difficulties, and older adults. Additionally, their perceptions of current understanding amongst the profession were similar to those self-expressed by Architects and Architectural Technologists with over 67% of respondents indicating Architects and Architectural Technologists have a at least a fairly good understanding of the needs of people with mobility difficulties, which was the highest rating of any of the populations presented.

6.3. UD Themes and Topics of Most Interest to Architects and Architectural Technologists Practising in Ireland

To gather insight into CPD preferences related to UD topics and themes, Architects and Architectural Technologist respondents were asked to indicate how desirable particular

themes and topics would be for CPD (from very undesirable to very desirable). Over one-third of Architect or Architectural Technologists respondents indicated that all topics and themes presented were at least very desirable to undertake in CPD. Responses demonstrated the most desirable topics and themes to be accessibility (55.5%), design for health, safety, and wellness (51.7%), and the application of UD to specific building types and spaces (49.2%). Less desirable themes and topics, as indicated by the responses, included design for diversity (31.1%), design for human performance (29.9%), and design for social needs (28.7%). Clients and architectural educators identified similar themes and topics as being most important for Architects and Architectural Technologists to undertake in CPD.

6.4. Existing CPD in UD for Architects and Architectural Technologists

The previous section detailed preferences and levels of importance attributed to different topics and themes for Architects and Architectural Technologists in CPD. To follow up, Architects and Architectural Technologists were asked to rate their perceptions on the current availability of CPD in the same topics and themes (from "does not address at all" to "adequately addresses"). Despite many respondents indicating a reasonably high level of desirability for most of the UD topics and themes identified, perceptions of how well current CPD addresses these themes and topics were less positive. According to responses, the theme/topic addressed most adequately by current CPD is accessibility, with over 71% of respondents indicating the topic is at least somewhat addressed. The next most addressed topic/theme is design for health, safety, and wellness with only 59.6% of respondents indicating it is at least somewhat addressed. Three topics—application of UD to specific building types and spaces, application of UD to urban design, and application of UD to landscape design—had no respondents indicate they perceived the topics were at least somewhat addressed in existing CPD.

An examination of these results indicated a number of gaps in current CPD content based on the preferences shared by Architects and Architectural Technologists. As shown in Table 3, responses showed the largest gaps in desired knowledge versus available CPD are perceived to be in the areas of applying UD to specific building types and spaces, applying UD knowledge to urban design, and applying UD knowledge to landscape design.

Table 3. Desirability vs Current CPD – Architects and Architectural Technologists (n=265)

Theme/Topic	At least desirable (%)	At least somewhat addressed by existing CPD (%)	Numerical difference
Universal Design & Specific building types/ spaces	87.0	0	87.0
Universal Design & Landscape design	75.5	0	75.5
Universal Design & Urban design	73.3	0	73.3
Design for context	74.9	29.1	45.8
Design for human performance	69.3	24.9	44.4
Design for diversity	71.2	27.1	44.1
Design for social needs	74.3	30.3	44.0
Design for ease of use/comfort and convenience	84.5	42.0	42.5
Lifetime homes/Universal DesignUD homes	82.7	41.2	41.5
Design for health, safety, and wellness	87.0	59.6	27.4
Accessibility	85.7	71.8	13.9

6.5. Motivations for Architects and Architectural Technologists to Access UD CPD

While two of the primary objectives for conducting the survey were to gather perspectives on UD content and CPD delivery methods, it would be remiss not to consider the motivations of professionals for taking CPD, particularly UD CPD. Understanding motivations can be useful in designing course formats, content and delivery approach. As a result, the survey asked both samples—Architects/Architectural Technologists and clients/architectural educators—to rate a list of motivating factors for seeking out and undertaking CPD in UD (from "not at all influential" to "significantly influential").

Responses from Architects and Architectural Technologists indicated the most influential motivating factors for encouraging Architects and Architectural Technologists to undertake UD CPD do not stem from personal motivation but instead arise from external influences. Respondents rated a client requirement for UD knowledge as the most influential motivating factor, with over 72.7% of respondents identifying it as significantly influential. Changes in legislation were also identified as a motivating factor with 67.8% of respondents indicating it is significantly influential closely followed by potential RIAI requirement with 59.6% of respondents. Self-improvement factors including learning about human ergonomics and abilities and learning about user-centred design ranked the lowest with only 28.0% and 33.2% of respondents (respectively) identifying them as significantly influential as motivating factors for undertaking UD CPD. Responses from clients and architectural educators indicated similar findings to those found in the responses of Architects and Architectural Technologists with client requirement rated as the most influential motivating factor closely followed by changes in legislation.

6.6. Most Effective Means to Deliver UD CPD to Architects and Architectural Technologists Practising in Ireland

In an effort to gather additional information from respondents based on their personal experience with CPD, the online survey gathered feedback on the effectiveness of different delivery methods for UD CPD. The survey asked both Architect/Architectural Technologist and client/educator respondents to provide insight into the effectiveness of particular CPD delivery methods by asking them to rate the methods on a five-point scale from "not at all effective" to "very effective".

The responses from Architects and Architectural Technologists indicated that CPD delivery methods vary greatly in their effectiveness. According to the feedback provided, lectures/seminars/workshops organised by professional organisations are viewed as very effective, with over 73.7% of respondents indicating this in the survey. Lecture series followed by conference sessions and building tours also rated high in survey responses with 63.1%, 60.2%, and 56.9% of respondents (respectively) indicating that these methods are very effective. While almost 68% of Architect and Architectural respondents indicated they had experience with one or both forms of online CPD (instructor, no instructor), these two methods rated the lowest of any of the other methods with only 18.6% and 16.9% rating online courses with instructor and without instructor as very effective. When the results were examined in relation to the respondent's number of years post-qualification, out of the four groups (0-5 years, 6-10 years, 11-20 years, and 20+ years), respondents 11-20 years post-qualification rated online courses least effective with only about 11% of respondents rating online

(distance) education (instructor-led) and about 7% rating online (distance) education (no instructor) as very effective. Aside from this low rating, responses across experience levels for each of the different delivery methods were found to be quite similar with little variation. Again, clients and educators responded similarly to Architects and Architectural Technologists identifying lectures/seminars/workshops organized by professional organisations as most effective closely followed lectures series.

7. Discussion

This survey is one part of a larger, multi-phase study to investigate the most effective means to develop and deliver a program of CPD in UD for Architects and Architectural Technologists practicing in Ireland. The response rate to the survey amongst practitioners was good which indicates a general appetite for information and material about UD.

While there are still a number of stages remaining in this project in which to examine and validate the survey findings, including interviews with experts and educators, workshops with Architects, Architectural Technologists, educators, and clients, and a prototype course, findings are already suggestive of the types of CPD material that could prove attractive to Architects or Architectural Technologists. Similarly, indicators suggest that in-person delivery is preferable, while a potential area of deeper inquiry may be to probe why on-line delivery is less popular. In addition, the results begin to highlight the areas where disparity exists between where respondents felt they had good knowledge versus the population group and subjects about which they wanted to know more. These population groups included people with mental health conditions, people with hearing impairments, and caregivers, while the subjects included the application of UD to specific building types and spaces and to other fields such as landscape design and urban design.

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