The EU Accessibility Act and Web Accessibility Directive and the implications for Digital Teaching and Learning Materials

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Abstract

The European Accessibility Act and the EU Directive on Web Accessibility require that the online experience be made more accessible and inclusive for everyone. Currently, the focus is primarily centered on websites and online services associated with the public sector. However, as these online products and services improve these same legal requirements are likely to also impact digital teaching and learning materials created for and by educators in the coming years. There are many online and on campus courses (accredited and unaccredited) available to help to guide and inform educators on the importance of using high quality digital materials that are truly accessible. Many courses also provide the instruction that is necessary in creating such digital resources. However, a “knowing-doing” gap still prevails. This article discusses the impact of the new regulations associated with the European Accessibility Act and the EU Directive on Web Accessibility for the education sector in Ireland and provides some recommendations on what can be done to address the “knowing-doing gap” and support faculty to create high quality digital teaching and learning materials.

Keywords
Digital pedagogies; UDL, Accessibility, e-learning; technology enhanced learning

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Introduction

The World Wide Web was initially set up as a text-based information system, and the aesthetics of website design or key usability principles were not the most important aspects of an online presence for either commercial or training purposes. As the web began to be used for commercial activity, early websites were not significantly concerned with how accessible online content was for people with disabilities (Acosta-Vargas et al., 2016). Many schools also provided an online presence but could not have been described as accessible. However, disability rights have become a global focus of the human rights agenda in recent decades (Greco, 2016). This focus now includes how this group accesses online information across all aspects of their lives. There is a growing number of organisations, both for profit and not for profit, advocating and campaigning for a better online experience for all. Organisations such as Usablenet, founded in 2000, have been responsible for helping to make websites accessible and usable for everyone. Usablenet works with government agencies, universities and large and small companies to provide accessibility solutions where necessary. Usablenet also provides an annual report that provides details on the number and type of digital accessibility lawsuits taken against organisations for not complying with their legal requirements.

This article outlines the regulations currently required for public sector online digital content and discusses how, in the future, these regulations may impact digital teaching and learning materials created by and for educators. The challenges associated with creating high quality digital content that is truly accessible are also examined. This includes both the technological challenges and the deficiencies in the supports offered.

What is accessibility?

In recent years digital teaching and learning resources are being incorporated into both online and face-to-face classrooms to a much greater extent across all levels of education (Marcus-Quinn & Hourigan, 2021). Educators are also much more aware of student diversity in their classrooms. The promotion of the UN Sustainability Goal 4, “Quality Education”, and the targets within that goal that relate to a quality education have enabled stakeholders to highlight the deficiencies that currently exist with some digital content. Goal 4 includes several targets which focus on trying to achieve more equitable access to quality education for those with special needs. The European Accessibility Act and the Web Accessibility Directive have heightened public awareness of accessibility issues in recent years.

European Union requirements: the European Accessibility Act

Ferri and Favallini (2018) state that it is crucial that future European Union (EU) digital policy action be underpinned by the principles of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) in order to successfully improve the social inclusion of people with disabilities in a modern digital society. There has been a lot of research undertaken to examine the impact of the UNCRPD and while this movement has helped to bring about improvements for students with disabilities it is still difficult for the majority of these students to gain access to an education that can be considered to be truly inclusive (Buchner et al., 2021). The European Accessibility Act (EAA) was published on June 28, 2019.

The Web Accessibility Directive

EU member states must have transposed the European Union Web Accessibility Directive’s provisions into national law by June 28, 2022. Within the next three years, educational publishers must have implemented the requirements of the EAA. The Directive underlines, in general, that access to audio-visual content or e-book files should allow users with disabilities to use their assistive technologies. All products shall comply with the accessibility requirements set out in Section I of Annex I of the Web Accessibility Directive. This legal obligation will ensure that everyone, including those with disabilities, will benefit from a greater supply of accessible products and services including e-books. For students using e-books this means that they will be able to participate more actively in class (Axelrod, 2018).

The Web Accessibility Directive is extremely important in terms of milestones of improvement for equitable access to online resources and services. The Web Accessibility Directive ensures that people with disabilities are entitled to and provided with access to websites and mobile apps within the public sector. In Ireland, the Directive was transposed into Irish law in September 2020. Currently, Irish public sector bodies must provide an online experience that is accessible to everyone, and this includes people with different abilities. Under S.I. No. 358/2020 - European Union (Accessibility of Websites and Mobile Applications of Public Sector Bodies) Regulations 2020 (including W3C WCAG 2.1 Standards), all public sector bodies in Ireland including universities and schools are required to make their websites and mobile applications accessible and have a clear accessibility statement on their website. The National Disabilities Authority (NDA) has responsibility for providing guidance and overseeing compliance on this regulation. The Web Accessibility Statement, at a minimum, underlines the commitment of institutions to create and maintain a positive online user experience. The NDA is the national monitoring body in Ireland responsible for periodically monitoring the compliance of websites and mobile applications of public sector bodies. Websites should, at the very least, adhere to the POUR principals detailed in the Web Content Accessibility Guidelines 2.1 websites and the content provided on the website should be Perceivable, Operable, Understandable and Robust. These same principles apply to digital materials for teaching and learning.

1. Perceivable: the criteria allow the product to be perceivable by people, regardless of their disabilities.
2. Operable: the user interface components and navigation must be operable.
3. Understandable: the information and the operation of user interface must be understandable.

4. Robust: the content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

**Accessibility in professionally produced digital materials**

Traditionally, accessibility has often addressed on an individual basis; where an individual student requests an accessible version of an assigned text for their course. Accessibility typically refers to a version of the text that can be or has been manipulated to meet the student’s need(s). Many publishers of educational and academic textbooks, including the Irish Educational Publishers’ Association (IEPA), deal with these requests on an individual basis. Publishers will make every effort to accommodate requests but cannot guarantee the availability of a particular title, or a title in a specific format. These representative bodies of publishing groups have had their own policies and processes in place to manage such requests for accessible texts and materials and have, where possible, facilitated requests for modified copies of textbooks for school children and students with special needs. These applications and requests have to be made on an individual basis and required a lot of administrative work for both those applying for the access and those granting access to the accessible material. For example, when a student or their parent/guardian submits a request for an accessible text to the IEPA in accordance with the General Data Protection Regulation (GDPR) and the Irish Data Protection Act 2018, the centralised IEPA Special Needs Access Policy requires written parental consent together with written confirmation by the school Principal of the individual student. Therefore, in order to gain access to an accessible text the parent/guardian would have to complete the Special Needs Access Process as follows:

1. Complete the IEPA Special Needs Access Request Form (which can be downloaded from the [IEPA website](#)).
2. This form must then be submitted to the relevant publishers via the email address provided on the website (there are several educational publishers operating in Ireland).
3. The publisher(s) in question will respond regarding the terms of the provision of files / granting of access (payment/proof of purchase, copyright forms, data retention policies, etc.).
4. Files / Access will be provided to the student in question on completion of the previous steps.

The process for getting access to accessible e-books as outlined above is similar in other countries. Therefore, the requirements associated with the EAA and the Web Accessibility Directive will have a hugely positive impact for everyone in terms of gaining access to accessible e-books for education.

AHEAD is an independent non-profit organisation working to create inclusive environments in education and employment for people with disabilities. The [AHEAD website](#) provides a useful overview of the practical implications of each of the four key pieces of legislation which deal with the rights of people with disabilities in education and employment.

If we are to improve the accessibility of digital materials used for teaching and learning across all sectors of education, we need to look beyond what we are legally obliged to make accessible and start to address the lack of accessible digital material in the education sector (Oncins & Orero, 2021). This next section focuses on what is being done in an Irish context to make the education sector more accessible for all. When it comes to digital content, accessibility is not something that is easily retrofitted afterwards (Lewthwaite et al., 2018). Not all digital content being used at a post-primary level is necessarily of a high quality or accessible (Dunne et al., 2020) and this is also the case for third level.

In the roadmap for social inclusion (2020-2025) the Irish government has committed to continue to improve retention rates at second level. In 2005 the Department of Education and Skills in Ireland launched an Action Plan for Educational Inclusion. The plan focused on addressing the educational needs of children and young people from disadvantaged communities, from pre-school through second-level education (three to 18 years). The plan merged a number of existing programmes under the framework of Delivering Equality of Opportunity in Schools (DEIS). As of July 2022, there are 323 primary schools and 38 post-primary schools participating in the DEIS programme. In 2018, the retention rate at second level in a DEIS school stood at 85% whereas the national norm stood at 91.6%. Goal 4 target 5 of the Sustainability Goals aims to “eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations” by 2030 (UN Sustainability Goals). Internationally, there is a lot of research that focuses on student retention at third level and many report that students with disabilities who do transition from second level education to post-secondary education are considered less likely than the wider student population to complete this education (Mac Domhnaill et al., 2020; Newman et al., 2020). Other studies note that “where students with disabilities have accessed either universal or disability specific student supports, they have been more likely to persist in college programmes” (Mac Domhnaill et al., 2020 p. 17). Internationally, there is a drive to broaden the diversity of the student body studying at third level (Orero, 2021). Ireland also shares this ambition. Broadening the diversity of the Irish student body which includes colleges of further education, institutes of technology and universities, is a part of the Government’s national strategy and in Ireland, all of the universities have policies in place pertaining to access, and widening participation and equality and diversity. The purpose of such policies is to provide entry mechanisms and support services that help to promote equality of entry and
participation for all. In attracting students from a broader base than previous generations may have experienced the government hopes that higher level institutions of education will become more representative of our modern Irish society. As a means of widening participation in third level in Ireland, participating colleges have developed a range of initiatives, including the Disability Access Route to Education (DARE) and other supplementary admission routes.

It is clear that striving for better accessibility for all in education is a complex process and that efforts must be sufficiently funded. During 2021, universities in Ireland were allocated significant government funding as part of an initiative aimed at improving access to higher education for students with disabilities. The initiatives support students with disabilities to access and engage with higher education. For example, in 2021 the University of Limerick was allocated almost EUR 600,000 under the scheme including funding for the purchase of assistive technologies.

Some of the projects funded at the University of Limerick include:

- Strategic development of disability student supports through an occupational therapy framework
- Blended learning programme on assistive technology, Universal Design for Learning (UDL) and accessibility in higher education
- Captioning outsourcing project in education (COPE) – pilot
- Exploring best practice for hard of hearing students using technology in HE (joint project with TU Dublin)
- Promoting inclusive mainstream practice through the provision of Gaeilge and Irish English text-to-speech (TTS) resources (sectoral project led by the University of Limerick).
- Developing a University of Limerick universal design strategy

In 2022 the Department of Further and Higher Education, Research, Innovation and Science made funding totalling EUR 40 million available to universities and colleges to make them greener and more accessible. Each institution can choose how to allocate the funding for key capital investment priorities including:

- investments to support universal access
- energy efficiency and decarbonisation upgrades
- general ICT and equipment-related upgrades
- health and safety works, and other building upgrades
- minor works and equipment

In the wake of the announcement, many universities stated that the funding would allow them to ensure that they could continue to make progress ensuring that their physical and online campus experience could strive to be inclusive and accessible for all.

**Faculty awareness of UDL at third level**

It has been acknowledged in the literature that the adoption of UDL and accessibility principles to teaching and learning can improve the experience for all learners but particularly for students with disabilities (Grifull-Freixenet et al., 2017; O’Shaughnessy, 2021). However, for the digital content and resources to be compliant with UDL principles and to be considered truly accessible they must be carefully planned (Marcus-Quinn & Hourigan, 2017). Accessibility is not something that can be “bolted-on” afterwards. As the diversity of learners at third level grows there is a need for more user centred design.

There is a perception that artificial intelligence and automated approaches will provide the solutions to making the online world more accessible and will allow institutions to meet their legal obligations in terms of content accessibility (Goel, 2020; Knox, 2020; Kuleto et al., 2021; Tait & Pierson, 2022). The proliferation of technological developments used to improve the online and digital experience for all can support professionals working in accessibility, but human involvement is still necessary. For example, auto transcription can be extremely good but is rarely 100% accurate and where a high-quality transcription service is required professional human-based processes will still be required and preferred by many (Oncins & Matamala, 2021). Providing subtitling, audio description and avatars used for sign language will require professionals for the foreseeable future.

There are challenges associated with the provision of inclusive and accessible education. We can acknowledge that there is a growing awareness but that barriers remain (Corby et al., 2022). Ştefan et al. (2021) among others cites three main challenges to students being able to access digital content that is accessible:

1. Lack of awareness: a significant number of the content creators (teachers, instructors, learning designers) are not aware of the existence of these functionalities.
2. Lack of adequate training: many have not received specific training that would enable them to create accessible content.
3. Limited visibility of accessibility features: functionalities that ease the creation of accessible content remain difficult to access.

Internationally, there has been an increase in the number of accessibility and UDL courses available online. There is an abundance of choice of online courses with content available from Coursera, MiriadaX, and LinkedIn Learning. These courses are regularly revised and updated to reflect best current practices in UDL and accessibility. There are also case studies published on the impact of such courses. For example, the University of Atlántico in Colombia published a case study on the Massive Online Open Course “Inclusive Educational Contexts: Design for all.” Their experience acknowledged the significance of design for all in inclusive virtual education.
by incorporating UDL principles into course design and considering accessible resources (Nieves et al., 2019).

Since the pandemic there is a heightened awareness in the education sector of the need to democratise access to online education and the result is that there has been an increase in the number of Continuing Professional Development (CPD) courses in UDL and accessibility principles available to educators. Some of these courses are accredited and have formal assessment and UDL credits associated with them. Many countries are also offering badges in UDL and accessibility principles. These badges offer faculty the opportunity to engage in ongoing CPD in the area of UDL and accessibility do not carry any ECTS credits. In Ireland, AHEAD (an independent non-profit organisation working to create inclusive environments in education and employment for people with disabilities) in collaboration with the National Forum for Teaching and Learning has developed a digital badge in UDL for faculty working in the third level sector (AHEAD, 2017). Participants are introduced to the concept of UDL, provided with related reading material and they engage in a range of activities that enable them to understand the key principles of UDL and how these principles can be incorporated into their own classrooms (both physical and online) and teaching practice. Historically, the custom and practice of traditional teaching methodologies may not have had accessibility at the core, but the majority of educators have always strived to be inclusive in how they have structured their teaching and learning. That faculty are willing to invest their time in such CPD is contributing to the growing evidence that such inclusivity is a necessary part of the modern teaching experience (McCarthy & Butler, 2019). At an international level there is a growing number of communities of practice working to highlight the benefit of a more inclusive approach to the design and development of digital teaching and learning materials. These groups are actively promoting accessibility considerations for digital resources and online supports. One such network is the European Cooperation in Science and Technology (COST). COST is a funding organisation for research and innovation networks and funds “Actions” to help connect research initiatives across the EU. One current COST Action LEAD-ME which began in 2020 and will run until 2024 aims to help all stakeholders in the field of Media Accessibility and related areas in Europe to meet the legal milestones requested by the recently passed EU legislation. This COST Action brings together researchers, engineers, scholars, businesses and policy makers to collect, create, share, and disseminate innovative technologies and solutions, best practices and guidelines, and promote them. As part of the ongoing work of this Action, training schools have been held in media accessibility thereby increasing awareness and skills in what is required when creating or sourcing inclusive digital content.

Challenges to creating accessible digital content

The multitude of courses and professional training available in accessibility and UDL should translate into digital teaching and learning experiences that are truly accessible. However, for many working in the education sector the “knowing-doing gap” remains. This refers to the gap that traditionally occurs when people “know” what should be done but there a number of challenges and barriers in place that prevent action being taken (Pfeffer & Sutton, 1999; Pfeffer & Sutton, 2000).

The costs associated with designing and developing material that is accessible and compliant with the new regulations are difficult to measure. There have been some research and case studies which have attempted to calculate the true cost of creating and providing accessible digital programmes. The cost of the provision of digital devices and associated software can be calculated but it remains quite difficult to calculate the costs of designing and delivering whole digital training programmes (Joshi et al., 2022). The differences between disciplines compound the challenges of estimating the true costs involved.

Podcasts have become a popular resource amongst faculty at third level institutions (King & Piotrowski, 2021; Moore, 2022; Parsons, 2021; Shah Ahmad Shahrizal et al., 2022). The financial cost of the time invested by a faculty member to create a podcast is frequently overlooked. Academics will also favour using free online tools, such as Audacity, to create podcasts. The editing stage for a podcast with a duration of 45 minutes can be quite onerous; especially when an accurate transcript is created. Creating a human transcript (document comprising 8,000-10,000 words) for a 45-minute podcast has been noted as taking on average three hours to create (Marcus-Quinn & Clancy, 2022). This does not include any time dedicated to the preparation of the actual podcast. Videos to augment existing teaching and learning practices have also been popular in recent years but the pandemic saw the use of video and recordings become much more prevalent at third level. Again, the primary costs associated with video production is the time taken by the academic to script, record and edit the content. Similar to the production of podcasts many academics will have turned to free and open-source software to create video content. In a recent case study, costing the time taken to create video content for undergraduate Physics modules, the production time considered comprises the process of capture and editing using free pieces of software such as OBS Studio and Kdenlive (Marcus-Quinn & Clancy, 2022). The data in this case study has a mean production time of 108 minutes and standard deviation of 109 minutes and found that for every hour of video 3.57 hours of production time was required. Ongoing usability of digital content is also necessary and must be factored into any development plans for accessible digital content. It has never been clearer that we now understand to a much fuller extent that there is a significant commitment of time required to make high quality digital content that is truly accessible. We must put this knowledge into action and, as Pfeffer and Sutton have stated, “the knowing is insufficient and action must occur” (1999, p. 105).

It is clear that there is an appetite among educators to do the right thing and to provide digital content that is compliant with both the new and any forthcoming legislation pertaining
to accessibility. However, the workload that is associated with created high quality digital teaching and learning materials cannot be ignored (Gregory & Lodge, 2015; Miller, 2019). Technology enhanced learning has been a feature of both second and third level for many years, but it was the global pandemic that forced many into adopting more of a digital component into their teaching and learning practices (Murphy et al., 2021; Washburn et al., 2021; Zhu & Liu, 2020). Historically, the academic workload allocation has not considered to any real extent the level of time and effort required to make high quality digital materials that are compliant with copyright and meet the needs of all students.

What can be done?
The EU Commission has recently (October 2022) published a report on quality investment in education and training. This report examines the policy discourse about the use of digital learning in Higher Education. Most importantly, the report highlights what is missing from the supports. The most cost-effective strategies for the inclusion of high-quality digital education in higher education are considered and these include:

1. Providing opportunities for high quality blended learning.
2. Specific arrangements to promote more equity in the digital learning opportunities for all students

All of these strategies require significant investment, but this level of commitment is what is necessary to support faculty in addressing the challenges of creating accessible content. Training and sharing the latest research and information with stakeholders is critical if there is to be an improvement in terms of both the digital teaching and learning content and universal design implementation in digital educational settings (Mehigan et al., 2022).

Conclusion
At a global level the UN sustainable development goals, including Goal 4’s focus on Education have facilitated a worldwide discussion on what a high-quality digital learning experience should be.

The European Accessibility Act and the Web Accessibility Directive have heightened public awareness of accessibility issues in recent years. In Ireland, the education sector is aware of the legal requirements that it must meet since the Web Accessibility Directive was transposed into Irish law in 2020. It is important to acknowledge the increase in positive advances that have been made in recent years in terms of enhanced accessibility of digital teaching and learning materials. Technological developments including, automatic speech recognition and the many online transcription services have allowed faculty to provide more accessible digital materials to students. However, it is clear that, despite the technological advances, this work in making digital materials cannot be fully automated at this time and human expertise is critical to the success of a positive online experience. Universities and other institutions of higher and further education must provide resources for this activity if they want to adequately address the “knowing-doing gap” and support faculty to create high quality digital teaching and learning materials. It takes a lot of effort and experience to create digital instructional resources that are UDL compliant and have accessibility concepts ingrained in them from the planning stages. As such, their design and development must be suitably resourced.

Data availability
The data for this article consists of bibliographic references, which are included in the References section.

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