Access and participation: The use of technologies as tools for inclusion by Spanish university lecturers

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Spanish face-to-face universities experience constant challenges that threaten the inclusion of students with disabilities. Adopting inclusive pedagogies can support universities to develop a more inclusive approach. This paper explores the extent to which the use of technology influences the inclusive pedagogies of Spanish university lecturers. In particular, we focus on how lecturers use technologies to promote student participation and accessibility in Spanish institution. A qualitative methodology involving semi-structured in-depth interviews with 42 Spanish university lecturers regarding their inclusive practices and use of technology was employed. The results contribute four fundamental findings: (a) Lecturers who practise inclusive pedagogy can be differentiated as proactive or reactive; (b) University lecturers place greater emphasis on the use of technology as a promoter of accessibility rather than as a tool to promote participation; (c) There is a disconnect between knowledge of universal design for learning and the use of the technologies; and (d) The full transformative potential of technologies to facilitate the inclusion of learners with disabilities is not being harnessed. All these results allow us to highlight some key points about the use of technological tools in the application of inclusive pedagogy in university classrooms.

Implications for practice or policy:

- Spanish face-to-face universities still need to harness the full transformative potential of technologies to facilitate student inclusion.
- There is a need for more professional development programmes within higher education institutions that focus on the potential of technologies to promote inclusion.
- Universities have an important role to play in promoting the use of technological tools to ensure accessibility and participation of all students, especially students with disabilities.

Keywords: inclusive pedagogy, disability, technology, participation, accessibility, higher education, qualitative study

Introduction

The focus of this article is the inclusive teaching practices of university lecturers in Spain, focusing in particular on how university lecturers use technology to promote the educational inclusion of students with disabilities. We define disability broadly to include physical, sensory, social, cognitive and affective disabilities. For the purposes of this article, we define technology as the standard technologies all students use or access as part of their studies. Examples include learning management systems (LMSs), university websites, email, online discussion forums, wikis and blogs. With regards to inclusion, we understand this as being multi-factorial, involving issues of access, accessibility, participation and equity (Li & Carroll, 2020). In addition, we argue inclusion and exclusion need to be addressed across the student life cycle:

- enabling students with disabilities to gain access to higher education study
- ensuring students with disabilities can participate in the same or similar learning opportunities and experiences as students without disabilities and ensuring that learning materials and resources are accessible

- ensuring students with disabilities can successfully complete their studies and achieve equitable academic outcomes.

In this article, we focus on the classroom teaching practices of university lecturers in Spain and the extent to which they use technologies as tools to promote accessibility or participation.

The context

The inclusion of students with disabilities is an important issue for higher education because evidence indicates that although more students with disabilities are accessing higher education, significant numbers of students with disabilities do not complete their studies or achieve poorer academic outcomes compared to non-disabled students (Cage & Howes, 2020). Internationally, statistics reveal that the numbers of students with disabilities entering higher education is increasing (Newman et al., 2011). For example, the National Center for Education Statistics noted that 19% of undergraduates in the United States of America reported having a disability in 2015–2016, an increase of 13% compared to 1999 (National Center for Education Statistics, 2016). In the United Kingdom, figures for 2019–2020 reveal that 17.3% of higher education students reported a disability, indicating an increase of 47% since 2014–2015 (Higher Education Statistics Agency, 2022). In Spain, in the 2021–2022 academic year, a total of 22,156 students with disabilities were enrolled in universities (Fundación Universia, 2023), which represents an increase of 75% in the period of a decade. Figures like these might suggest that significant advances have been made in the inclusion of students with disabilities in higher education. However, access to higher education on its own does not guarantee positive outcomes for students with disabilities (Gibson, 2015).

The dropout rate at university for students with disabilities is higher than that of other students (Cage & Howes, 2020). For example, 23% of undergraduates who reported a disability in 2012 graduated with a bachelor's degree by 2017, compared to 38% of students without disabilities (Postsecondary National Policy Institute, 2022). Canadian, American and British data show that students who enrol but do not complete a higher education programme are less likely to be employed and more likely to receive a lower salary than a graduate (Advance Higher Education, 2018). In the United Kingdom, there is also evidence of a persistent attainment gap, where students with disabilities obtain poorer degree outcomes than non-disabled students (Office for Students, 2020). This gap exists in all four nations of the United Kingdom (Equality Challenge Unit, 2014) and has been highlighted as a priority issue that universities need to address (Millward, 2019). This indicates that it is important to identify the significant enablers and barriers to the academic success of students with disabilities in higher education to guarantee equal opportunities and the inclusion of students with disabilities (Datta et al., 2019; Edwards, 2019).

Literature review

In this section, we review the literature relating to inclusive classroom teaching practices in higher education and the use of technologies in order to scope the extent to which accessibility and participation form a core component of proposed inclusive pedagogies and practices.

Classroom teaching practices

Unsurprisingly, much attention has been focused on the classroom teaching practices of university lecturers (Moriña & Morgado, 2018). In terms of access, a significant barrier that has been identified by students with disabilities is the inaccessibility of learning materials (Odame et al., 2021). In terms of participation, significant barriers exist, including the absence of reasonable adjustments in teaching methodologies and the rigidity of assessment processes (López-Gavira et al., 2021). This suggests that lecturers are not responding to individual students and not accepting that diversity across the student population can present opportunities to transform pedagogy and practice rather than troublesome problems.

In an effort to conceptualise inclusive pedagogy and help practitioners understand the factors that contribute to the development and implementation of the inclusive classroom teaching practices, a framework has been proposed that comprises beliefs, knowledge, designs and actions (Florian, 2014; Gale & Mills, 2013; Rouse, 2017). Beliefs are closely linked to teaching practice (Sansom, 2020) and are often very stable personal assessments that are difficult to change (Göransson & Nilholm, 2014). In inclusive pedagogy, beliefs are understood as all those conceptions, principles or assumptions that lead university lecturers to design and develop their teaching practice to include all students, while avoiding singling out and treating students for being different (Florian, 2014). One of the biggest influences on inclusive pedagogy is the conceptions that lecturers hold around disability. For example, if their conceptions of disability are underpinned by a medical model of disability, as opposed to a social model of disability, their practice will be more likely to focus on adjusting the student with a disability to a particular disabling environment, rather than adjusting the disabling environment.

Rouse (2017) and Gigante and Gilmore (2020) have argued that university lecturers need to have knowledge of relevant theories (e.g., social model of disability or universal design for learning) as well as policies and legislation (e.g., national disability discrimination or equality laws). In this knowledge-related dimension, training for university lecturers is particularly relevant (Carballo et al., 2021). Numerous studies have highlighted how a lack of training can affect a lecturers' abilities to respond to the needs of students with disabilities (Moriña et al., 2020). Rouse stressed that university lecturers need knowledge related to teaching strategies, disability and student needs, classroom organisation and management, external support and the legislative and political context, among others. Training university lecturers in all these issues could increase their sensitivity and support them to design teaching taking into account the needs of all students and thus benefiting the student body (Moriña et al., 2020).

Design relates to those issues that university lecturers take into account when planning accessible teaching projects. One of the most commonly advocated approaches to design is universal design for learning (UDL), which is proposed as a possible path towards the inclusion of students with disabilities at university. UDL prioritises proactivity over reactivity and encourages lecturers to anticipate the diverse needs of the student cohort at the point where they are designing learning materials and experience. However, this will minimise the extent to which materials and activities have to be adjusted after they have been designed, as well as the extent to which students have to advocate for access or accommodations (CAST, 2018). The need to focus on both accessibility and participation is implicit in the underpinning principles of UDL. For example, CAST proposed three principles of UDL:

- multiple means of representation: to give learners various ways of acquiring information and knowledge
- multiple means of action and expression: to provide learners alternatives for demonstrating what they know
- multiple means of engagement: to tap into learners' interests, offer appropriate challenges and increase motivation.

The first principle focuses on making learning materials accessible, the second and third principle focus on ensuring participation in learning activities and experiences. Despite the fact that there is relatively little empirical evidence that adopting UDL has a positive impact on student outcomes (Seale, 2017) and growing concern that the "brain research" evidence that CAST and its advocates cite has similarities to the largely discredited learning styles research (Boysen, 2021), UDL is the most dominant design approach in higher education.

Actions are understood as those affective, emotiona, and teaching-learning strategies put into practice in the development of teaching. From this perspective, students are conceived as the protagonists of their own learning and university lecturers as their guides. Sánchez-Díaz & Morgado (2021b) identified the existence of certain characteristics of university lecturers who carry out inclusive classroom practices. These include the development of flexible educational practices, the accessibility of materials and resources that support the students' learning process, a willingness to present content through different

channels and the use of different methodologies and teaching strategies to respond to the needs of their students. In this respect, Seale et al. (2020) emphasised that when materials, resources, tools and devices are not accessible, inclusive teaching is less likely to be achieved. Finally, in relation to actions, the affective-emotional component of teaching is fundamental. Lubicz-Nawrocka and Bunting (2019) have pointed out that university lecturers who maintain relationships based on closeness and trust with their students develop strong feelings of belonging to the group.

In the study reported in this article, we used the inclusive pedagogy framework of beliefs, knowledge, design and actions to seek to understand the inclusive classroom teaching practices of lecturers in Spanish universities.

The use of technology in classroom teaching practice

There is consistent and substantial evidence that technology both enables and hinders the inclusion of students with disabilities in higher education (Fichten et al., 2020). In terms of facilitating access to higher education, the use of online learning can enable students with certain disabilities, such as mobility impairments, specific learning difficulties and poor mental health, to participate fully in higher education (Sánchez-Díaz & Morgado, 2023). For those students with disabilities who are not able to travel to campus to study or who find campus-based learning difficult, online learning offers them the opportunity to access the course at home and still feel like they are part of the class. Students who find it difficult to take notes during classes can benefit from technologies such as audio recorders on smartphones which enable them to record lectures or the opportunity to download their professors' lecture notes from the LMS. Students who need support to structure their ideas and arguments can benefit from concept mapping software such as Inspiration (Seale, 2018).

Technology can act as barrier to inclusion in a number of ways. For example, there is consistent evidence that students with disabilities can feel stigmatised by their use of specialist assistive technologies, which are perceived by their peers and lecturers as marking them out as different. This can lead them to reject or abandon their technologies, even if they find them helpful (Seale, 2014; Tsatsou, 2021). Another technology-related barrier to inclusion is a lack of accessibility. A raft of studies report that students with disabilities have difficulties accessing digital versions of textbooks, university websites and other digital resources such as handouts and presentations (Campoverde-Molina et al. 2023; McNaught & Alexander, 2021). There are two main reasons for this. Firstly at an institutional level, technology related policies and procedures fail to make accessibility a core requirement, when procuring digital resources from external companies (Fichten et al., 2020). Secondly, at the classroom level, university lecturers do not take the needs of students with disabilities into account. Examples include being unwilling to provide alternative formats for learning materials and resources (Cain & Fanshawe, 2020), not allowing students with disabilities to use their personal mobile technologies in class (Fichten et al., 2020) and being inconsistent with the way resources are presented and structured in the LMS, so that students with disabilities find it difficult to navigate and locate the information they needed (Podsiadlik, 2023). Exclusionary practices such as these have resulted in calls for university lecturers to change or adapt their classroom practices and for university lecturers to receive more training so that they can enhance their knowledge of how to use technology as a tool for inclusion rather than exclusion (Seale, 2014).

In the UDL and technology literature, there are lots of examples of how lecturers can apply UDL principles to their use of technology. For example, Garrard and Nolan (2023) and Espada-Chavarria et al. (2023) have offered technology-related examples of the three UDL principles proposed by CAST (2018). Principle 1 suggests that the lecturer provide multiple representations of the same information, such as pre-recorded YouTube videos of lectures, lecture transcripts in both Microsoft Word and PDF formats, an audio recording and Prezi presentation slides. Principle 2 suggests that the lecturer provides multiple means of expression such as allowing students to submit a formal written essay, a Microsoft PowerPoint presentation or a recorded oral presentation. Principle 3 suggests that the lecturer provides multiple means of engagement such as enabling students to access the LMS from any device, at any time from any place. Burgstahler (2015) has argued that UDL needs to be applied at both the micro and macro levels in instruction. The macro level involves evaluating the learning goals and objectives of a course and applying

the right method of teaching for each goal. The micro level focuses on the detail of making teaching resources accessible. We would suggest that the macro level is about participation whilst the micro level is about accessibility.

In a review of the technology and accessibility literature, Seale et al. (2022) noted that there have been many criticisms of UDL, which may be due in part to the fact that there are many variants of UDL and therefore a potential lack of consistency in defining it (Edyburn, 2010). Two particular criticisms of UDL identified by Seale et al. (2022) are that adopting a "one size fits all" approach, while appealing, is unachievable in practice and that a universally designed digital learning resource may still present challenges for some individual learners.

In this paper, we present the results of a study which attempted to capture detailed descriptions and insights into the nature of inclusive teaching practices in higher education. We aimed to address the following research questions:

(1) Are university lecturers using technologies as tools to promote accessibility?
(2) Are university lecturers using technologies as tools to promote participation?
(3) To what extent is lecturers' use of technologies informed by UDL?

Materials and methods

This study is part of a wider research project funded by the Spanish Ministry of Science and Innovation titled Inclusive Pedagogy at University: Faculty Members' Narratives (MINECO, ref. EDU2016-765887-R), which aimed to find out how inclusive university lecturers develop inclusive pedagogy. This study used a biographical-narrative research design to interview inclusive university lecturers about what they do, how and why they do it. As part of this interview, university lecturers were invited to describe and discuss their use of technologies, and it is this aspect of the data that we particularly focus on in this paper.

The Spanish university context

The university lecturers who participated in this study belonged to six public universities in Spain, where face-to-face teaching is provided. Official university degrees are divided into undergraduate studies (4 years) and postgraduate studies, which include master's degrees (1–2 years) and doctorates (3 years). In Spain, all public universities have disability support services for students with disabilities. These services ensure that these students have the necessary resources for the development of their learning process and advise lecturers on the reasonable accommodations to be made, if necessary.

Participants

A total of 42 university lecturers from six Spanish universities, teaching in faculties of Education Sciences, participated in this study. The selection and recruitment of the participants involved two stages. Firstly, students with disabilities from the participating universities were asked to nominate, on a completely voluntary basis, those university lecturers who they felt had carried out inclusive practices in their classrooms and who, therefore, had a positive influence on their academic performance. To support this nomination process, students were provided with a set of criteria to be met by these university lecturers. These criteria were drawn from a study conducted by Moriña et al. (2015) in which the life histories of university students with disabilities from one Spanish university were analysed in order to identify the characteristics of "ideal faculty". Example criteria include their teaching is active, using different methodological teaching strategies; they show concern for their students' learning; they show flexibility, with a willingness to help; they motivate students; they maintain close relationships and favour interactions between students.

In the second stage, once the students had provided their nominations, the nominated lecturers were contacted through a formal email, where they were introduced to the study and their participation was

requested. A total of 65 university lecturers were contacted, of whom 42 participated. Prior to carrying out the interviews, participants signed an informed consent document in which they were guaranteed anonymity and confidentiality of their personal data throughout the research process, in accordance with the Organic Law 3/2018, on the Protection of Personal Data and the Guarantee of Digital Rights (Boletín Oficial del Estado, 2018).

At the time of the study, the age of the participants ranged from 33 to 59 years, with an average of 41.2 years (*SD* = 7.18). A total of 17 (40.5%) were male and 25 (59.5%) were female. The participants' teaching experience ranged from 7 to 32 years, with an average of 15.8 years (*SD* = 3.54). The participants belonged to different discipline areas: social sciences (40%), arts and humanities (31%), health sciences (17%) and sciences (12%).

Data collection instrument and procedure

The research was carried out on the basis of two individual interviews designed ad hoc for the study. Prior to its application, the interviews were piloted with 17 university lecturers who did not participate in the study. All considerations or suggestions for modification were analysed and discussed during several meetings held by the research team, in order to create the final instruments. The final interviews focused firstly on the beliefs and knowledge of university lecturers, and secondly, on exploring the design of educational projects and actions carried out by university lecturers in the classroom to facilitate inclusion.

The interviews were conducted by the members of the research team. Most of them were carried out face-to-face (*n* = 34), but for practical reasons six were conducted via Skype and two by phone call. All of them were audio-recorded and lasted between 60 and 90 minutes. This study complied with the ethical requirements approved by the Spanish Ministry of Science and Innovation.

Data analysis

Data collection was carried out over a period of 7 months (March to October 2019). The information collected in the interviews was transcribed verbatim in all cases. It was subsequently coded manually by seven coders, which ensured the accuracy of the results. Finally, it was processed through the qualitative data analysis software MaxQDA, using an inductive system of categories and codes, which allowed the information collected to be organised and made sense of. Thus, based on the interview script, a very broad system of categories was created, which was subsequently completed in a second stage of coding the interviews, through which new codes appeared. Table 1 below reflects the categories and codes used for the development of this study. In the Results section, we present extracted quotes from the interviews and use “P” (participant) followed by a number to distinguish between quotes from different participants (e.g., P1, P2).

Table 1
System of categories and codes used

Dimension	Category	Subcategory	Indicators (Codes)	Description
Beliefs	Beliefs about disability	Conceptions of disability	A1. Medical model	Understands that the cause of disability resides in the individual
			A2. Social model	Understands that the cause of disability resides in society, which is not sensitive to all people.
			A3. Inclusive approach	Understands disability from a human rights advocacy perspective.
Knowledge	Disability-related knowledge	UDL	B1. Knowledge of UDL	University lecturers are aware of the concept of UDL and its underlying principles
			B2. Minimal or no knowledge of UDL	University lecturers lack knowledge of the concept of UDL and the principles that underpin it.
Designs	Design of pedagogical projects	General design considerations	C1. Flexible/open	The pedagogical project makes it possible to introduce changes in the elements that make it up, favouring the accessibility and participation of the students.
			C2. Closed/not modifiable	The pedagogical project does not allow the implementation of changes in the elements that make it up, favouring the accessibility and participation of the students.
Actions	Lecturer practices in the classroom	Methodology strategies	D1. Active	The methodologies enable the active participation of the students. Students are the protagonists of their own learning process.
			D2. Not active	Methodologies are neither active nor participatory. Students do not take an active part in the lessons.
		Use of technology	E1. To promote accessibility	To promote access to the materials, lessons, etc.
			E2. Encourage student participation	To promote the participation of students with disabilities in the same way as all other students.

		E3. Both	To promote both equal access and equal participation of learners.
	Reasonable adjustments	F1. Proactive	University lecturers adjust their teaching to the whole student body prior to the start of teaching practice.
		F2. Reactive	University lecturers adjust their teaching to the students who require it in the course of their teaching practice.

Results

The results revealed a wide range of profiles of the university lecturers. With respect to the use of technologies, the majority of university lecturers described using a small range of standard technologies that had been mandated by their institutions, such as the Virtual Campus for uploading study materials, email for communicating with students and presentation software for producing lecture slides and handouts. A small number of university lecturers used a more diverse range of technologies including wikis, blogs and YouTube video; but this was not a common practice. Our analysis suggests that when lecturers used technologies, they were using them more as a tool to enable accessibility than as a tool to promote participation. Furthermore, their use of technologies was rarely explicitly linked to knowledge about UDL.

Different ways of understanding disability

Our analysis shows that university lecturers conceptions of disability fell into two main categories. They either drew on the social model of disability (*N* = 26), arguing that disability is a consequence of a disabling society; or they supported inclusive approaches (*N* = 14), defending the need for all students to benefit from quality education and to participate fully in the teaching-learning processes:

> It seems to me that the society we are building is not ready to accept diversity ... So, it worries me, but it doesn't worry me about the person, it worries me about the social conditions, because I think we are not ready for that yet. (P2)

> Well, diversity, inclusion, democracy, equity. (P10)

> Challenge comes to mind. I don't know if it is because I also have a disability. It is a challenge for the student, it is a challenge for you, that you have to start knowing how to manage these different need. (P39)

Only two of the participants, from the science area, drew on the medical model to define disability:

> The idea that comes to me is someone with a limitation and with specific needs in order to be able to lead a normal life. Someone always comes to me who needs something extra, who with everyday life is not able to lead the life we lead. (P30)

The use of technologies as tools for accessibility

Some lecturers described using technology to facilitate access to materials any time or anywhere:

> Also post the videos or the links, or rather the links to the videos, so that they can watch them at home. (P12)

However, it was more common for lecturers to talk about using technology to provide alternative formats for learning material:

> I provide them with the materials in a format with enlarged print or, instead of a Power Point, they can convert it into a Word document and then convert it with their little programmes. (P29)

> I believe that the more senses we bring into play, the easier it is for us to get the information. They have auditory and visual material, which, in many cases, like the Power Point presentation, can be voiced. So they have a lot of possibilities […] The fundamental recommendation, which is very simple, is to give them the information in Word, or put it on the platform in Word, why? Because they can expand, add, remove ... That's the fundamental recommendation. (P9)

The use of technologies as tools for participation

We found very few examples of university lecturers using technologies to transform how students with disabilities participated in classroom activities. One rare example was a participant who described how they encouraged their students to use a wiki to collaborate on the production of a classroom diary. Students were asked to record notes on what happened in each class, to record any difficulties they had in the class and give feedback that would help their peers address these difficulties. Although the lecturer did not explicitly state that they had designed the use of the wiki specifically to benefit students with disabilities, it was clear that they believed that an important outcome of using the wiki was inclusion:

> This one is like a Wiki, it's built from the first day of the class, so that one person is in charge of collecting everything that happens in the class one day, and the rest of the people can also make their interventions if they see it necessary. So, the collaborative classroom diary is like a diary of what happens in each of the sessions. This allows us to have collective notes, independently of those of each of the students. So, on the one hand, they are considered to be general notes, but they are also a tool that allows us to have some knowledge of what has happened in the previous class. Or it allows the student, before coming to class, to read it, and to know what happened the day before, which is also possible. So, it is one more instrument of inclusion. (P18)

Although technologies were not routinely being used to transform how students with disabilities participated in classroom activities, some university lecturers did describe how they used technologies to enable students to communicate their needs in relation to both participation in classes and accessibility of materials:

> Normally I go and say "whatever you need to tell me, anything, any modification that you suggest, go ahead, ok?" And, above all, in the first classes I say "hey, how are you doing, how are you doing", and in the virtual campus activities and so on, I see if he is doing them or not and if he is not doing them, I ask him. (P22)

> I have sometimes used forum and chat tools to discuss some unclear activities with the class. I tend to use the messaging tool so that they communicate with me not only through email. (P12)

Analysis of the interviews suggest that this use of technology was strongly motivated by beliefs regarding the importance of maintaining close relationships with students and listening to their needs. In this case, encouraging participation was related more to promoting a sense of belonging than promoting engagement in activities.

The influence of UDL on use of technologies as tools for accessibility

Across the interviews, a small number of lecturers explicitly talked about their use of UDL, suggesting that they were consciously adopting UDL principles when making learning materials accessible:

> I try to design in a way that fits all students regardless of their circumstances, characteristics and so on. […] Well, I think they are aspects that benefit any student, everyone, starting from the belief or the conception when you are going to design that you want to reach everyone, that's the key. […] I'm currently working on an exhibition and I'm thinking about how I can start from the UDL, because experience is telling me that there is diversity in the classroom. (P29)

However, it was not common for UDL to be mentioned in relation to technology use: Where lecturers did reference their understanding of UDL in relation to using technology to make learning material accessible, they sometimes expressed concern that they lacked the digital knowledge and support to do this consistently well:

> UDL means that when we plan a course, we have to take into account that it is very broad and that we cover the maximum number of students, and then we readapt it in each of the classes. […] And for students with disabilities, if you adapt the material to accessible content, it's the bomb. In the 2009–2010 academic year I had everything adapted, but the subject could not be left with content that had not been updated, so what happened? Well, I needed a technician again. And what I often do is that I say "well, I'm going to give a voice to this presentation", but not to all of it because I don't have any knowledge either... it's very difficult for me. (P9)

The influence of UDL on use of technologies as tools for participation

Across the interviews a small number of lecturers talked in general terms about how principles such as diversity, flexibility, and accommodating individual differences influenced their attempts to promote participation in learning activities. However, it was not common for this implicit reference to UDL to be applied to technology use:

> I think we should be aware that when you include, you make all the strata richer and better. (P31)

> The fact that an activity can be done by people with disabilities increases the percentage of people who don't have the label who can probably do it […] I think that, except for specific things that are not very relevant, that do not need to be mentioned, then, without a doubt, the methodology you propose, that is flexible, open, participatory, cooperative, that there is learning among equals. (P22)

Interestingly, the lecturer who described the use of a wiki to promote participation in learning activities demonstrated a nuanced awareness of UDL. They were aware that ideally inclusive practice should be proactive in terms of anticipating students' needs but were critical that in reality much of the practice labelled as being UDL appeared to be reactive and focused on offering specialist individualised solutions:

> I think that in an inclusive class, the necessary adjustments are always made. But not a posteriori, but a priori. I think that when we think of the class, we think of everyone, and if that is the case, we don't need other types of adjustments afterwards. The real adjustment

> is when you think about all your students. […] If you go to some experience of universal design in the university, you say "God, this is more exclusive than other times". Because in the end, what they've done, they've turned it into adaptive technology. (P18)

Their use of a wiki appeared to be linked more to their passion for cooperative learning than UDL:

> Right now, the dynamic is that everybody is sitting in groups, in their cooperative work group. At this moment, they would be elaborating as a team a design on how they want to do the transfer of what they have learned so far […] they now have to make a presentation on what they have learned about other people in the community […] then, they have to make a didactic design of how they are going to transfer them, they have to put together a small didactic sequence where they present the theme of inclusion, and they have to prepare them in sign language to be able to participate in an activity collective of coexistence. And there, they have to collect information from the people they are going to invite to see also, what their needs are. (P18)

This raises important questions regarding whether and how university lecturers are able to align their personal pedagogic theories of the best way to learn (e.g., cooperative learning) with pedagogical theories relating to inclusive teaching practices. It also has implications for inclusion focused staff training. A common assumption is that in order to promote inclusive pedagogies we need to exclusively focus on raising awareness and understanding of the principles that are argued to underpin inclusive pedagogy, such as UDL (Seale, 2014). These are often presented as something new or additional that lecturers have to learn. Based on our results, there may be a case for arguing that staff training should seek to build on what exists, rather than creating something new, by seeking to support lecturers to identify the extent to which their existing pedagogies can reflect or amplify the principles of inclusive pedagogy.

Discussion

In this paper, we have present the results of a study which attempted to capture detailed descriptions and insights into the nature of inclusive teaching practices within Spanish universities. With regards to research questions 1 and 2, our analysis indicates that lecturers place greater emphasis on the use of technology as a promoter of accessibility than on its value as a tool that promotes student participation. This may be explained by the type of teaching offered at the universities participating in the study, since all of them teach in a face-to-face format. The reality, therefore, could be very different if the participating lecturers were teaching at online universities, as can be seen in the studies by Seale et al. (2020) and Cash et al. (2021). Another possible explanation for this finding may relate to a lack of training in the use of technology, which is a need according to the lecturers in this study. Along these lines, the studies by Moriña et al. (2020) and Morales-Torres et al. (2021) have highlighted this and explained the importance of using technologies to transform traditional training models, allowing individualisation and flexibility in teaching in order to respond appropriately to the needs of students.

With regards to research question 3, our analysis suggests the presence, broadly defined, of two types of inclusive teaching profiles. Some lecturers are more proactive, such as the profile of P18, and others are more reactive, such as P22 or P31. There are several differences between these profiles that are worth noting. The more proactive profiles are those who have more training or knowledge about the reality of people with disabilities and about those strategies and issues that favour the inclusion of students (Rouse, 2017). Moreover, their teaching practices are designed with the principles of UDL (CAST, 2018) and their pedagogical actions are focused on promoting the active and participatory role of students, offering support so all students participate in their learning process (Sánchez-Díaz & Morgado, 2021a). We are, however, particularly intrigued by the fact that some of the lecturers were more reactive than proactive in their use of technologies. On the surface, this would appear to contradict the central tenet of UDL regarding the importance of proactivity, and yet these teachers were nominated by their students as being inclusive lecturers who have had a positive influence on their learning. However, UDL does not seek to eliminate reactivity, rather it seeks to minimise it. This has implications for staff training and

development in relation to UDL use in terms of supporting staff to understand the nuances of the UDL principles but also encouraging active reflection on the extent to which reactivity is perceived as a failure to apply the UDL principles or a success in terms of delivering other forms of learning that could also be considered inclusive, such as personalised learning.

The results of this study also show that there is a disconnect between knowledge of UDL and the use of the technologies. It may therefore be helpful for staff training to focus on developing the technological competencies of lecturers as well as their knowledge and understanding of UDL principles, particularly in relation to promoting student participation (Basilotta Gómez Pablos et al., 2022). For example, lecturers could be made aware of the different ways to encourage student participation through the use of technologies, for example, by using innovative and inclusive methodological strategies such as gamification or flipped learning (Moriña, 2021), by implementing m-learning in the classroom, using applications such as Mentimeter or Padlet to explore students' opinions and previous ideas (Mahoney & Hall, 2017) or by using assistive technologies (Seale et al., 2020).

Finally, the results of this study suggest that the full transformative potential of technologies to facilitate the inclusion of learners with disabilities is not being harnessed. Making university classrooms technology-friendly environments where inclusive pedagogy is implemented is not an easy task. Enhanced training with a combined focus on both technology and inclusive pedagogy such as UDL may offer one solution to this problem. Although there are other additional barriers that limit the transformative potential of technologies, such as inaccessible or stigmatising technology designs, insufficient technical support staff and a lack of institutional commitment, studies such as this one reinforce the argument that in order to transform the inclusive learning experiences of our students, we need to do more than transform technologies and institutions – we also need to transform teaching practice.

Limitations, strengths and future research

One of the limitations of the study lies in the number of universities participating in it, which may be low. It would also be interesting to have had the experience of university lecturers who teach in distance learning universities. In addition, this research was located in Spain. A study that considers possible differences between Spanish and other international contexts (e.g., English, American or Australian) could provide additional interesting findings. Finally, another limitation is related to the fact that this study focuses on practices that facilitate the inclusion of students with disabilities. It would be enlightening to develop future studies where other non-traditional student groups are taken into account. These are all issues that should be taken into account in future research, with the aim of further advancing knowledge of inclusive teaching practices in higher education.

Despite the limitations mentioned above, this work has strong implications for professional practice. It highlights the need for higher education institutions to consider and offer training plans for lecturers that deal with two fundamental contents in order to continue advancing towards a more inclusive educational practice in universities. Firstly, in the use of technological tools to support accessibility and participation of all students, especially students with disabilities. Secondly, it is important to provide information and training for university lecturers on the principles of UDL and similar frameworks.

Author contributions

M. N. Sánchez-Díaz: Conceptualisation, Data curation; Investigation, Methodology, Software; Writing – original draft, Writing – review and editing; **B. Morgado**: Conceptualisation, Investigation, Supervision, Writing – review and editing; **J. Seale**: Conceptualisation, Investigation, Writing – review and editing.

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