Disability evidence review with TASO

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1. Executive Summary

Overview

This evidence review explores what works to reduce equality gaps for disabled students in higher education (HE) through an extensive systematic review of the academic literature, engagement with expert stakeholders, and analysis of institutional data.

Disability inclusion (DI), the extent to which higher education providers (HEPs) support disabled students' equal access to university and equal opportunities to do well compared to their non-disabled peers (Evans & Zhu, 2022), was examined through the analysis of 491 academic articles (n=408) and reports (n=83), a review of a representative sample of English HEI and College institutional Access and Participation Plans (APPs) (n = 68), and consultation with expert stakeholders (n= 53).

Organisation of the review

Section 1 provides the overview of key findings. *Section 2* introduces the context of DI in higher education[1]. In *Section 3* the evidence review methodology is outlined (further information on the technical details of the review are located in Appendix 1. *Section 4* outlines DI findings from the literature. *Section 5* identifies the 12 key DI themes derived from the combined data sources (see also Appendix 2) and provides evidence to support the efficacy of different approaches to DI. *Section 6* draws on access and participation plan (APP) data to explore the nature of DI in the context of English Higher Education Providers (HEPs), with Appendix 3 providing a focused examination of APPs across the student lifecycle, and identifying research and practice gaps. *Section 7* utilises findings from stakeholder interviews to substantiate the 12 identified core DI themes. *Section 8* considers implications of the review findings for research and practice and provides recommendations in moving DI in higher education forward.

Evidence review findings

Methodological considerations

- Only 12% of the academic articles (n=49) were of the highest quality in terms of reliability and validity; this finding is consistent with international comparative reviews of the literature (Madaus et al., 2018).
- There is little evaluative work exploring the outcomes and effectiveness of DI approaches (Hughes & Spanner, 2019; Papay & Grigal, 2019), with few longitudinal studies examining the sustained impact of approaches to DI (DSC, 2021d; Kutscher & Tuckwiller, 2019).

[1] Higher education is the name for qualifications and courses you take after 18. It includes diplomas, foundation years bachelor degrees. Some students may go to university or into another type of higher education earlier than 18 years old. www.nationalcareers.service.gove.uk/explore-your-education-and-training-choices/higher-education

- Research studies demonstrating causal effects comprised only 2% of our data set; the relative lack of such methodologies is comparable to findings in other international reviews (Madaus et al., 2021).
- Intersectional variables implicated in disabled student success matter, but only 4% of articles directly considered intersectionality.
- Most research aggregates students with disabilities into seemingly uniform groups ignoring the fact that students with specific disabilities have unique and complex needs (Austin & Pena, 2017).
- The significant international and local variations in how disability is understood, defined, and classified makes comparisons between studies difficult (L'Ecuyer, 2021).
- There is little information on implementation procedures and outcomes making replication of initiatives to promote DI difficult (Papay & Grigal, 2019).

Focus of DI research

- Research is focused on undergraduate populations with only 2% of the literature capturing the postgraduate student experience. There is very little research on international disabled students' experiences (Duma & Shawa, 2019; Kruse & Oswal, 2018).
- There is a lack of work 'researching from the margins' (i.e., encompassing the voices of those most marginalised, for example, disabled students from lower socio-economic backgrounds, and with multiple disadvantages and disabilities (Waterfield & Whelan, 2017).
- In considering disability type, most attention is placed on disabled students with cognitive and specific learning difficulties and autistic-spectrum disorders (ASD).
- Much of the data on continuation statistics considers undergraduate students' first-to-second year experiences, with little attention afforded to progression during and beyond the second academic year of study.
- Disclosure is difficult, and a stumbling block for disabled students, and staff in HE (Harpur & Szucs, 2022; Merchant et al., 2020).

Equality of access and equal opportunities to do well for disabled students and staff

- The WHO benchmark of disabled persons in every population is 15.6% (SImui et al., 2019), however disabled student access to higher education across the globe is extremely variable (30% in the Netherlands to < 0.1% in Zambia).
- Disabled students fare less well than their non-disabled counterparts in terms of access to, and success within and beyond HE, with certain groups of disabled students facing greater challenges than others.
- In England, while 17.3% of all home undergraduate students reported a disability in 2020-2021 (Hubble & Bolton, 2021); this figure varies enormously from 1.4% at the London School of Economics to 19.8% at Wrexham Glynder in Wales, with 97% of HEPs having rates below 15% (Sunday Times Social Inclusion Rankings, 2022).
- The research reveals key facilitators and barriers to disabled student access to HE. Key barriers include but are not limited to: (i) disconnects between how disability is managed

in secondary/high school compared to HE, making initial transitions difficult (Hector, 2020); (ii) very real physical barriers to disabled student access in HE (in virtual/digital and physical environments) (Williams et al., 2019); (iii) fear about the potential negative impacts of disclosure (Aquino, & Bittinger, 2019); (iv) lack of quality of supports (timing, relevance, utility etc.) (Chatterway, 2019); (v) lack of curriculum access (GDI Hub and Snowden Trust, 2021) and (vi) the need for specialist DI careers support (CSJ, 2021).

Disabled staff context within higher education

- Only approximately 5% of UK academic and 7% of non-academic staff declared a disability (2019-2020 data), with numbers dwindling to 3.2% and 3.6% for research-focused and academic senior managers respectively (Advance HE, 2021; HESA, 2022). These figures need to be looked at against overall UK data on disability suggesting that 14.6 million people (22% of the population) had a disability in the UK in the 2020/21 financial year. The prevalence of disability rises with age: in 2020/21 around 9% of children in the UK were disabled, compared to 21% of working age adults and 42% of adults over State Pension age (Kirk-Wade, 2022).
- The literature and data suggests there is a lack of disabled staff in leadership positions within HE impacting progress in developing fully inclusive communities (Harpur & Szucs, 2022; Martin, 2017) as highlighted in recent reviews of the relative inclusivity of the research and innovation landscape (UKRI, 2022).

Disabled student access and performance across different disability profiles

- The research suggests that those with **hidden disabilities** face greater difficulties in accessing accommodation, and that students with mental health and neurodiverse conditions are especially apprehensive around disclosure. The pattern is complex and detailed understanding of context is needed (Clouder et al., 2019; McEwan & Downie, 2019).
- Students with **cognitive or learning difficulties** while experiencing better continuation rates (from year one to year two) than their non-disabled peers in English higher education providers, had lower performance (achievement of a first or upper second-class degree) than their non-disabled peers (the degree attainment gap is -2.6% in 2019-20 and -2.3% in 2020-2021) (OfS, 2021; OfS, 2022).
- Students with **social or communication impairments** (e.g., ASD) in English HEIs or Colleges had the worst attainment record (a gap of -3.3% compared to their non-disabled peers) (OfS, 2022), and the worst progression rates into high skilled employment or higher-level study of -11.5% compared to their non-disabled peers (DSC, 2021a; Hubble & Bolton, 2021; OfS, 2019, 2021). Students with **autism spectrum disorder** (ASD) often experience poorer postsecondary employment outcomes (Chen & Yakubova, 2021; Gurbuz et al., 2019; Safer et al., 2020). ASD students reporting psychological disorders or depression are higher than national benchmarks (Sturm & Kasari, 2019).
- Students with **mental health conditions** had the poorest rates of continuation from year one to two of all disabled student types, but their attainment (achievement of a first or 2:1 degree) was close to that of their non-disabled peers in 2019-2020 (OfS, 2021), and marginally better than non-disabled students in 2020-2021(OfS, 2022).
- Safer et al. (2020) found that students with **hearing impairments** were most likely to discontinue after the first semester.

- The DSC (2021) report noted higher rates of unemployment post-graduation for students who were **blind or had serious visual impairment or physical impairment or mobility issues**. Roughly 42.8% of young people with 'a seeing difficulty' aged 16-25 are not in employment, education or training (NEET), in the UK compared to 21.7% of 16-25 year olds (Chatterway, 2019)

Intersectional factors impacting outcomes

- Disabled students from low socio-economic backgrounds, ethnic minorities, first generation students, those with weaker social networks and without strong parental support, and with multiple disabilities are at higher risk of not completing or succeeding in HE (Vaccaro et al., 2019).
- Gender effects on outcomes are mixed, and dependent on disability type, cultural and individual differences (García González et al., 2021; Safer et al., 2021).
- Attainment gaps are accentuated when ethnicity is included in analyses, with Black disabled students doing least well and especially when socio-economic status is factored in (Druckman et al., 2021).
- Part-time disabled students are especially vulnerable and often have poorer learning outcomes; this is especially true of students with cognitive or learning difficulties in the UK (OfS, 2022). Part-time disabled students with cognitive or learning difficulties and social or communication disabilities performed less well.

What does the evidence tell us?

- A key aim of this combined evidence review was to explore causality: '*the use of methods which demonstrate that an activity has a 'causal impact''* (OfS, Type 3 evidence). Of the 408 studies reviewed only ten Type 3 studies were identified, with nine of these being of acceptable quality in terms of reliability and validity. Intervention studies were also explored, with 35 of 62 of these being of acceptable quality.
- In triangulating data from the academic literature, expert reviews, institutional access and participation reports, and consultation with stakeholders (interviews and surveys) it was possible to identify 12 key themes impacting DI within HE.
- In privileging causal and correlational studies aligned with the remit of this review, activities that provided the strongest evidence of impact to enhance DI included:
    - accommodations,
    - assistive technologies, and
    - self-advocacy/self-regulation approaches involving the development of students' cognitive, affective, and metacognitive skills, with associated impact on
    - transitions' approaches.
- In examining research in these core thematic areas (accommodations, assistive technologies, self-advocacy approaches, and transitions), key principles underpinning effective activities included:
    - the importance of anticipatory rather than retrofit designs in engaging *with* disabled students to enhance access to learning, teaching, and research (Cinquin et al., 2021; Nieminen & Pesonen, 2020)
    - a shared language of disability (Pearson, et al. 2019)

    - collaborative activities (Koushik & Kane, 2019; Moon & Park, 2021)
    - attending to disabled students' academic and social integration (Goegan & Daniels, 2019), and a co-ordinated cross-function/sector approach (Evans & Zhu, 2022). The need for an integrated approach to DI, bringing together teams from across and beyond institutions, and the important role of faculty and specialist support in enabling disabled student success in HE is noted (DSC, 2022; Williams et al., 2019).
- Gaps in research are highlighted. The importance of training to support understanding of DI and enhanced faculty awareness permeate the literature (Baker et al., 2021; Shaw, 2021). However, less than 1% of articles with the highest quality (n = 49) addressed this issue. In contrast, while there is a significant body of work on inclusive approaches to learning and teaching including Universal Design for Learning [2], the relatively poor quality of interventions make it difficult to make inferences about causal factors (Nieminen & Pesonen, 2020).

Recommendations

- This combined evidence review highlights the need for focused research in developing and testing the efficacy of integrated approaches to DI; the Disability Inclusion Institutional Framework (DIIF) (Evans & Zhu, 2022) is one such example of this approach to DI. Such integrated approaches require leadership at all levels within an organisation in driving DI.

[2] Universal Design for Learning (UDL) is a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn https://www.cast.org/impact/universal-design-for-learning-udl

2. Introduction

The last decade has seen significant growth in the disabled student population in postsecondary education in the UK (DSUK, 2022), and internationally (Bellacicco & Parisi, 2021; Cox et al., 2020). At the same time, there has been increased supportive legislation and associated funding for disabled students (Hewett et al., 2021), enhanced provision for students with disabilities within mainstream schooling (DfE SEND review, 2022), and technological innovation (JISC, 2021) to improve disabled students' access and participation in higher education.

However, in the UK there has been little overall change in the percentage of disabled people with a degree (21.8%) compared to that of non-disabled people (38%) from 2013-2019 (ONS, 2021). Disabled students remain under-represented at point of entry, often do less well across the student HE lifecycle (transitioning into university, continuation, attainment, and progression beyond university), and have lower levels of employability and employment compared to their non-disabled peers (Barkas et al., 2020; Bettencourt et al., 2018; DSC, 2021a; Jacques & Abel, 2020; Lister et al., 2021; OfS, 2021; Shaw, 2021).

In the UK, disabled students are often less satisfied with their HE experiences (OfS, NSS, 2019), and in England, are likely to be older than their non-disabled peers when they finish their degree (i.e., in the UK 29% of disabled students are under 21 when they finish their degree compared to 36% for non-disabled students (DSC, 2022 drawing on Advance HE's *Equality in higher education: students' statistical 2021 report*).

In 2020-2021, 17.3% of the undergraduate population reported a disability in the UK, representing a 47% increase in numbers since 2014-15 (HESA 2019/2020 data source). In the UK context, the rapid rise in disabled student numbers is largely accounted for by the growth in numbers of students reporting a mental health condition which has increased by more than 180% since 2014-15 (Hubble & Bolton, 2021). In England, 14.7% of postgraduate students have a registered disability (Hubble & Bolton, 2021). There are considerable variations in representation at the discipline level with Taylor and Johnson (2020) noting that within geosciences, for example, disability disclosure amongst postgraduate research students is approximately half that for undergraduate students.

Some 'disability' types seem to experience more support than others. While Wolbring and Lillywhite (2021) report that the less obvious the disability, the more positive attitudes disabled students received, research suggests those with hidden disabilities face more disadvantages given the lack of understanding and willingness to accommodate these students (McEwan & Downie, 2019; Morina, 2017a,b).

Students with mental health-related non-apparent disabilities have been reported as experiencing higher discomfort when disclosing, and more negative peer interactions than students with apparent conditions or non-apparent learning difficulties (Smith et al., 2021). Students with neurodiverse conditions experience considerable apprehension around disclosure (Clouder et al., 2019; Cox et al., 2020).

Recent English HE data comparison of the performance of disabled students versus their non-disabled peers for 2019-2020, suggests poorer continuation rates from year one to year two of -0.9%, attainment gaps (award of 1st or 2:1 degree) of -1.3%, and progression onto highly skilled employment or postgraduate study gaps of -1.8% (OfS, 2021). Latest data from the Office for Students (OfS) APP dashboard for 2020-2021 suggests attainment gaps have dropped to -1.1% (OfS, 2022) but these figures underplay the relative performance of students from different disability groups and the impact of intersectionalities which amplify issues for some students. While survey responses from higher education providers (HEPs) indicate the impact of such intersectionalities, (for example, ethnicity and disability on student learning outcomes); available UK data sets on this are lacking. The literature highlights the combined effect of variables such as ethnicity, age, and socio-economic status with disability in impacting outcomes for disabled students:

- ***Socio-economic status effects:*** While there are few intersectional studies considering disability and socioeconomic factors (Bellacicco & Pavone, 2020), in those studies that report on this area, disabled students from lower socioeconomic backgrounds and first-generation students are frequently reported as being at higher risk of not completing or succeeding in HE/college (Showers & Kinsman, 2017; Taneja-Johansson, 2021; Torres, 2019; Vaccaro et al., 2019; Waterfield and Whelan, 2017; Zilvinskis, 2021).

- ***Race*** plays a role in disability inclusion. Disabled students from ethnic minority backgrounds were identified as at greater risk of doing less well, dropping out and interrupting their courses of study (UCL survey report, 2022).

- ***Gender effects*****:** Female students with disabilities are reported as facing greater barriers to inclusion than males (García González et al., 2021), more likely to underrate their academic ability and intellectual self-confidence compared to males (Kim & Kutscher, 2021), and feel less sense of empowerment than their male counterparts (Moswela & Mukhopadhyay, 2018); cultural factors are implicated in these findings. Females with ASD, and ASD students with any comorbidity disorder are identified as more likely to self-report poorer psychological health than their male counterparts and those without co-morbidities (Sturm & Kasari, 2019). However, Safer et al. (2021) examining ten-year data sets from one US college found that males accessed fewer services than females and did less well. The team noted that males and females had proportionately different disabilities which may have impacted outcomes. For example, their research identified that males were five times as likely to have ASD, and females were twice as likely to have psychological disabilities, hearing, and mobility disabilities. Females were 50% more likely to have learning disabilities, and males were 50% more likely to have ADHD.

- ***Discipline/profession barriers:*** The difficulties disabled students face in STEM subjects and medicine are highlighted in the literature (Feig et al., 2019; De Oliveira et al., 2021; L'Ecuyer, 2021). Safer et al. (2021) argue that hard sciences are likely to require more technology and specialised support impacting disabled students' ability to do well. Jeannis et al. (2020) found that students with physical disabilities experienced a wide range of limitations to full participation in laboratories, from entering the laboratory to being given passive roles. Bustamante et al. (2020) found that disabled students experienced increased barriers in their physics courses compared to other courses,

specifically due to the increased time needed to process information and a lack of guidance on how to effectively study content for conceptual understanding. Participation and awarding gaps between disabled and non-disabled students are evident at the discipline level within the UK (DSC, 2022). The largest participation gaps were found in Business Studies (7.9%), Engineering and Technology (2.8%) and Psychology (2.4%), and largest awarding gaps were found in Veterinary Science (5.9%) and Agriculture (5.7%) (DSC, 2022).

3. Evidence Review: Approach and Aims

A comprehensive approach was adopted to address the question: *'What works to reduce equality gaps for disabled students in higher education'* to support TASO in prioritising future interventions for impact evaluation in disability inclusion (DI). In doing so, we considered the current context of DI, evidence of effective practice, gaps in current provision, and approaches to enhancing DI in moving forward, drawing on UK and international research, UK institutional data, and consultation with stakeholders. The following areas were considered to address the aims of this project:

(i) the prevalence and emergence of equality gaps for disabled students in HE;
(ii) approaches or interventions (including financial support and reasonable adjustments) implemented in HE settings to support the success of disabled students throughout the student life-cycle;
(iii) the extent to which intervention efficacy varied depending on the type of disability a student experiences or their demographic to include intersectionality with other widening participation characteristics;
(iv) the extent to which providers adopted inclusive approaches and practices throughout the student lifecycle;
(v) best practice and methods to evaluate the impact of interventions, and inclusive learning and teaching approaches.

Methodology

In addressing the 'what works' remit, our aim was to go beyond a summary of research findings and add to knowledge and understanding of how to enhance disability inclusion (DI) within HEIs.

We approached disability from an **interactionist perspective** where disability involves the interaction of a person's impairment [inherent and/or acquired] within societal, cultural, and contextual contexts that pose barriers and affordances (Gustavsson, 2004; Riddle, 2013; Shakespeare, 2014).

This rapid combined systematic evidence review involved sequential and concurrent research processes around four main interrelated elements as outlined in Figure 1. The multi-stage process informed by Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines (PRISMA) methodology is outlined in Figure 2 in Appendix 1. Ethical consent to undertake this research was approved by the ethics committee of the University of Lincoln, UK.

Figure 1: Rapid Evidence Review Components

- **A systematic review of the literature on disability inclusion** via indexing databases (ERIC and Scopus) (n = 408) including snowballing of relevant works not picked up in the initial review (n = 12).
- **Exploration of expert reports** (n=83) involving national agencies, government, and specialist committee reports (n =58), plus cross-referencing to 25 related papers and summaries gathered using snowballing techniques.
- **Secondary data analysis** using the UK Office for Students (**OfS) data dashboard** and **analysis of 68 Access and Participation Plans (APPs)** ensuring a representative sample* across different types of institution to explore institutional responses to enhancing disabled student access, continuation, success, and progression compared to non-disabled students.
    - The stratified purposeful sample included 68 of the 171 available reports in 2020-2021 ensuring representation across FE colleges, small and specialist providers, Russell Group universities, post-92 universities, and metropolitan universities made up 21% of the sample of UK HE (n = 164) and FE colleges offering HE courses in England (n= 162).
    - Access and participation plan review involved analysis of the trajectories of students with different disabilities across the student lifecycle to include access to HE, continuation and attainment and progression into employment or further study. Differences in institutional approaches to reporting on DI were noted along with key themes, and the frequency of them within documentation. Data was initially analysed independently by four colleagues and assimilated into one final analysis following detailed discussion and cross-checking of data sets. A synthesis of the APP findings can be found in Section 6 of this report, and a summary of research and practice priorities of APPs is summarised in Appendix 3 of this review.

- **Consultation with stakeholders** involved (a) **institutional online surveys** for academic and student leads of DI, and (b) **panel interviews** to test and evolve the key themes identified via the systematic literature review encompassing expert reports.

  The online surveys comprised two surveys of 20 questions (one for academic DI institutional leads and one for student leads). The questions making up the surveys were derived from analysis of the literature, and focused on issues relating to financial, specialist and academic support for disabled students within HE at all stages of the student life cycle. Colleagues were invited to provide case studies to exemplify practices and selected examples are included in the narrative of this review.

  Institutions were invited to participate in the survey via direct email to senior leaders and student bodies via Advance HE's Deputy and Pro-Vice Chancellor (DVC/PVC) network, UK, bespoke emails to key groups and relevant national agencies during January and February 2022. Only 16 institutional responses from a possible 271 Deputy and Pro-Vice Chancellors were received (12 from academic leads, and 4 from student bodies).

  Expert stakeholder panels were convened with colleagues with specialist knowledge and experience of DI to gain better understanding of challenges in developing DI, and examples of best practice. Purposeful sampling was undertaken to identify key organisations, and individuals within the DI field and open calls were made to HEI senior leaders (e.g., Deputy and Pro-Vice Chancellors) and to equality, diversity, and inclusion networks, and specialist disability groups to ensure engagement of colleagues from a variety of perspectives. Experts included senior leaders of HEIs, members of national disability groups, disability specialist leads and team members, specialist disability organisations related to specific disabilities and/or specific provision of support (e.g., employment). Eight focus panel meetings were convened engaging with specialists across a range of organisations involving 37 colleagues in meetings of 30-120 minutes duration.

Systematic literature review process

The initial search using PRISMA methodology (Page et al., 2021) identified 10,898 potential articles for inclusion, of which 10,347 articles were removed following the first step analysis of titles and abstracts. Further checking of article titles from the combined ERIC and SCOPUS searches led to removal of duplicates (n = 66), and work that was not written in English (n = 2).

Third step screening of abstracts and inclusion of articles from snowballing resulted in 495 articles being selected for further analysis with 58 articles being removed due to insufficient focus on student disability and the HE context. A fourth step involved reading of 437 full-text articles by four members of the research team with weekly team cross-checking of inclusion and exclusion protocols, and coding decisions, and with two researchers responsible for reading of the whole data set. At this stage, a further 29 articles were removed for not being sufficiently focused on HE populations. The final set of 408 articles was included for analysis along with an additional 83 reports and papers obtained from snowballing and other methods (panel meetings; online searches; discussions with experts).

Details of the systematic literature review process including the search criteria, data sets collected, and methods of analysis are detailed in Appendix 1. Challenges in interpreting the data in relation to methodological considerations are outlined in Appendix 1

All 408 articles were assessed according to the nature of evidence collected and inferences that could be inferred using OfS standards of evidence (Table 1), and in relation to recognised quality research standards (Appendix 1).

> **Type 1 – Narrative**: there is a clear narrative for why an activity may be effective, and this is often based on findings of other research or evaluation.
>
> **Type 2 – Empirical Enquiry:** data suggests that an activity is associated with better outcomes for students.
>
> **Type 3 – Causality:** methods are used which demonstrates that an activity has a 'causal impact' on outcomes for students.

Table 1: Nature of Evidence for All Papers		
	Frequency	Percent
Type 1 - Narrative	286	70%
Type 2 - Empirical	112	27.5%
Type 3 -Causal	10	2.5%
Total	408	100%

In seeking to gain a deep understanding of the context of disability inclusion (DI) a deep dive into the literature was taken mindful of the need to take account of differing perspectives, contexts, and cultures. All 408 papers, across all 'types of evidence', (Types 1-3 (TASO)) were also assessed according to internationally recognised standards for quality research (Evans et al., 2021).

In prioritising the use of reliable evidence, robust data analysis and reports that demonstrate '**causal evidence**' (TASO, 2021), quality issues and what counts as evidence were carefully considered, mindful of measuring what we value and not valuing what we measure (Biesta, 2014). To this end, we adopted a belt and braces multi-layered approach to include:

(i) Initial focus on Type 3 causal studies, systematic literature reviews that included critical evaluation of causal evidence, intersectional approaches, longitudinal survey data, and evidence-based interventions.

(ii) Building conceptual understanding of what works through analysis of Type 1 to Type 3 studies that met our required cut-off for quality (Appendix 1). Of the 198 papers identified as being of acceptable quality 41.6% of Type 1 (n = 119), 62.5% of Type 2 (n= 70) and 90% of Type 3 (n=9) studies met this criteria.

(iii) Exploration of high quality qualitative and quantitative methodological academic articles to support and enhance understandings of initial data findings from causal evidence (See Table 2).

(iv) Cross-referencing with additional sources of data collected through institutional access and participation plans (APPS) (Section 6), and stakeholder panel interviews (Section 7), and survey returns.

Table 2: Methodology and Nature of Evidence for all Articles			**(n=408)**
Methodology	**Detail**	**Frequency**	**Nature of Evidence**
Non-empirical articles (n=82)			
Literature Review		39	● Type 1 = 26 ● Type 2 = 13
Conceptual		43	● Type 1 = 43
Empirical articles (n=326)			
Quantitative	Experimental design	5	● Type 3 = 5
	Quasi-experimental design	6	● Type 2 = 2 ● Type 3 = 4
	Survey design	25	● Type 1 = 9 ● Type 2 = 16
	Other quantitative designs	62	● Type 1 = 22 ● Type 2 = 40
	Total	**98**	
Qualitative	Case study	38	● Type 1 = 36 ● Type 2 = 2
	Ethnography	6	● Type 1 = 6
	Phenomenology	30	● Type 1 = 26 ● Type 2 = 4
	Action research	3	● Type 1 = 3
	Grounded theory	3	● Type 1 = 3
	Other qualitative designs	105	● Type 1 = 91 ● Type 2 = 14
	Total	**185**	
Mixed methods		**43**	● Type 1 = 23 ● Type 2 = 20

4. Overarching Data Patterns on Disability Inclusion

In contextualising the research findings, baseline trends in the data are signposted below.

- **Cultural bias:** 50% of the data comes from lead authors affiliated to US institutions, followed by approximately 10% from the UK, 5% from Canada and Spain, 4% from South Africa and Australia, 3% from Israel, and 2% from Ireland. While 46 countries are represented in total, there are few contributions from colleagues in South American, Asian and African countries.

- **Discipline bias** (Table 3)**:** Of the 84 discipline-specific papers 43% of these (n= 36) are STEM based (e.g., mathematics, science, and geography), with an emphasis on the needs of neurodiversity in science (Bundock et al., 2021; Pfeifer et al., 2021), and creating genuinely inclusive opportunities for physically disabled in laboratory and/or fieldwork (Carabajal & Atchison, 2020). Approximately 33% (n = 28) of articles are focused on Medicine and Health disciplines, and especially on the challenges in professional nursing clinical placements (Major & Tetley, 2019). 20% (n = 17) of papers are Social Sciences focused, with only 3 papers (4%) emanating from Arts and Humanities.

Table 3: Discipline of All Papers

Discipline	Frequency	Percent
Medicine & Health	28	7%
STEM	36	9%
Social Sciences	17	4%
Arts & Humanity	3	1%
General	324	79%
Total	408	100%

- **Disability type bias** (Table 4): The literature focuses greatest attention on cognitive and specific learning difficulties (e.g., dyslexia, ADHD) and autistic-spectrum disorders (ASD) compared to other areas of disability which aligns with the dominance of specific learning differences within the UK HE context (HESA data, 2021).

- Of those papers noting disability type (n = 183), 33% focused on specific learning difficulties, compared to 19% on neurodiversity (to include social communication/autistic spectrum conditions), 15% on visual impairment and intellectual and development disabilities, 5.5% on physical disability and mental health, with only six articles on hearing impairments. Relatively high reporting on neurodiversity compared to several other disability types aligns with concerns around the relative performance of this group to others (Clouder et al., 2020).

- **Stage of progression within HE**: Approximately a third of papers focused on undergraduate students, and 30% on mixed stakeholder groups (students, staff, family), with only 2% of papers exclusively focused on the postgraduate disabled student experience.

Table 4: Disability Types of Specified Papers		
	Frequency	Percent
Specific learning disability (SpLD)	61	33%
Neurodiversity including ASD	35	19%
Visual impairment	27	15%
Hearing impairment	6	3%
Physical condition	10	5.5%
Mental health; psychiatric	10	5.5%
Long term condition	2	1%
Intellectual and developmental disability (IDD)	27	15%
Hidden disabilities	5	3%
Total	183	100%

Identification of Key Themes

Process

Thematic analysis of the data resulted in the identification of twelve key disability inclusion (DI) themes (Appendix 2, Table 5).

In the first stage, iterative analysis of international expert reports (n= 58) was undertaken to explore student and academic perspectives of disability inclusion using thematic analysis techniques (Braun & Clarke, 2006). Review of an additional 25 papers and reports snowballed from the original 58 expert reports informed refinement of the themes. In this first phase of analysis, seventeen potential core themes were identified.

In the second stage, evolution and refinement of themes and subthemes was achieved through concurrent analysis of the full literature review data base and a range of data sets (e.g., 68 Access and Participation plans from UK postsecondary institutions), survey data (comprising 16 surveys in total including four from student groups, retrieved from a survey of 271 senior university representatives); engagement with expert stakeholders, and ongoing cross-referencing with expert reports.

Using a recursive and iterative process, involving deductive and inductive approaches across the entire data set, the twelve key themes were identified as listed below. While the literature highlights the importance of these twelve themes, evaluation evidence of impact for some of these themes is limited (e.g. evaluations of leadership of DI). There is also some discrepancy between the DI focus within the literature and that of the access and participation plans (Appendix 2, Table 5, and Appendix 3, Table 6).

5. Organising Structure for the Combined Evidence Review

This section provides evidence of the effectiveness of DI approaches in supporting equal access and equal opportunities to do well for disabled students using the 12 themes derived from the combined data sets utilising the systematic literature review, expert reports, institutional access and participation plans, and stakeholder information (interviews and surveys).

1. Leadership capacity – extent to which there is strong central leadership of DI within institutions and effective policies and processes to support disability inclusion as the responsibility of all.

2. Evidence informed – extent to which DI research is used to inform practice to also include investment in DI research with staff and students and wider stakeholders.

3. Embedded evaluation – extent to which data is used to good effect to inform DI; this includes at the module/unit level of study.

4. Integrated delivery – extent to which there is a holistic and joined up approach to the delivery of DI services to support DI for all staff and students.

5. Clear communication – consistency in messaging around DI, and alignment between values and operation of DI on the ground.

6. Enabling student and staff voice – how disabled students and staff are involved in anticipatory design of the infrastructure of the institution, and how comprehensive approaches are used to capture the disabled student and staff experience.

7. Disability inclusion training – the nature and extent of DI training, and evaluation of the quality of it.

8. Enabling access – the nature and operation of supports to enable disabled students and staff to have equal access and equal opportunities to do well.

9. Inclusive learning and teaching – approaches to ensuring inclusivity in all aspects of the student/staff experience of learning to include extra curricula activities (academic, social, physical).

10. Assistive technologies (ATs) – quality and prevalence of ATs for all informed by an understanding of individual differences and effective pedagogies.

11. Transitions support – supports provided for disabled students at all stages of the student lifecycle.

12. Promoting self-advocacy - how students are supported in developing the skills required to be able to advocate effectively for their needs, and the extent to which the development of an inclusive learning environment reduces/negates the need for disabled students/staff to need to advocate.

5.1 Leadership

The importance of effective leadership of DI is flagged throughout expert reports. However, there is a lack of research focused on institutional approaches to DI or on preparing leaders to manage DI (Martin, 2017). Only 1% of our papers considered this theme (Appendix 2, Table 5). Research relating to institutional leadership of disability inclusion, use of research and evaluative techniques to inform practice, and integrated delivery is largely missing; intervention studies in this area are lacking.

The underrepresentation of disabled staff in leadership positions within HE (Advance HE, 2021; Williams et al., 2018) impacts progress in developing fully inclusive communities (Martin, 2017).

> *Higher education can no longer stand by as competent, intelligent people with disabilities are absent from or invisible in leadership positions. Not only do organisations lose significant opportunities for diverse thought leadership and improved representation of staff and student cohorts but they fail obligations to include persons with disabilities.* (Harpur & Szucs, 2022)

In the UK context for 2019-2020, only approximately 3.6% of academic senior managers disclosed as disabled (Advance HE, 2020). In describing approaches to disability inclusion at the University of Queensland in Australia, Harpur and Szucs (2022) identify the dual importance of creating structures of DI that enhance the capacity of institutions to champion DI, while at the same time providing direct leadership opportunities and networks for disabled academics and students (DSC, 2022).

The message of valuing diversity (Bennett et al., 2019; Hill et al., 2020) is diluted by the lack of visibility of disabled leaders within HE. In expert reports leadership is analysed at a variety of levels to include the roles of government and regulators, to businesses and disability organisations in working in concert with HEIs. A culture of responsibility for DI across the entire organisation is emphasised (Lipson et al., 2019), along with the requirement for senior leaders to prioritise the needs of disabled students (DSC, 2022).

5.2 Evidence-informed

Expert reports identify the need for quality research into the lived experience of disabled students and staff and the role of qualitative and quantitative methodologies in this. How institutions are using research on DI to inform inclusive approaches and encouraging research in DI is less evident in the literature.

Expert reports highlight the importance of embedding inclusive research within and across organisations (Berghs et al., 2016), and the need for rich data to fully capture the experiences of disabled students as summarised by Mitra and Yap (2021, 6):

> *Realizing the rights of persons with disabilities requires disability data and statistics. It requires statistics that are based on concepts that are in line with a human rights approach to disability, disaggregated by disability status, and reflect various aspects of the lives of persons with disabilities and their diversity.* (Mitra & Yap, 2021, 6)

5.3 Embedded evaluation

There are no evaluation studies of how higher education providers are embedding evaluation in DI processes, although quality of evaluation is fundamental to enhancing practice. The importance of rigorous monitoring and evaluation activity to support DI across all areas of activity and at all levels (government, HEPs and relevant stakeholders) is strongly fronted within expert reports (Hector, 2020; Saas, 2019; Williams et al., 2018). Utilising the learnings from COVID to refine DI provision is strongly advocated (DSC, 2022; DSUK, 2022).

Survey data from 12 UK institutions highlighted the importance of better use of data to support intersectional analyses to improve understanding of disabled student experiences (e.g., the impact of intersectionalities such as ethnicity and social class with disability on student performance). However, the need for enhanced monitoring and evaluation processes to ensure equality of access and support for disabled students and staff is prioritised in only three of the 12 survey returns in discussions around inclusion initiatives.

5.4 Integrated approach

The importance of an integrated approach to DI is highlighted across the literature but only the core focus of 8% of research articles (Appendix 2). While there are no evaluation studies on integrated approaches to DI, the importance of integration in supporting holistic approaches to DI permeates the literature in discussion of associated themes.

The importance of integrated cross-sector working to smooth the pathways for disabled students from school to HE and beyond, by aligning systems and processes including the language of disability to support smoother student transitions, is highlighted in expert reports (DSC, 2022; Williams et al., 2019). Integrated approaches to employment support are especially flagged in institutional surveys (e.g., Kings College London; Liverpool John Moores University's integrated approach to mentoring provision and training support.

Reducing the administrative load of disability is seen as a priority with arguments that DI needs to be a collective responsibility, instead of disproportionately falling on the shoulders of disabled students, staff, and specialist support DI services (DSC, 2022; DSUK, 2022).

The importance of integrated cross-sector working to smooth the pathways for disabled students from school to HE and beyond by aligning systems and processes including the language of disability to support disabled student access and equal opportunities to do well is highlighted in expert reports (DSC, 2022; Williams et al., 2019) and focused examples provided by stakeholders, including the following case study.

An Integrated Approach Case Study:

De Montfort University, UK: Support for Students with Sickle Cell

Author: Rachel Davies, De Montfort University: rachel.davies@dmu.ac.uk

Scale: Focused project within the Disability Advice & Support team at DMU, but which benefits students across the institution who have Sickle Cell

***Focus*:** Students with Sickle Cell

Overview

Sickle Cell is a genetic condition and in the UK people with a Black African or Black Caribbean heritage are most affected. Sickle Cell causes a wide range of health issues, and Sickle Cell crises (acute episodes of pain) caused by dehydration, strenuous exercising, stress or the weather (NHS, 2022) are a common reason for people with Sickle Cell to seek medical care via A&E departments. Students with Sickle Cell find themselves needing to balance the requirements of study with the need to rest and manage their condition and so reasonable adjustments such as lift keys, extensions and deferrals, and access to appropriate university accommodation are crucial.

Our experience of supporting students with Sickle Cell, prior to this work taking place, was that students rarely shared information about their condition with the university unless they were at a point of crisis, and often when their health was proving a barrier to continuing their studies. They and their families were often not aware of the support that we could provide to support them to study. A number of other factors and beliefs may also contribute to reluctance to share information about Sickle Cell including concerns about being treated differently and families' religious beliefs. Transition to adult services is a particular issue for young people entering further education or employment.

A programme of support, in partnership with the Sickle Cell team at University Hospitals Leicester (UHL), was developed to encourage students to share information about their Sickle Cell with the university so that appropriate support could be put in place and so that we could enable students to access Disabled Students' Allowance funding, where possible.

Implementation: The programme of support includes the following elements:

1. **Partnership with the Sickle Cell nursing team at UHL.** Medical staff can, with the student's permission, inform the Disability Advice & Support team that a student has Sickle Cell so that we can work with them following a hospital visit to set up appropriate support. Disability Officers at DMU include a letter from the Sickle Cell team at UHL in to students with Sickle Cell when the student first shares information about their medical condition.
2. **Health Promotion events**, designed in tandem with the Sickle Cell nursing team at UHL, such as "Smoothie Night" which promotes good nutrition.
3. **Promotion to students of UHL Leicester** Sickle Cell information, events and of the value of transferring their medical records to the UHL team to speed up access to medication.

4. **Promotion of the support available to students with Sickle Cell** at university Open Days.
5. **Proactive contact of students disclosing Sickle Cell** prior to the start of a course to provide advice, set up links with UHL and support DSA applications.
6. **Setting up a "DELTA" for students with Sickle Cell.** This provides students with a wrist band (and a card to keep in their wallet/purse) to wear so that campus First Aid and Security teams can access information about their condition if they are taken ill on campus, and facilitate access to the Sickle Cell team at UHL.

Impact

Disclosures of Sickle Cell: 18/19 = 15 students; 21/22 = 21 students

Feedback from UHL Sickle Cell team:

The university and hospital approach was commended at the Haemoglobinopathies Peer Review in February 2016. The reviewers said that they had never seen such close links and support between a university and hospital anywhere else. Approximately 20% of the Sickle Cell patients in Leicestershire are DMU students (UHL data).

***Outputs*:** "Starting University with Sickle Cell" booklet for prospective students and their families.

Key learning points

Partnership with the local UHL Sickle Cell team was crucial to the success of this project. Through working together, the UHL Sickle Cell team could help students to access support at university and this in turn could enable them to manage their condition more effectively as they studied. The DELTA wristband system enabled students to access appropriate medical care swiftly because university staff were able to provide paramedics with crucial medical information at handover.

Any key unanswered/ unresolved questions/issues arising from the work?

Further work, with Sickle Cell support organisations in London & the Midlands, would enable us to increase the numbers of students who tell us about their Sickle Cell prior to starting at DMU. There are many reasons why students may be reluctant to share information about their Sickle Cell disease, and so it is crucial to work with trusted intermediaries to promote the support available and the reasons why sharing information is helpful. This work should ideally take place at a sector level, with similar partnerships set up in other universities, so that students with Sickle Cell are not forced to choose universities in cities where "lots of Black people live" in order to feel that they will be able to access appropriate support (https://www.sicklecellsociety.org/selfoversickle/).

5.5 Clear communication

No articles focused on evaluating DI communication strategies were identified. This theme is covered in approximately 5% of access and participation plans, and approximately 2% of academic papers.

There is a lot of research on disabled student access and accommodations, however, there is relatively little research on the role of clear communications, enabling student and staff voice, and disability inclusion training in supporting DI. As noted by Bumble et al. (2019), how HEPs conceptualise the inclusion of disabled students is likely to shape programmes, practices, and partnerships.

From a socio-critical perspective, language, systems, processes and structures send messages to the community around the extent to which disability inclusion is valued. Expert reports highlight the need for significant campus culture change to realise DI (e.g., Hill et al., 2020 commenting on the US context). The deficit view of disability as something 'to be fixed' rather than embracing the gains associated with diversity is embedded within systems such as university accommodations processes. Expert reports highlight the importance of strengths-based narratives of disabled students as capable learners (e.g., Bennett et al., 2019 commenting on the Australian context).

Enacting inclusion requires examination of the language of disability and the different messages it conveys (DSC, 2022). Disclosure represents the elephant in the room, the process whereby disabled students are required to disclose a disability to ensure provision of specific supports (Jacques & Abel, 2020). As noted by colleagues in our panel meetings, disclosure for many is a 'nasty word' and the psychological and physical burden of disclosure for disabled students and staff can be enormous.

The varied language used to describe disability highlights uncertainty among staff and students in how to engage with disability terminology (Comeaux et al., 2021; Pearson et al., 2019). There are considerable tensions around the use of the term 'disability', with some preferring not to use the term disabled at all (i.e., preference for differently abled). Pearson et al. (2019, 6) argue that a 'one-size-fits-all approach is not appropriate to choosing language used to communicate with students' given that what is right is dependent on the context (e.g., they found students preferred a 'medical' language model' to be used for disability disclosure questions).

Language matters as can be seen in the impact of updating the disability question wording on UCAS forms in the UK system which resulted in student disability disclosure rates increasing by 10% from the previous year (DSC 2020; Shaw, 2021). The layered and often messy way in which many disabled students try to navigate disclosure by disclosing in some spaces and not in others testifies to the importance of an integrated approach to ensure students' needs are acknowledged (Aubrecht & La Monica, 2017). Language which speaks to disabled students needing to 'fit in' perpetuates emphasis on the need for a student to adjust rather than valuing the strengths the student brings and promoting mutual adaptation as promoted in interactional models of disability (Shakespeare, 2014). Similarly, lack of physical access to buildings and to materials has impact beyond the obvious in signalling messages to disabled students about how much they are valued (Moswela & Mukhopadhyay, 2018). As noted by Merchant et al. (2020, 284):

"the elements of material 'things' such as doors, corridors, signage and parking …were thus inextricably bound to and shaped by elements of meaning and value."

5.6 Enabling student and staff voice

Focus: includes studies where disabled students are involved in interventions that support the co-development of teaching, research and policy, and wider university provision (buildings and services). A participatory role of disabled students and staff in joint authoring of disability inclusion provision is assumed.

Empowerment realised through engaging with disabled students and staff experiences in the development of learning environments is seen as essential as part of co-regulated approaches to provision. Meaningful engagement is known to impact outcomes (Musso et al., 2020), however, engagement can become an additional physical and emotional burden for those engaged in advocating for their needs and those of others. Developing shared ownership of disability inclusion at institutional scale is central to building and inclusive culture – linking to the first four key themes.

Approaches to engaging disabled student voice in supporting anticipatory design of physical and intellectual university spaces are highlighted in expert reports (Hughes & Spanner, 2019; Saas, 2019; Tai et al., 2022), however only approximately 4% of the academic literature is focused on this theme. Evidence of comprehensive approaches to utilising disabled student voice to inform DI planning is lacking.

It is widely acknowledged that the experiences and beliefs of disabled students should be central to disability inclusion (DI) approaches (DSC, 2022; DSUK, 2022; Sanchez-Rodriguez & LoGiudice, 2018), and 35% (n=142) of the literature reviewed considered facilitators and barriers to disabled student inclusion. However, there is a lack of evidence of the impact of participatory approaches/co-design on disabled student outcomes.

Institutional survey returns provide a descriptive account of disabled student engagement in DI within HE (n = 7) highlighting important questions for HEPs to consider in engaging disabled students and staff in DI decision-making to include but not limited to:

- To what extent are disabled students engaged in decision making around provision?
- At what point in the consultation process are disabled students and staff engaged in DI activities?
- How is the institution ensuring that groups consulted are representative of those they are representing?
- How is inclusion of disabled students and staff facilitated in the decision-making process? For example, in relation to knowledge and understanding of working with established stakeholder/committee groups.
- How does the work of 'action groups' relate to the wider work of the institution around DI?
- How is the additional load on those wishing to advocate for themselves and for others managed as part of this process?

- How is the journey of working groups captured to inform further work?
- How does the work on DI intersect with work to support students/staff with other protected characteristics?
- What are the mechanisms for ensuring collation of quality data and at meaningful points?
- How is the information from action groups shared and their work identified in communication planning?
- What training is available for those participating in DI agendas?

There are limited examples of Student Union engagement and disabled student engagement in curriculum design. Research articles, surveys, panel discussions and expert reports highlight the importance of fully utilising DI research within institutions in an integrated way to support practice (Hughes & Spanner, 2019).

The importance of anticipatory design that engage students in the design of education and wider provision in higher education providers (HEPs) was identified in 5 of the 6 articles highlighted In Table 5.6.

Relevant Articles: Table 5.6 Student and Staff Voice				
Interventions				
Author	Focus	Type of evidence; Strength of evidence	Impact on behaviour/ outcomes Impact on aspirations/attitudes	Cost
Cinquin et al. (2021)	User centred approach to developing a MOOC. Evaluation of design approach with users to support development of an integrative framework for the design of accessible e-learning systems.	Type 2; Emerging	MOOC development using participatory design engaging input from students with cognitive impairments.	Medium
Nieminen & Pesonen (2020)	Investigated the perceptions of disabled students within a mathematics course adopting the principles of Universal Design for Learning.	Type 1; Strong	Highlighted the importance of assistive technologies in giving students access to learning.	Medium

Supporting Studies		
Author	Focus	Key findings
Kruse & Oswal (2018) Type 1	Participatory research methodology engaging disabled faculty and students in exploring factors that impact success.	Argued the need for a more inclusive approach beyond the reductionist '*regime of retrofit accommodations.*
Menzi-Çetin et al. (2017) Type 1	Tested the usability of a university website with five visually disabled students as part of a participative design.	Highlighted the lack of access, and importance of such work in supporting understanding of difficulties for disabled students in order to enhance provision.
Toro et al. (2020) Type 1	Introduced an Ecological-Enactive (EE) model of disability to address the lived experience of being disabled, and the physiological dimensions of disability.	Aimed to address attitudes and perceptions of disability – through the development of a conceptual model which was evaluated with 11 disabled students.
Wolbring & Lillywhite (2021) Type 1	Explored how disabled students, non-academic staff, and academic staff engaged with inclusion-focused academic literature.	Concluded that the lack of engagement of academic staff and students in research on disabled student experience and how to build the academic pipeline for disabled students, is problematic. Analysis involved 16 papers, the quality of which was not examined as part of the review.

Engaging students in **authentic participatory research**, and the benefits of this, are illustrated in the following case study by Julie Hulme and colleagues on '*students as researchers'*.

In sum, the interventions by Cinquin et al., 2021 and Nieminen and Pesonen (2020), and the supporting studies (n=4) referenced in Table 5.6 attest to the **importance of anticipatory rather than retrofit designs** in engaging with disabled students to enhance access to learning, teaching, and research.

Implications for research

- Further research and evaluation is required to build the evidence base on how student/staff engagement in participatory design impacts learning and attainment and closes equality gaps.

Implications for practice

- Utilising the experiences of disabled students and staff to develop more inclusive environments within the university context is essential. This links with generating rich opportunities to capture disabled student/staff voice.

Students as Researchers Case Study: Amplifying Disabled Student Voices

Context: Keele University, UK

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Scale of activity: School-level (BSc and MSc Psychology programmes, PhD)

Focus: Theme – students as researchers; stage – all; groups – all disabled

students ***Overview***

Disabled students are known to be disadvantaged within higher education, in terms of access, continuation, achievement, and employability. My research (and the wider literature) suggests that this can be a result of stigmatisation, a feeling of being under-valued by the university, and difficulties accessing appropriate support (Hamilton et al. 2021). Much research treats disabled students as a homogeneous group, rather than considering diversity and individual experiences. As a qualitative psychology researcher, I realised that there was a real opportunity to engage disabled students to lead research projects focusing on their own disability community.

I sought to recruit student researchers through assessed research-focused modules (undergraduate Final Year Projects, MSc Dissertations, MSc Research Apprenticeship), as well as through School of Psychology-funded summer student internships and PhD students, to work with me across a wide programme of disability and inclusion-focused research, aiming to:

a) Explore the experiences of diverse disabled students within higher education, to inform more inclusive practices and policies;
b) Create a community of practice (Lave & Wenger, 1991) of student researchers who can provide peer support and establish a group identity;
c) Develop and empower disabled students through recognition of a positive social identity (e.g., Jackson et al., 1996; Tajfel & Turner, 1976) and individual and group coaching to support their personal and professional development as researchers.

Implementation

In the context of my role in supervising of BSc Psychology undergraduate final year projects, MSc dissertations, and 'research apprenticeships', I created project briefs that called for students who were interested in carrying out research into disability in higher education, whilst leaving flexibility for them to choose what type of disability they wished to study. These projects proved popular, and whilst many of the students who chose to take part were disabled themselves, some were interested because they were close to someone with a disability, or they wanted to learn more about inclusion for their future career. This allowed us to build a diverse community of practice. We agreed on a set of expectations, emphasising mutual respect and professional behaviour. Meetings were mostly held on MS Teams, and Teams was used to continue conversations between meetings. One-to-one supervision sessions were arranged at regular intervals to allow students to raise sensitive topics, and for individual coaching and skills development.

Impact

Together, these projects form a wide programme of related research (see here). Disabled students from across the UK have participated and have expressed appreciation of being able to have their voices heard in a way that can inform university practices and policy. One student researcher (Hamilton) created an innovative design for data collection using Discord, to ensure accessibility, which participants have enjoyed: '*The Discord/asynchronous format has been absolutely genius, it's such a wonderful idea. It's extremely accessible and non-stressful'*. The student researchers gain training in research skills, confidence in their abilities, and rich data that can be of publishable quality, as well as insight into inclusion for disabled people. I learn from the data, but also from the student researchers, which benefits both my research and my inclusive educational practices.

Outputs

Lyons, S. M. & Hulme, J. A (2021). *Why are so many students locked out of their education?* WonkHE (18/06/2021). Retrieved from: https://wonkhe.com/blogs/why-are-so-many-students-locked-out-of-their-education/

Hamilton, P., Hulme, J. A. & Harrison, E. D. (2021). Experiences of higher education students with chronic illnesses. *Disability and Society.* DOI: 10.1080/09687599.2021.1907549.

Hulme, J. A. (2021). Social identity and disability in the classroom. Changing States of Mind Podcast, September 2021.

Hulme, J. A., Hamilton, P., Keeling-Ball, C. & Crabb, E. (2021). Inclusive learning: Engaging student voices. GlobalMindED expert talk, 28th May 2021 (from 27 minutes).

Hulme, J. A., Hamilton, P. R., Lyons, S. M., Keeling Ball, C. & Harrison, E. D. (2021). *Experiences of disabled students in higher education: A social psychological perspective on educational inclusion*. BPS: Psychology of Education Section, annual conference, September 2021.

Key learning points

A crucial part of making this approach work has been for me to set aside my 'authoritative supervisor' role, and to become a member of the learning community that I have created. Students recognise my greater experience in research, but appreciate that they are experts in their own experiences, as students and mostly as disabled students. Trust and honesty are essential. My top tips would be not to over-commit to supervising too many students at once, and not to expect that every student will produce first class or publishable work – but don't be surprised when quite a few of them do!

Any key unanswered/unresolved questions/issues arising from your work?

Genuine inclusion and accessibility is never easy, and we are now working hard to pull together and publish our findings, to better inform university policy and practice. Encouraging universities to listen to disabled student voices is a challenge, but we hope that we are amplifying these voices, and helping them to make a difference.

Key research sources:

Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

Mercer-Mapstone, L., Dvorakova, S. L., Matthews, K. E., Abbot, S., Cheng, B., Felten, P., Knorr, K., Marquis, E., Shammas, R. & Swaim, K. (2017). A systematic literature review of students as partners in higher education. *International Journal for Students as Partners*, 1 (1). DOI: https://doi.org/10.15173/ijsap.v1i1.3119.

Walkington, H. (2015). *Students as researchers*. York: Higher Education Academy

5.7 Disability inclusion training

Focus: includes training and support for academic and professional services colleagues and students to increase awareness and understanding of disability inclusion (DI).

Disability inclusion training encompasses a wide range of approaches (e.g., knowledge sharing around specific disability needs, legislation, policy, and strategy requirements, developing shared conceptions of what good practice is, exploration of bias, guidance around specific disabilities, procedures, the physical or built environment, communications and specialist networks of support etc.).

The importance of DI training and enhanced faculty awareness of DI permeate the literature (Baker et al., 2021; Shaw, 2021). However, less than 1% of the highest ranked articles (n = 49) centrally addressed this area. Few studies rigorously explored the efficacy of approaches to training. The paucity of research in this field is acknowledged, for example, Diaz-Vega et al. (2020) noted that in the Spanish context only 16% of universities have introduced training in principles of accessibility. Lack of evaluation studies on the efficacy of training approaches in impacting DI is a concern given the importance of utilising resource to best effect.

While there is emphasis in the literature on the need for disability awareness training, there is a lack of focus on the evaluation of the effectiveness of EDI training on staff and student outcomes. Furthermore, the training that is emphasized is predominantly generic rather than discipline focused; much more attention is needed on the latter in realising a fully inclusive model (Asghar et al., 2017).

In sum, effective monitoring of the effectiveness of training in impacting disability awareness and improvements in practice is lacking (Hector, 2020; Pitman, 2022). The relative lack of knowledge about disabilities and appropriate adaptations among academics, professional services staff, and non-disabled peers in HE perpetuates retrograde conceptions of disability and places limits on inclusive practice (Lister et al., 2021; Merchant et al., 2020; Pickard, 2021; Svendby, 2020).

Feedback from senior leaders in our institutional survey reports (n = 12) highlighted staff training issues, and lack of training for students to enhance awareness of disability. Expert reports also highlighted the importance of training (DSUK, 2022; Hector, 2020; UUK, 2020), however, there is limited evidence of the efficacy of approaches to enhancing student awareness and understandings of DI.

Looking to institutional survey focused findings on training support (n =12), questions are raised in relation to the need for **anticipatory rather than reactive approaches** to DI: *'Training is often not delivered consistently and tends to be reactive (i.e., when an issue is identified within a school or course'.* Co-ordination of provision with partners is also noted as a concern by providers '*The availability of training is a challenge. External providers do not necessarily understand the context of higher education and even less [our university approach] to supporting students. Internal specialist disability support staff do provide some training support, especially in terms of resources, but it is not their main role and students support has to be prioritised.*'

The need for coherence and integration of DI training (Williams et al., 2019) is required to address ad-hoc approaches to DI, where it is seen as an additional extra (Meeks & Jain, 2018), and to ensure technology assists are integral to software provision rather than as part of additional packages. Survey responses noted the concern that: '*training is often not co-ordinated it is often tailored as per the request and there is a lack of mandatory disability awareness training*.'

Ownership of training is also a key consideration, and especially around how much DI training is centralised, and how much is developed within and owned by faculties, linking to the notion of sustainability and the ability to embed approaches within the fabric of things (Evans et al., 2019). Associated questions include who has access to training: Do technology support staff, librarians, academic staff, and students all have equal access to training?

Variability in the **quality and accessibility of learning materials**, and responsibility for evaluating quality, and engaging staff and students in training are key concerns for HEPs in scaling up DI. Central to such engagement is culture shift as identified in survey responses: *'Re-positioning of disability services and culture shift away from a medicalised deficit model towards identifying learner strengths, identifying learning barriers and challenges and co-creating a goal oriented individual learning plan with SMART outcomes for the student to enable robust progress reviews*.' Supporting studies are shown in Table 5.7; there are no examples of interventions evaluating the quality of DI training provision in the 198 articles of acceptable quality that we examined.

Relevant Articles: Table 5.7 DI Training		
Supporting Studies		
Author	Focus	Key findings
Bettencourt et al. (2018) Type 1	Explored how STEM faculty thought about and responded to disabled students to shape effective interventions.	Stressed the importance of relationships between academic and disability support services. Identified the need to develop specialized STEM liaisons to consult regarding disability accommodations within STEM.
Druckman et al. (2021) Type 1	Explored whether bias existed within the accommodation-deciding process.	Bias was evident in that requests from student with vision impairment were treated more favourably than for ADHD students. No evidence found of race bias.
Gurbuz et al. (2019) Type 1	Highlighted the need to increase awareness of ASD among staff and other students.	Emphasis was placed on ASD students' social skills development needs, social support opportunities, and levels of ASD awareness from others including peers.

Moodley & Mchunu (2020) Type 1	Examined the organizational readiness of nursing education institutions (NEIs) in S Africa to include disabled student nurses.	The lack of policies and/or guidelines impacted the experiences of disabled nurses.
Pfeifer et al. (2021) Type 2	Explored factors impacting self-advocacy of disabled students in (STEM) subjects.	Both a sense of comfort and a perception that accommodation use is accepted in a STEM course promoted self-advocacy behaviours, and the opposite was observed in the absence of these factors.
Trunk et al. (2020) Type 1	Explored factors impacting student disclosure	Negative cultures impacted student willingness to disclose. The need for faculty awareness training to ensure staff are more receptive to accommodation was identified along with developing UDL within the curriculum. Students with psychiatric impairments reported higher stigma scores compared to peers with other types of impairments.
Valle-Flórez et al. 2021). Type 2	Reported on work with 201 university professors of teacher training programmes in Spain to explore inclusive approaches to learning.	Highlighted the importance of academics' previous experiences of working with disabled students, impacting willingness to accommodate. Signposted the value of techniques such as collaborating with disability services, cooperative learning, situated learning, service learning, or project-based learning.

HEP staff perceptions of disability are explored but rarely in relation to how attitudes impact policy and practice. However, our search was focused mainly on the student experience and may have not have fully captured the literature on disability inclusion training initiatives for staff.

The research literature and expert reports highlight the importance of training to address bias around DI and specifically in relation to specific disabilities (LERU, 2019). The need for integration between specialist and academic teams in the design and delivery of learning experiences is highlighted (Feig et al., 2019).

The central role of the academic in facilitating disabled student access (academic and relational dimensions) is emphasized (Morina & Biagiotti, 2021). The need for student and staff awareness training is highlighted (Robinson et al., 2019). A holistic approach to training to include staff with diverse roles is advocated by Lister et al. (2021).

Emphasis on the need to address faculty perceptions of disability and willingness to accommodate needs, and/or remove the need for accommodations through inclusive practice is highlighted by Svendby (2020). The importance of specialist knowledge of

disability and awareness of specific disabilities being owned by the university community and not being the sole responsibility of central disability support services teams is acknowledged as important in moving to more inclusive provision; such need is highlighted in the following literature reviews:

○ Clouder et al. (2020)	Neurodiversity
○ Davis et al. (2021)	Autism Spectrum Disorders
○ Dobson Waters & Torgerson (2021)	Dyslexia
○ Flegenheimer & Scherf (2021)	Autism
○ Lightfoot et al. (2018)	US students with Learning Difficulties
○ Papay & Grigal (2019)	Learning Difficulties
○ Sedgwick (2017)	ADHD
○ Simui et al., (2018)	Visual Impairment
○ Wolbring & Lilywhite (2021)	EDI Principles in Universities
○ Zeng et al. (2018)	Interventions for Students with Learning Difficulties

In sum, evidence of the impact of staff and/or student training in DI approaches was limited**.** No evaluative studies of acceptable quality on the efficacy of training approaches to enhance staff awareness of disability, and utilisation of such awareness in practice were found. We found no intervention studies exploring the efficacy of different approaches to training.

Implications for research

- More work is needed on the efficacy of different training approaches in impacting outcomes (e.g., impact of training on practice rather than focused on satisfaction around the quality of training).
- Evidence of approaches to scaling up institutional knowledge and understanding of disability inclusion through the building of inclusive communities is needed given the lack of work in this area.

Implications for practice

- Emphasis needs to be placed on building collaborative partnerships between disability support teams and academic teams.
- Ensuring a strategic approach to training to ensure parity and consistency of practice across all teams.

5.8 Enabling Access

Focus: This theme includes a range of accommodations (e.g., reasonable adjustments such as extra time on tests, assistive technologies, tutoring, mentoring, and range of support programmes to include occupational therapy, in addition to financial support). Specialist guidance is often managed by central disability teams in liaison with academic departments within postsecondary organisations. Such assistance impacts disabled student success (Sarid et al., 2020).

Context: Most accommodations, especially where financial assistance is involved, require disclosure from students and are, therefore, often seen as reinforcing a medical model of disability where the student needs to 'prove' their disability to receive funding; a situation that deters many students from disclosing. For example, Newman and Madaus (2015) identified that 35% of students did not disclose to their institutions when entering postsecondary education. Disclosure itself is a multi-layered construct in that there are many ways in which students may disclose a disability which requires careful co-ordination across services to ensure the students' needs are met.

Accommodations was the dominant focus within the full research literature data set (26%) and approximately 23% of our highest quality articles focused on this theme (Appendix 2, Table 5). The overall quality of research within this area is questioned given that many studies are small-scale in nature and located within specific contexts limiting the inferences that can be made. Madaus et al. (2018) in reviewing over 133 articles on support services for disabled students concluded that the quality of the research base on the impact of accommodations was not strong, citing the lack of published research using rigorous designs to evaluate the impact of interventions (Dobson Waters & Torgerson, 2021). Papayand Grigal (2019) and Viezel et al. (2020) confirmed the significant lack of evidence on the longer-term outcomes of college-based support programmes on disabled students. Quality work interrogating the integrity (efficacy and appropriateness of supports) is limited (Spenceley et al., 2020). Kutscher and Tuckwiller (2019) found no quantitative studies examining awareness of supports, quality of supports, and match of supports to disabled students' needs with student persistence and graduation. However, they found evidence of small to moderate effects of supports to students in their participation in postsecondary education programmes.

Disability is personal and multi-layered, and the importance of the interaction of context (individual and environment) makes comparisons of studies difficult. There is a lack of work exploring the efficacy of accommodations in specific contexts. English HEI and College access and participation plans (n = 68) emphasize the role of professional specialist support teams in supporting disabled students throughout the lifecycle with reference to integrated approaches to provision, early assessment of needs, financial assistance, supporting mental health and wellbeing. However, there is little evidence of evaluation of the relative effectiveness of such initiatives.

Accommodations are important in impacting disabled student success in HE (Newman et al., 2019), but they need to be '**anticipatory, progressive and mutual'** (Hewett et al., 2017).
How institutions create inclusive cultures that encourage disabled students to disclose needs, and through inclusive practices reduce the need for students to disclose, are important. In the English context, higher education providers (HEPs) receive funding from the government in the form of Disabled Student Premium (DSP) to provide reasonable adjustments and disability

support services for disabled students. It is obfuscate how institutions use this funding to support disabled students (CSJ, 2021).

Encouraging disclosure to ensure disabled students receive the necessary help they need and in good time is a key focus for HEIs. Survey data from nine providers highlighted key approaches to supporting disclosure within HEIs. Work is needed to evaluate the relative effectiveness of different approaches to DI, and for students with different disability 'types' and to include intersectional variables.

Analysis of 408 articles, many of which comprise narratives detailing the lived experiences of disabled students, highlight that the **basics of provision are still not being met** for many disabled students. Such basics of provision include preparing students for transition and making information explicit so that students are clear about what supports are available (Hewett et al., 2017; Le Gary, 2017). Students' relative lack of experience of specialist supports in high/secondary school negatively impacted their development of study skills and ability to seek supports at university (Schechter, 2018). Many students were unaware of the supports available, exacerbated by the fact that they many may be undiagnosed at point of entry to HE (Pickard, 2021).

Disabled student access to and use of accommodations is dependent on students **knowing how to navigate systems of support**, their previous experiences of doing so, willingness to disclose, their perceptions of how accessible the climate of the university is in supporting disclosure, especially the attitudes of staff and non-disabled peers (Sprong et al., 2019), and lack of direct engagement of academic staff in the reasonable adjustments process (Shaw, 2021).

Lack of **physical access to resources** (e.g., ensuring websites meet basic accessibility standards, and ensuring physical access to buildings) (Merchant et al., 2020), is a dominant theme within the literature. Barriers to access include experience of bias, where systems and processes differentially impact students with different disability characteristics (Kruse & Oswal, 2018). Additional pressures on disabled students result from late notice curriculum changes that they have little additional capacity to manage (Evans et al., 2021; Williams et al., 2018).

Expert reports highlight the **administrative load** impacting disabled students around disclosure, the seeking of funding support, and the need for the load to be shared (DSUK, 2022; Wilkinson, 2019; Williams et al., 2018). Emphasis in expert reports is on supporting students' self-advocacy skills through organisations simplifying systems and processes and making the messaging around disclosure accessible (Johnson et al., 2019). The need for effective monitoring and evaluation of the quality of supports is noted (Chatterway, 2019; Meeks & Jain, 2018).

Barriers to accessing the curriculum reported on in the literature included individual and organisational variables. From individual perspectives, disabled students' fears about the negative impacts of disclosure and the need to fit in are dominant (Kilpatrick et al., 2017), along with the experience of being unable to access supports when needed and juggling multiple needs (Baker et al., 2021), and fear of failure associated with not being able to access the curriculum (Pickard, 2021). Double loading in feeling the need to advocate for oneself and for others was also a barrier to full inclusion for disabled students (Bruce & Aylward, 2021; Hewett et al., 2021; Read & Kennett, 2017; Santos et al., 2019).

Students with certain dispositions were found to be less likely to use supports available to the whole student population. Smith and Smith (2021) found that students choosing not to disclose were

more likely to have a medical view of disability, had 'hidden disabilities,' were younger, had mental health issues and/or learning difficulty issues (Grimes et al., 2017), were first-generation and non-traditional students, ethnic minority, and international students (Weis and Bittner, 2021). Safer et al. (2020) found that Native and African Americans and Hispanic students were less likely to declare disability and males were less likely to use accommodations; ASD and hearing-Impaired students were found to be most vulnerable. Zilvinskis (2021) found that less than 10% of first generation and transfer disabled students used support services despite the positive effects of them on student learning. Zaussinger and Terzieva (2018) found that 25% of disabled students do not seek any assistance because of stigmatisation fear. Lacking a sense of belonging to higher education, feelings of social isolation and perceived financial difficulties were found to be significantly associated with the reluctance to seek support due to fear of stigmatisation.

Lack of alignment of institutional DI support with disability need, impacted outcomes. Anderson et al. (2017) found emphasis was placed on academic supports whereas for many students, it was social rather than academic supports that were most wanted (e.g., in the case of neurodiverse students). Contrary to this, Davis et al., in their 2021 review of 24studies on ASD students' supports found the opposite to be true; in the latter review the focus was narrower and the effectiveness of supports were not analysed.

Organisational integration across teams in providing supports was essential in supporting disabled student access to resources. A piecemeal approach to accommodations, rather than considering accommodations as integral to the whole learning experience, impacted effectiveness (Reyes et al. 2021). From expert reports, Hill et al. (2020) identify the importance of building campus-wide understanding among students and staff about accommodations.

Discipline, professional and societal attitudes towards disability impacted rates of disclosure. For example, disclosure in Nursing was found to be complex (L'Ecuyer, 2019). Meeks et al. (2018) suggests that less than three per cent of medical students in the US have disclosed having disabilities given the barriers related to policies and procedures.

Anderson et al.'s (2018) systematic review of 24 interventions for postsecondary students with ASD highlights the **need for more specialist understanding of the needs of ASD** students and their **intersectional characteristics to** maximise the impact of interventions. Hewett et al. (2017) raised similar issues in relation to staff needing the specialist knowledge and resources to ensure appropriate accommodations for students with visual impairments.

Table 5.8 identifies three interventions that considered various supports for disabled students; the key messages from these and the supporting articles listed, are that accommodations are important but judicious use of them is needed to ensure alignment with disabled student needs and especially around quality of resources, ease of access, timing in ensuring students have the resources when needed.

Relevant Articles: Table 5.8 Enabling Access				
Interventions				
Author	Focus	Type of evidence; Strength of evidence	Key findings	Cost
Baker et al. (2021)	Looked at importance of Learning Access Plans and support for nursing students.	Type 2; Emerging	Highlighted the need for early disclosure of disability.	Mod to High
Sarid et al. (2020)	Explored the relationship between level of support and attainment.	Type 2; Strong	Despite the initial differences in admission scores, no significant difference was found in the final GPA of graduates with LD who received different levels of support from the university, meaning the intervention had a positive impact.	Low
Weis & Beauchemin (2020)	Impact of separate room testing effects for ADHD, learning disabilities, and/or test anxiety on performance.	Type 3; Strong	The results did not support separate room testing and demonstrated that in some cases, it may have lowered test scores.	Low

Supporting studies		
Grimes et al. (2017) Type 1	Explored the characteristics of the disclosing and non-disclosing disabled students in one HEI.	The non-disclosing group was younger (under 25), more likely to have mental health issues and learning difficulties, and more likely to have only one disability.
Hoggatt (2017) Type 1	Explored how policy, structures, and practices impacted access and educational opportunities for disabled students in one HEI.	A deficit view of disability was prevalent in policy and practices, and this restricted access and educational opportunities for disabled students who had limited opportunities to be part of decision-making.
Kruse & Oswal (2018) Type 1	Focused on barriers to accessing support services for students with mental disabilities (bipolar disorder).	Stigma surround mental disabilities, and procedural barriers impacted access.

Newman et al. (2019) Type 2	Explored the effects of receiving disability-specific and universally available supports on continuation and completion for students with LD in US context using national data sets.	A significant relationship was found between support receipt and retention or success in HE (70% of those who did, compared with 50% of those who did not). The HE success rate increased to 80% for students with LD who only accessed universally available supports. The most frequently accessed accommodation was time extensions, with 22% of participants accessing this.
Parsons et al. (2021) Type 2	Explored transitions impacts for disabled students.	The more accommodations a student lost from high school to university, the lower their GPA and incidence of potential failure.
Safer et al. (2020) Type 2	Examined predictors of reduced retention and graduation rates for students using 10-year institutional data.	Disabled students who stayed after the first semester were much more likely to graduate. Intersectional effects: Males used fewer services, attained slightly lower grades, and were slightly less likely to graduate than females. Financial support targeted at lower SES students did not benefit all students. It helped Hispanic students but negatively impacted African Americans graduation rates.
Schuck et al. (2019) Type 2	Explored variables impacting college attendance and persistence for blind students in the US.	Having the ability to get academic help from outside the university services was the strongest predictor of college persistence. Students with visual impairment who found academic support from outside university-provided services, were four times more likely to complete their first year.
Kilpatrick et al. (2017) Type 1	Explored impacts of supports and adjustments on retention and success for disabled students.	Retention and performance varied by disability type. Those who did not disclose disability type had lower retention. Good relationships with faculty and support staff and viewing disability from an accessibility viewpoint rather than a medical viewpoint were identified as retention identifiers.

In summarising key findings, the use of support services contributed towards disabled students' retention, graduation, and attainment (GPA) but the situation is complex given the range of individual and contextual factors implicated.

- **Receiving specific accommodations** (i.e., extended time on testing, modification of testing materials, and assignment accommodations) were **statistically significant predictors of college GPA (mainly in the US context)** in 15 articles reviewed by Madaus et al. (2021).
- Students **who used supports** (those available to the full student body and/or disability-specific supports) were more likely to **persist in, and successfully complete their studies.** The implications of this being that transition staff need to ensure students are not only are prepared to seek disability supports once on campus, but that equal emphasis

should be placed on helping students access supports available to the full student body (Newman et al., 2019).

- **The use of universal supports alone** (e g., tutors, writing centres etc.) **impacts outcomes for disabled students**, and this is important as students are more likely to access universally available supports than disability supports (Newman, et al., 2019).
- Keptner and McCarthy (2020) found evidence of **positive impacts of occupational therapy training and support on student outcomes** in 11 out of 25 studies they reviewed. However, the content of such programmes which frequently included goalsetting, self-management, social and academic skills, were highly variable making it difficult to deduce what works.
- **Timing of support impacted outcomes**, the **first semester experience** was found to be related to disabled students' overall GPA and completion (Safer et al., 2020).
- **The need for careful consideration of equal opportunities regarding employment/further study prospects** (Druckman et al., 2021; Major & Tetley, 2019).

The efficacy of accommodations is complex and dependent on numerous variables such as: (i) student propensity to disclose which is often linked to type of disability and intersectional variables such as socio-economic class and ethnicity; (ii) appropriateness of supports and the level of expertise of those supporting accommodations (Muyor-Roriquez et al. 2021; Wright& Meyer, 2017); (iii) the level of integration of support services (e.g. library, specialist careers, housing, academic access); and (iv) training available to all stakeholders including the disabled student and others (e.g. school staff preceding higher education, family, faculty members, admins, library staff, disability support office staff, employers). The research highlights **the importance of students' self-regulatory skills** in relation to knowing how to access supports, awareness of effective networks of support and self-awareness of need (see self-advocacy section).

Implications for research

- Research is needed on the relative effectiveness of different forms of support (financial, equipment, learning support devices, assistive technologies, coaching and mentoring, internships, support networks etc.) on outcomes for disabled students (attainment, progression, skills development etc.).
- Research is needed to help understanding of why some groups (e.g., Black and ethnic minority disabled students) are less likely to request disability support than others.

Implications for practice

- The importance of language around disclosure, valuing of diversity, and consistency of practice
    - equity across groups and what this means.
    - alignment between messaging and actions
- Efficiency of operations across academic and professional/expert leads to ensure a joined up and holistic approach.
- Early assessment of needs to ensure students have the supports they need in place prior to continuing their studies.
- Factoring in time to enable students to master the supports and networks available.
- Move to inclusive model where accommodations are built into design to minimise the need to disclose.

- Key questions relate to how information translates to disability support at faculty level, and also the role of students' unions in supporting disability disclosure at all stages in the student lifecycle?

5.9 Inclusive learning and teaching

Focus includes curriculum approaches that promote equal access and equal opportunities for all students to do well within learning environments (e.g., nature of learning materials; organisation and structuring of learning and teaching including assessment; ensuring transparency and ease of access to learning materials; building reasonable adjustments into curriculum design; scaffolding of learning, engagement with students; understanding students' learning approaches etc.).

Key concepts:

Participatory Practice in the way that faculty engage with students (e.g., partnership) (Scott et al., 2014).

A critical pedagogy interrogates the potential differential impact curriculum may have on some groups of students in developing an inclusive approach (Waring & Evans, 2015).

Universal Design for Learning (UDL) (CAST, 2011, 2018) represents an inclusive approach to learning that draws attention to (i) how information is presented (*representation*) (i.e., different formats and organising structures to permit access to a wide range of learners); (ii) enabling learners to demonstrate their knowledge in different ways *(action and expression),* and (iii) enhancing motivation through engaging students in meaningful activities *(engagement*) (Diaz-Vega, et al., 2020).

Examples of elements of UDL include reducing cognitive load by stripping back the curriculum and signposting core elements, ensuring choice in how students can navigate learning environments and the nature of resources they use, and engaging students in negotiating and justifying how their choice of assessment meets the learning outcomes requirements (Evans, 2022).

Only 3.5% of our top-rated articles considered inclusive pedagogies although much of the literature talked about the need for inclusive learning and teaching and approaches such as Universal Design for Learning (UDL) to enable inclusion for all students within the curriculum. There is wide support for inclusive learning and teaching approaches as a major way of addressing DI as identified in expert reports (DSC, 2022; DSUK, 2022; GDI Hub & Snowdon Trust; Griful-Freixenet et al., 2017: Williams et al., 2019). While the concept has strong face validity, understanding of what inclusive practice is and how to facilitate it effectively within HE is an issue (Shaw, 2021).

Inclusivity is a ubiquitous term within the disability inclusion literature, but there is little discussion of what it includes, what theoretical frameworks have informed approaches, or how to do this effectively (Lightfoot et al., 2018; MacMillan et al., 2021; Michalski et al., 2017; Morina,

2017a,b; Simui et al., 2018). Inclusive assessment like inclusive curriculum is an umbrella term with varied interpretations (i.e., anticipatory reasonable adjustments (DSC, 2022), choice in assessment methods (DSUK, 2022)), and the importance of not treating disabled students as a homogenous group is emphasized (DSC, 2020a).

Lawrie et al. (2017) differentiate between inclusive curriculum, delivery, assessment, and institutional commitment to inclusive learning and teaching acknowledging the difficulties in comparing the literature given the fluid use of terminology around inclusion and the multiplicity of ways in which the term is applied. Significant issues in supporting inclusive practice are raised within institutional survey reports (n=12) to include notions of shared responsibility, shared and informed understandings of what inclusive practice is, and gaining buy-in.

The quality of research on inclusive learning and teaching approaches is varied. There are few examples of inclusive learning and teaching evaluative interventions within disciplines or at programme level. In Table 5.9 only one intervention study was found of acceptable quality (Nieminen & Pesonen, 2020). Supporting studies and especially that of Atchison et al. 2019 is useful in addressing issues of inclusion within fieldwork contexts, highlighting the need to engage specialist support services and academic staff at the beginnings of curriculum design to ensure an integrated and inclusive approach for all students.

Relevant Articles: 5.9 Inclusive learning and teaching				
Interventions				
Author	Focus	Type of evidence; Strength of evidence	Impact on behaviour/ outcomes Impact on aspirations/attitudes	Cost
Nieminen & Pesonen (2020)	Evaluated accessibility of a new mathematics course design.	Type 1; Strong	All participants reported that they benefited from the self-assessment process, although it brought both opportunities and challenges.	Medium

Supporting studies		
Author	Focus	Findings
Atchison et al. (2019) Type 1	Inclusive approach to geoscience field courses.	Focused on different ways of promoting physical inclusion on fieldwork through meaningful site selection, fostering social inclusion, and utilizing technology to mediate access and facilitate collaboration in field-based teaching and learning. Importance of alignment between students' expectations of field trip accessibility and reality in the field.
Bustamante et al. (2021) Type 1	Explored impact of course design on strategy use.	Recommends UDL approach to course design, which would incorporate accessible learning and materials.
Burgstahler (2021) Type 1	Outlines a UDL framework.	Incorporates WebContent Accessibility Guidelines (WCAG) into UDL model.
Feig et al. (2019) Type 1	Designing inclusion in field work.	Highlighted the value of academic and disability support teams working together with students to build inclusive fieldwork experiences and through an understanding of the disabled student experience.
Griful-Freixenet et al. (2017) Type 1	Explored whether UDL addressed the learning needs of disabled students effectively.	Highlighted the importance of a flexible approach to UDL cognisant of different students' learning needs.
Scanlon et al. (2018) Type 1	Used the UDL Framework to investigate how well chemistry curricular materials supported different students' needs.	Suggested there is much room for improvement in consistently providing support for learner variation within chemistry curricular materials.
Wilkens et al. (2021) Type 2	Discusses potential of digital learning to support the needs of all learners and importance of UDL in this.	Highlighted that many resources are inaccessible for a wide variety of learners.

In institutional survey reports (n = 12) priority was afforded to making course requirements and expectations explicit to students, training staff and students in the use of online technologies and ensuring reasonable adjustments were outlined to students prior to them embarking on their

courses. Far less attention was afforded to disability awareness training, alternative formats of information to support accessibility, and ongoing evaluation of specific disabled student groups as part of module reporting mechanisms.

Universal Design for Learning

Much attention has been afforded to the adoption and promise of UDL approaches within HE to support success for all learners. UDL has been used to promote the importance of physical access and academic and social inclusion within fieldwork design and effective deployment of technologies (Atchison et al. 2019; Carabajal & Atchison, 2020). The literature suggests that UDL can serve as a useful framework to evaluate the inclusivity of curriculum materials (Scanlon et al. 2018), to clarify course content and accessibility for all students (Dean et al. 2017) and support effective implementation of assistive technologies (Wilkens et al, 2021).

However, there is much inconsistency in how UDL is understood, configured, and applied (Fleet, 2019; Scanlon et al. 2018). One of the key issues impacting effective implementation lies with the lack of high-quality research on UDL to be able to reach conclusions around impacts of such approaches on students' learning.

While Cumming and Rose (2021) found from their systematic review of 52 articles exploring UDL as an accessibility tool, that the theory of UDL provides a high level of support for practical application with high satisfaction rates from both students and instructors. However, research lacked identification of measurable indicators of the efficacy of UDL within given educational settings. Schreffler et al.'s (2019) literature review explored experimental and quasi-experimental designs of UDL within STEM. While four studies predominantly demonstrated outcome gains (e.g., perceived self-efficacy, self-regulation skills, use of more inclusive approaches in the classroom), they concluded that there was insufficient evidence to support the widespread success of the initiative.

Nieminen and Pesonen (2020) in synthesizing findings from four systematic reviews of UDL (Rao et al., 2014; Roberts et al., 2011; Seok et al., 2018; Schreffler, 2019) involving 34 articles, noted that the relatively poor quality of interventions made it difficult to make inferences about causal factors. They noted that Seok et al. (2018) deduced that UDL, including active teaching methods aligned with the principles of UDL, positively impacted outcomes for disabled and non-disabled students. However, to accurately assess the impact of UDL approaches on learning, the methodology needed to be better, and with more emphasis afforded to students' perceptions of the value of UDL. Fleet's (2019) systematic analysis of UDL identified 20 papers, of which most identified positive gains from UDL interventions. Improvements in learning were identified (Black et al., 2015; Burghstahler et al., 2015; Catalano, 2014), along with the complexities of trying to implement UDL, and the need for additional insights when working with students with specific needs (e.g., deaf or hard of hearing). However, the quality of the research was not assessed.

Implications for research

There is a need for evaluative studies exploring the impact of inclusive approaches to disability inclusion such as UDL training on staff and students, and for specific groups of disability, and to include intersectional variables including Type 3 causal evidence, and the value of mixed methodologies.

- Analysis of the impact of different forms of assessment on disabled students' performance.

- Exploration of what elements of inclusive design and delivery (e.g., UDL) are most impactful in impacting student learning outcomes.
- Effectiveness of specific inclusive teaching and learning approaches within disciplines on closing equality gaps.

Implications for practice

- Clarity is needed around what UDL or inclusive teaching and learning approaches constitute in a specific context, and better understanding of the underpinning theory (ies) informing curriculum design and learning support(s).
- Articulation of key principles of inclusive practice is needed.
- Focus needs to be on evaluating the inclusivity of curricula and the development of integrated approaches across functional areas to ensure coherence in provision.
- Greater emphasis needs to be on evaluating the quality of professional development activities to develop understanding of inclusive approaches to the curriculum.

5.10 Assistive technologies (ATs)

Focuses on 'any technologies that enhance access to learning and assist someone to do something they would otherwise be unable to do or have difficulty with' (JISC, 2021), to include note-taking alternatives, smartphones, multimedia presentations to support text material, alternate participation supports, graphic organizers, text-to-speech software, and other AT writing and visualization tools (Ko & Petty, 2020).

Key concept: Digital equity indicates that each learner has an equal opportunity to access and experience learning resources without physical constraints (Moon & Park, 2021, 316).

Assistive technologies (ATs) impact disabled students' access to learning, attitudes towards learning, independence, and performance (Alamri & Wood, 2017). ATs have educational and psychological benefits for students (McNicholl et al., 2020). Furthermore, ATs have potential to impact the performance of all learners. However, the evidence base on the impact of assistive technologies on disabled student learning outcomes while predominantly positive is relatively limited in nature. While the importance of assistive technologies in supporting disabled student access and success in learning is noted in research and expert reports (Pitman, 2022), this focus is underplayed in English HEI and College access and participation plans.

The broad and varied nature of interventions, and interaction of individual and contextual factors makes it difficult to come to clear conclusions. Reyes et al. (2021) highlight the importance of access, socialisation, and inclusive pedagogical practices, and the role of academic support, concluding that the inclusion of disabled students in online HE contexts involves the combination of pedagogical, technological, psychological, and emotional factors. Significant benefits have been reported on the impacts of AT on increased independence, and development of self-regulatory skills (Ko & Petty, 2020).

Emphasis on assistive technologies was a dominant theme in 10% of the articles included in this review. As illustrated in Table 5.10, ten interventions were identified with five of these outlining the positive impacts on student performance and associated skills development.

Relevant Articles: Table 5.10 Assistive technologies				
Interventions				
Author	Focus	Type of evidence; Strength of evidence	Impact on behaviour/ outcomes Impact on aspirations /attitudes	Cost
Batanero et al. (2019)	Impact of matching student needs to appropriate content (e.g., non-auditory and non-visual formats) for blind, deaf and deaf-blind engineering students.	Type 2; Strong	Enhanced learning performance significantly improved across all groups: blind (45%), deaf (46.25%) and deaf-blind (87.5%).	Medium
Bruno et al.(2020)	Direct instruction in the use of text to speech assistive software.	Type 3; Medium	Impacted student confidence in using tool but did not impact attainment.	Medium
Cinquin et al. (2021)	Impact of engaging students as co-designers in MOOC design.	Type 2; Emerging	Accessibility of MOOC content was improved for students with cognitive impairments. Impacted on student' perception of self-determination, autonomy & competence.	Medium
Clouder et al. (2019)	Evaluated a two year project aimed at enhancing access to HE and employment opportunities for disabled students using AT.	Type 1; Weak	Led to the development of accessibility centres facilitating ATs which supported student agency, promoted academic staff- student dialogues and negotiations between disabled students and their institutions.	High
Detar & Vernon (2020)	Used a video based feedback intervention (weekly 30min sessions) to support students' social conversational skills development.	Type 2; Emerging	Social inquiry skills improved within a short period of time.	Low

Kaufmann et al.(2018)	Evaluated the effectiveness of collaborations between Library and Disability Support Services around co-creation of video tutorials for staff and students and accessible software.	Type 1; Weak	Increased access to accessible software across the institution, and increased and between department awareness of shared goals to support student success.	Medium
Lahav et al. (2019)	Used technology to turn visual information into sonified feedback to support learning of blind students.	Type 2; Strong	Higher scores achieved by all participants.	Medium
Malcolm & Roll (2017)	Investigated the impact of personalised approach to providing assistive technology, training students in the use of it, and ongoing IT support on satisfaction and performance of academic task for disabled students.	Type 2; Strong	Student ratings of their performance and satisfaction on all of the academic tasks (i.e. reading, writing, note-taking, test-taking, and studying) significantly increased from pre- to post- intervention.	High
Menzi-Çetin et al. (2017)	Tested the usability of a university website with five visually disabled students as part of a participative design.	Type 1; Medium	Highlighted lack of access and supported understanding of difficulties and enhance provision.	Medium
Woods-Groves et al. (2018)	Trained students in electronic essay writing strategies.	Type 3; Strong Numbers involved relatively small (n =20)	The treatment group improved their essay writing skills and improvement was sustained.	Medium

Much attention is placed on **web content accessibility** (Eligi, 2017; Laufer Nir & Rimmerman, 2018; Lowenthal et al., 2020; Scanlon et al., 2021), with reports that many HEI online learning platforms do not meet the basics regarding Web Content Accessibility Guidelines (WCAG 2.0) (Menzi-Certin et al., 2017; Park et al., 2019; Scanlon et al. 2021; Wilken et al., 2021). Zhang et al. (2020) highlighted the need to address accessibility of Online Education Resources (OER), and use of assistive technologies using OER. Problems with access are particularly acute in certain disciplines (Batanero et al., 2019). For example, Scanlon et al. (2021) in exploring the accessibility of undergraduate Physics curriculum webpages and graduate research webpages found that lack of accessibility was common.

Assistive technologies put in place during the COVID pandemic highlight the **differential impact of online provision on students with different types of disabilities** (DSC, 2022). Digital equity is especially problematic for students with visual impairments (Moon & Park, 2021; Wilson et al., 2020). Students with certain types of disability demonstrate higher levels of online self-efficacy (i.e.,

students with medical disabilities compared to peers with psychological or learning disability, and/or managing added challenges (e.g., racial and sexual minority backgrounds)) (Lee et al., 2021;Terras et al. 2020).

Reyes et al.'s (2021) systematic review of academic interventions for disabled students in online environments highlighted successful outcomes for disabled students where **VLEs had been adapted to make them more accessible, and where support materials were available** (e.g., braille devices, video classes, active teaching approaches and online tutorials), and in good time (Wilson et al., 2020).

The importance of **providing AT tools that support inclusive learning** as standard, or that are easily available is highlighted in the University of Reading's access and participation plan (e.g., accessibility checking tools, automatic generation of alternative file formats (including audio, lecture capture & transcription and note taking software; use of Blackboard Ally to provide learning material in multiple accessible formats; audio note taking software e.g., Sonocent)
A key issue being the judicious analysis of most appropriate tools for a specific course, university support of such tools, training for staff and students in the use of them and ongoing evaluation to review student access to such tools and the impact of them on student academic and holistic wellbeing (DSC, 2022; DSUK, 2022; OfS, 2019).

The research highlights the importance of **building inclusive and participatory** learning environments in which to situate ATs. The importance of **participatory design** involving disabled students' access from the outset to build the technology with disabled students is highlighted in Cinquin et al. (2021) and Clouder et al.'s (2019) research. Pearson et al. (2019) in building inclusive online communities noted the importance of (i) a **shared language of disability**; (ii) **embedding inclusivity** within the curriculum at every stage but keeping it simple to what this actually means in practice; (iii) ensuring the **technical infrastructure was there to realise the curriculum** and that students and staff know how to use it; and that **students had time to trial resources prior to embarking on their programmes**; and (iv) attending to the **challenges that online groupwork activities** raise for some students.

Many AT designs are underpinned by Universal Design principles, however lack of understanding of the conceptual underpinnings of UDL, and an associated lack of criticality in the application of UDL impacts efficacy (Batanero et al., 2019) as previously outlined.

Moon and Park (2021) in synthesising 30 articles on how OER can support disabled students found few examples of the impact of OER driven interventions, making it difficult to draw inferences from the research. However, they identified the value of **designing legitimized and collaborative activities** in helping learners with disabilities by facilitating learner–learner and learner–instructor interactions (Kane et al., 2018; Koushik & Kane, 2019), the **importance of peer support**, and **instructors' familiarity with assistive technologies**. Complicated interfaces of OER that failed to consider learners' physical difficulties and the unique circumstances they create, impacted students' learning.

Where **accessibility is built into programmes** and incorporated into assessment it can be extremely powerful in feeding forward to impact wider populations. For example, where programmes are focused on maximising understanding and use of ATs, and the production of valuable DI products as an outcome of this (MSc in Educational Assistive Technology at University

of Dundee).

Training students and staff in the effective use of ATs is essential (Ko & Perry, 2020; Lee et al., 2021), and as part of this, training needs to acknowledge the additional burden placed on those disabled students already managing additional load (Williams et al., 2018). This includes engaging with all stakeholders including employers to ensure continuity and ease of use of software across platforms. The need for students to have time to familiarise themselves with, and master, ATs prior to starting their courses, to avoid additional overload, is highlighted in survey reports and panel interviews.

Captioning and video instruction facilitates access when of good quality (See DSC, 2022 for discussion around the significant issues involved in automatic captioning). Alsalamah's (2020) systematic review of **captioning** (access to audio material in written form) for deaf or hard of hearing students, found that students' performance increased in seven of the experimental research studies. However, most of the studies were STEM based and relatively dated. The impact of COVID has significantly expanded captioning; a key issue is whether captioning services will be retained at these higher levels, with potential for much greater evidence on impact. Kent et al.'s (2018) review argues that captioning can benefit all students as an argument for mainstreaming the provision, but also suggests the need for further evidence to substantiate the value of it. The importance of ongoing evaluation of the quality of ATs especially that of lecture capture is highlighted (DSC, 2022).

Use of video to model and coach students in development of knowledge, understanding and skills can be effective (Nylen & King, 2021). Chen & Yakubova's (2021) systematic review of 75 articles concluded that there is sufficient evidence to support the effectiveness of video-based intervention in teaching vocational skills to transition-age students with ASD. Out of the 19 studies that met the What Works Clearinghouse (WWC) design standards,15 studies demonstrated a 100% success estimate, 18 studies indicated medium or strong effect sizes with evidence of sustained gains in those studies that collected follow-up data (e.g., 86% of the vocational skills were maintained during follow-up and 73% were successfully generalized to new contexts). In the most effective studies, these rates increased to 95% and 100%, respectively. Of note, was that while video modelling (watching a continuous video) and video prompting (where the viewer watches a video showing one step at a time, with a pause between steps for the viewer to complete the step they just watched) were both effective, video prompting with pauses was most effective.
Similarly, pause procedures in the delivery of information in lectures were found to be effective in Dobson et al.'s (2020) systematic literature review evaluation of interventions to support dyslexic students.

Gaps in the literature were identified. The potential to use data generated by learners in online platforms to support inclusion is underutilised (Zhang et al., 2020). Insufficient attention is given to the role of ATs in supporting students' social relational skills, sense of belonging and self- efficacy, all known to impact performance (Evans et al., 2021). Cain & Fanshawe (2021) highlight the importance of considering student engagement from a holistic perspective (cognitive, behavioural, collaborative, emotional, and social) drawing on Redmond et al.'s (2018) online engagement framework. The authors present a useful tool for supporting students with print disabilities which has relevance and application to wider groups of students.

AT training programmes are important for upskilling staff and students but there is little evidence of systematic and rigorous evaluation of the success of training programmes to support upskilling in the judicious use and application of ATs to support learning (Seale et al., 2021).

Implications for research

Further research to build the evidence is needed on:

- Disabled students' use of ATs and differential effects of design on students with different disability profiles and intersectionalities.
- The effect of online learning environments on disabled students' engagement in their learning, and relationships of online behaviours to success.
- Evaluating the effectiveness of AT training for students and academics.
- The impact of the design of online assessment on the performance of disabled students.

Implications for practice

Work is needed by HEIs to address the basics of AT provision. Such basics include ensuring that disabled students and staff know what supports are available, that these supports are timely, and that physical and virtual access must be delivered on. For example, universities need to ensure that they meet WCAG 2 web content accessibility standards, otherwise many disabled students will remain locked out of learning (DSUK, 2022). Key areas of importance highlighted in the research include:

- Ensuring baselines of accessibility are met across all functions.
- Mainstreaming the basics such as captioning, lecture capture; the quality of such provision needs careful monitoring.
- Evaluating the impacts of AT provision during COVID and ensuring best practice is retained and built upon (DSC, 2022; DSUK, 2022).
- Ensuring consistency in the quality of support within and across programmes.
- Ensuring ATs can be used across multiple platforms and devices.
- Providing students with a route map to how the online learning environment works.
- Judicious use of tools and training of staff and students in them.
- Disabled students being given pre course access to training to ensure readiness to use tools.
- Ensuring disabled students and staff have time to master ATs prior to course delivery.
- Ensuring greater collaboration between schools and HEIs to ensure smooth AT transitions.
- More effective use of artificial intelligence to support personalised learning.
- Judicious use of face to face and online provision to maximise the benefits of both attuned to the needs of students with multiple and varied access needs.

5.11a Transitions support: Transitions from school to university

Focus: includes interventions to support disabled students' transitions into higher education including working in partnership with stakeholders (e.g., parents, schools, colleges), making supports explicit, and engaging students in pre-university skills development, courses and place familiarisation, self-advocacy skills development etc.

Transitions is a dominant theme featuring in 21% of our highest rated articles. Within the literature, transitions support for disabled students focuses on entry to HE (Hill et al., 2020), disabled student retention and continuation, and progression into employment (Hector 2020). In triangulating with access and participation plan commentary most attention is focused on employability, and then access with less attention given to retention/continuation strategies for disabled students, with one exception: the focus on mental health.

In Table 5.11a, four interventions are highlighted. Transitions support programmes positively impacted student dispositions and outcomes in Schillaci et al.'s (2021) study. Goegan and Daniels (2019) emphasize the importance of academic and social supports. Agarwal et al. (20210) and Ruble et al. (2018) tested the efficacy of different approaches to mentoring and coaching which are highly dependent on the specific dynamics involved (individual, context and interactions).

Factors supporting the efficacy of transitions support are highlighted in the four supporting studies outlined in Table 5.11a. Kutscher & Tuckwiller (2020) highlight the importance of transitions programmes supporting students' self-determination, linking with much of the research on self-advocacy. Zilvinskis (2021) identifies the complexity of the relationship between support services and disabled student engagement, and role of intersectional variables (first-generation students). Intersectionality is also a theme in Showers et al. (2017) where socio-economic status is identified as a factor in impacting disabled student success in HE related to socio-cultural capital in knowing how to access supports, again linking with the importance of self-advocacy in facilitating disabled students' transitions.

Appendix 3 highlights the discrepancy between the DI priorities highlighted in English HEI and College access and participation plans (APPs), and findings from research. While the APPs focus on disability support from central, specialist teams, orientation programmes, communication strategies and focused study skills support, the research and expert reports emphasize preparing students for entry through alignment of school and university systems and processes (DfE, 2022; NADP, 2021).

There is a lack of evidence-based research on the effectiveness of transition interventions in improving disabled students' post-school outcomes (Ruble et al., 2018). Research on the disabled student voice in transitions is also lacking (Cavendish et al., 2020)

Relevant Articles: Table 5.11a Transitions support				
Interventions				
Author	Focus	Evidence type; Strength of evidence	Impact on behaviour/ Outcomes Impact on aspirations/attitudes	Cost
Agarwal et al. (2021)	Explored the effectiveness of a transitions mentoring programme.	Type 2; Medium	Limited impact of workshops found on mentor and mentee knowledge gains.	Medium to High
Goegan & Daniels (2019)	Explored the relationships among student characteristics for first year students (e.g., disability status, perceived academic ability),	Type 3; Strong	Academic integration was significantly and directly associated with better academic success. Social integration was associated with drive to achieve. It predicted the acquisition of knowledge and skills and overall satisfaction. The impact of social integration on success was stronger for students with LD than for their peers without LD. For all students, drive to achieve had an indirect effect on success outcomes.	Low
Ruble et al. (2018)	Tested the efficacy of a parent-teacher consultation and coaching sessions with ASD students.	Type 3; Strong	Outcomes were higher for those engaged in a coaching model compared to the placebo control group. The importance of ongoing coaching for teachers was emphasized.	Medium

Schillaci et al. (2021)	Evaluated the impact of a college-based transition services model, providing students with intellectual and development disabilities (IDD) with access to college courses, internships, and employment during their final 2 to 3 years of secondary education.	Type 3; Strong	Participation in 1 year of the transition services substantially increased students' self- determination. The treatment group achieved substantially higher scores in six of seven domains of self-determination at the end of school year. Feelings of control were linked to student achievement.	Medium to High
Supporting studies				
Kutscher & Tuckwiller (2020) Type 1	Investigated the influences of high-school experiences on transition to HE for disabled students.	Receiving more facilitators or support in high school did not automatically result in a smoother transition to HE. Self-determination was found to be positively correlated to disability self-identity. Those who identified with or had stronger connections to a disability community also had a higher level of self- determination skills.		
Showers et al. (2017) Type 2	Examined the effects of family variables (i.e., socio-economic status and parent aspiration) and student characteristics (i.e., student expectation, math and reading performance, and time to enrolment) on college success for students with LDs.	Students with LDs from higher socioeconomic status (SES) families, who have higher educational expectations, coupled with a strong academic background, have the best chance at succeeding in college. However, these factors only explain 13% of the variance.		
Williams et al. (2020) Type 1	Explored factors impacting successful HE transition and completion for students with LD.	Highlighted the importance of collaboration between school and HE to bridge the transition process for students.		

Zilvinskis (2021) Type 2	Examined the impact of frequency of use of disability student services on engagement of disabled students and in relation to other variables.	Greater use of disability student services was related to higher levels of engagement. For first-generation SWD, increased use of career counselling had a significant, direct, positive effect on engagement. However, for transfer disabled students, increased use of disability student services was associated with lower engagement.

The evidence from papers of acceptable quality including systematic reviews (n = 198) suggests that:

- Transitions projects impact disabled student retention and success; however, individual studies are of variable quality so findings need to be interpreted cautiously (Anderson et al., 2019).
- The first semester experience has significant impacts on disabled students' retention, and attainment (Safer et al., 2000).
- The importance of meaningful preparation and advice about what support at university looks like and what disabled students need to do to prepare and ensure their support is in place drawing on an integrated approach involving disability support teams, mental health and finance teams to facilitate transitions support.
- Students who received transition planning from secondary to postsecondary education were more likely to use available accommodations and support services (Newman & Madaus, 2015), and use of accommodations was frequently, but not always, linked with student success.
- Provision of supports alone is insufficient to effect positive transitions especially where students have multiple marginalized identities (Safer et al., 2020).
- Early assessment of student needs makes a difference to how students perform. Students need to be clearer about what supports are available as part of transitions programmes; this is currently seen as a weakness of such programmes (Ju et al., 2017).
- Transitions support needs to engage all relevant stakeholders including families and friends, and facilitate understanding of the intersections and combined impact of diverse cultural, developmental, and contextual factors on educational outcomes (Cook et al., 2017; Francis et al., 2018; Ruble et al., 2018). Close communication and collaboration between secondary and postsecondary settings is essential to ensure teachers in schools can support school students in developing self-regulatory skills to support their transitions (Milsom & Sackett, 2018).
- Training programmes offered to high schools to support disabled student access and transition to college or postsecondary are important (Schillaci et al., 2021).
- The need to support students' self-advocacy development so that students have a better understanding of their own disability(ies), are more able to communicate needs and aware of what resources and strategies are available (Williams et al. 2020), and especially for students from low socio-economic backgrounds.

In sum, transitions support into university has potentially large effects on outcomes for

disabled students but is dependent on quality of design, and impacts are variable dependent on disability type(s). High-quality research articles on peer and academic mentoring of disabled students are lacking, limiting the inferences that can be drawn on the impact of different mentoring approaches on DI. Findings on the effectiveness of mentoring approaches on DI are mixed, but given the very different designs of mentoring programmes, and frequent lack of information on what the precise nature of mentoring involved, it is difficult to be definitive about the impact of mentoring on impacting outcomes for disabled students. Intuitively it makes sense, that academic mentoring would facilitate the development of social and cultural capital of the learner, and that this is particularly relevant to the needs of disabled students and especially those with multiple disadvantages.

5.11b Supporting transitions from university into employment or post-graduate study

Focus: includes work with specialist disability careers support, external agencies and employers, and curriculum work to support disabled students' entry into the workplace to include skills development through coaching and mentoring (academic and social), internships, work-integrated learning, and opportunities to engage in research.

Research examining collaborative approaches between universities and businesses to support smooth transitions of disabled student into employment is limited although strongly mentioned in expert reports (CSJ, 2021; Myplus, 2015). There are few examples of high-quality articles that explore the effectiveness of approaches to support disabled students into employment (DiYenno et al., 2019), both within the curriculum (Kutscher et al., 2019), and from wider projects outside of it (Theobald et al., 2019).

As identified in Table 5.11b, there were only two intervention studies on employability initiatives of sufficient quality to be able to draw inferences from, and the strength of evidence in these was not strong. There are no articles in the data set exploring disabled students transitions into postgraduate study.

Expert reports highlight the importance of streamlined support into employment through close working of HEIs with employers to ensure transparent disability employment reporting (CSJ, 2021), and clear guidance to disabled students on employer support from government and employers, and the need for reform of support schemes (DSC, 2021b: CSJ, 2021; Hector, 2020).

Access and Participation Plans (APPs) highlight the importance of an integrated approach to employability approaches in HEPs working closely with a range of professional partners, ensuring that all elements of employability support are joined up from the moment a disabled students starts their university career (see Section 6).

Relevant Articles: Table 5.11b: Transitions into Employment				
Interventions				
Author	Focus	Type of evidence; Strength of evidence	Impact on behaviour/outcomes; Impact on aspirations/attitudes	Cost
Di Yenno et al. (2019)	Internship for students with physical disabilities	Type 2; Weak	Participants reported improved transferable skills and personal competencies, felt better prepared for employment, and more confident about getting jobs and in succeeding in employment. Positive impact found on employers' perception of and accommodation of disabled students.	Medium
Spencer et al. (2021)	Investigated the development of social networks, employment outcomes, and self-determination for students with intellectual disabilities one year after they graduated from HE.	Type 1; Emerging	5 out of 6 participants were employed a year later. Limited expression of self-determination among participants was found in terms of employment choice; receiving family encouragement and support was evident in making this choice.	N/A

Institutional survey data identifies a range of transitions support provided to enhance disabled students' access to employment utilising integrated approaches. We are not able to evaluate the effectiveness of these approaches as there is limited evidence of evaluation activities to explore the efficacy of specific approaches, but the focus of approaches is aligned with that suggested within the literature review. Key questions raised include the extent to which:

- disabled students are supported from point of entry into university with progression to higher level study and employment.
- focus is on the strengths of disabled students rather than deficits.
- disabled students are actively engaged in internships, international study opportunities, social networks across the institution which all provide them with valuable skills for the jobs market.
- specialist employability support being developed and at the discipline level.
- there is support from professional, statutory, and regulatory bodies in facilitating disabled students' progression into employment.
- disciplines/professions, and disability type impact student progression.

Implications for research

More research is needed on:

- What makes for a successful transition, the nature of disability and the role of intersectional variables in this (Anderson et al. 2019).
- Evaluation of the relative success of disabled students' transitions into employment and further study by discipline/profession and disability type, including intersectional characteristics.
- Evaluation of schools and HEI collaborative work to support transitions from an early stage in the process (teacher knowledge of supports).
- The impact of engaging disabled students more centrally in the transition process.
- Disabled students' transitions into postgraduate study.
- The impact of internships on longer term employment and wellbeing outcomes for disabled students.
- The impact of the timing of internships on future employment success.
- The impact of different forms of mentoring on outcomes.
- How the design of assessment can impact employment transitions success.

Implications for practice

- The importance of enhanced engagement of universities with secondary/high schools to support student transitions into HE.
- Ensuring supports are in place prior to disabled students' commencing courses.
- Early opportunities for disabled students to engage in internships, and research.
- The importance of a co-ordinated approach to ensure comprehensive employability support.

The University of Aberdeen provides a focused example using information derived from their institutional survey responses.

Case Study: Employability Support: University of Aberdeen

The Careers and Employability Service provide one-to-one guidance to all students based on their academic discipline, including those with disabilities, on all aspects of career choice, developing skills, connecting with employers, employer requirements, applications, interview preparation, sourcing work experience and placements, further study and graduate employment and connections with employers and opportunities.

Early Support

- All first-year students undertake the Professional Skills Development Course PD 1002 "Getting Started at the University" to explore skills development at an early stage. Access to careers advice and guidance is offered in a range of settings – by telephone, online via Blackboard Collaborate and in person.

Access

- The relevant building is accessible via a lift for those with mobility issues. Documents can be supplied in a range of formats and there is a hearing loop in reception. Careers fairs take place either in a building which has mobility access, or online.
- Careers and Employability Service resources include organisations dedicated to making access to placements and graduate work much easier for students with disabilities such as Aspiring Solicitors and Rare Vantage and these are advertised to students.
- The resources section of the CES website includes extensive and varied publications to support students in these ways.
- Students are informed of the services open to them at induction and via online courses which are advertised to the students on MyAberdeen via academic schools Students can access the website at anytime (www.abdn.ac.uk/careers). All students are actively encouraged and supported to apply for advertised and dedicated placements advertised on the Careers and Employability Service website.

Quality of Networks

- The Careers and Employability Service works closely with employers and national task groups such as the Association of Graduate Careers Advisory Services (AGCAS) Disability Task Group, to access information, publications, and training to ensure staff are in the best position to advise students with disabilities on employers' requirements, recruitment methods and disclosure on the part of students of particular disabilities (when in the recruitment process and how).
- The Careers and Employability Service work closely with organisations such as Employ-Ability to source information and one to one support for individual students in gaining entry to placements and graduate employment.
- The Careers and Employability Service are members of the Institute of Student Employers (ISE) who represent a wide range of employers who recruit graduates. ISE holds regular conferences attended by careers staff, to disseminate good

practice in employers' Equality, Diversity and Inclusion activities. This information is then shared with students at the University of Aberdeen via talks, workshops and one to one advice and guidance.

Ensuring quality

- All of the Careers and Employability Service team have undertaken EmployAbility training to assist with understanding of the issues faced by students with disabilities with a view to more comprehensive support on careers- related education, information and guidance to students with disabilities. Careers and Employability Service staff are professionally trained to provide advice and guidance to students on career development, application processes, interview preparation and assessment centres with particular regard to disability disclosure, reasonable adjustments and any matters around ensuring fair access for students with disabilities.
- Careers Advisers individually support students in particular academic disciplines and thus Careers staff are well informed about current Labour Market Information, types of employment and trends in recruitment. Staff are well placed to advise on issues such as disclosure, reasonable adjustments in the recruitment process and sourcing employment.

Keeping students informed

- Diversity and Inclusion sessions are regularly included in Boost Employability periods (three times per year) organised by the CES, when students can hear from employers on their E,D and I activities and speak with alumni who have successfully achieved graduate level employment.

Evaluation

- The CES has a dedicated member of staff to regularly review provision for students with disabilities, assess resources on the website and recommend training for staff to ensure high levels of support for students with disabilities.

Research highlights the need to place emphasis on the positive impacts of diversity on workplaces, and strengths rather than a deficits-based approach to supporting disabled student entry into the workplace. Magrin et al. (2019) noted that almost all disability specific workplace literature has focused on barriers to employment, with little focus on career success. Working with disabled students to recognise their knowledge and skills is strongly linked to work on self-advocacy and maximising the positives associated with certain types of disability and skills is needed as part of 4th industrial skills' requirements (Carrero et al., 2019; Ortiz, 2020). Key findings included:

- Supporting disabled students' transitions into work through **internships**, and from an early point in their post-secondary study is important (Meacham et al., 2017). The positive impact of internships to support disabled students' entry into the workplace is also confirmed by Magrin and Marini (2019), and also highlighted in 22% of the English institution access and participation plans (APPs) (n = 68).

- Research on transition to employment suggests that **early work experiences** are correlated with successful employment outcomes (Riesen, & Oertle, 2019).

- **Mentoring programmes to support the development of disabled students' employability skills** are outlined but detailed evaluation of the efficacy of these is missing (Dunn et al., 2018; Pellicena et al., 2020; Wilcocks & Elliot, 2017). Emphasis on professional mentoring of disabled students is highlighted in 12% of the English institution access and participation plans (APPs) (n = 68).

- **Continuity of support from HE to employment in relation to financial, assistive technologies, and living arrangements is identified** as especially important for disabled students. 22% of HEIs noted financial support for disabled students to undertake internships in English institution access and participation plans (APPs) (n = 68).

- The **low engagement of disabled students in international mobility programmes** limits their networking skills development (Duma & Shawa, 2019).

- The importance of **well-trained specialist disability employment staff** to support disabled students access to, retention, success and progression within employment is stressed by Griful-Freixenet et al. (2017).

5.12 Promoting self-advocacy

Focuses on training to support students in developing effective dispositions to navigate and negotiate their learning to include a wide range of self-advocacy constructs concerned with: (i) awareness of one's own needs; (ii) knowledge of what support is available; (iii) knowing how to advocate effectively for appropriate support; (iv) ability to use the learning environment and adapt it to suit one's needs, and (v) deploying self-regulatory skills to achieve academic success and successful management of self to include wellbeing and positive identity development.

Associated concepts include:

Self-regulation skills: identification of task needs, setting of goals, effective planning, and monitoring of progress towards goals, adapting approaches as necessary, and evaluation of efficacy of approaches in meeting goals – all of which involve cognitive (how one processes information), metacognitive (understanding of one's learning), and affective skills(ability to manage emotions) (Evans et al., 2021).

Self-determination (SD) refers to being able to make decisions for oneself (Accardo et al., 2019; Morina & Biagiotti, 2021) encompassing self-realization, self-autonomy, self-regulation, and psychological empowerment (Ju et al., 2017).

Training includes:

Self-advocacy approaches to promote awareness of own strengths and limitations, how to request accommodations, sense of purpose, and identity development (Collins & Wolter, 2018; Lopez et al, 2020; Schillaci et al., 2021; Shogren et al., 2017; Vaccaro et al., 2018).

Teaching of specific learning strategies (Alamri & Tyler Wood, 2017; Anastopoulous et al., 2021; Dyer, 2018; Morina, 2017a, b; Shogren et al., 2018).

Cognitive behavioural therapy programmes (Anastopoulous et al., 2021).

Affective models (Morina, 2019); student voice (Allen & Nichols, 2017; Kubiak et al. 2021; Tansey et al., 2018).

Self-regulation promotion within the discipline to address cognitive, metacognitive and emotional skills development (Evans et al. 2021).

Mentoring models including peer and academic mentoring.

In defining self-advocacy we acknowledge a broad definition of self-advocacy that explores the reciprocal relationships between an individual and their environment (e.g., HEI). Using this interactionist approach, the individual is not seen as passive and reactive but enabled to engage with their environment and support its evolution as a partner in the process involving:

(i) an individual's ability to manage their environment effectively for themselves which is applicable to all students, but even more so for disabled students.
(ii) organisational capacity to support all learners to be agentic and empowered.

Conceptions of self-advocacy matter as to whether this involves reactive behaviours (responding to a given context), versus initiating change (McEwan & Downie, 2019).

Self-advocacy is a dominant theme within the literature, and a key focus in 15% of our highest quality articles and 12% in the data base overall. Elements of self-advocacy approaches were indirectly noted in 14% of access and participation plans. At a meta-level, self-advocacy is highlighted across all DI themes but the focus on how best to support the development of self-advocacy from the individual and organisational perspectives is not heavily featured in curriculum development approaches.

Table 5.12 identifies ten interventions, of which eight identify the positive impacts of subject-specific and generic skills training on student performance and skills acquisition. Two papers focused on mentoring initiatives. Hillier et al. (2019) highlight the relevance of consideration of immediate and longer-term gains, and Markle et al. (2017) identify the benefits of academic mentoring for disabled students. In the supporting studies, Fleming et al. (2017) found self-advocacy to be the only modifiable predictor and strongest predictor of academic performance when considering a range of variables impacting disabled student performance.

Focusing on approaches to support students' management of cognitive load and affective dispositions (feelings of belonging etc.) have significant impacts for disabled students and this is true for the wider population. Marino et al. (2020) (Type 3, n = 120) focused on executive function deficits, and found coaching for STEM students to identify short and long term goals led to better student learning outcomes (GPA) and persistence. Similarly, Ruble et al. (2018) is a Type 3 study exploring interventions with 20 pairs of students and teachers focused on goal-setting and goal realisation that resulted in higher goal realisation scores.

Relevant Articles: Table 5.12 Self-advocacy				
Interventions				
Author	Focus	Evidence type; Strength of evidenc	Impact on behaviour/ Outcomes Impact on aspirations/ attitudes	Cost
Anastopoulos et al.(2021)	Examined the effectiveness of a cognitive-behavioural mentoring programme involving weekly 90-min group sessions and weekly 30-min individual sessions delivered over two consecutive semesters.	Type 3; Strong	The treatment group showed significant improvement in executive functioning (greater increase in their knowledge of ADHD, greater increase in use of behaviour strategies and significantly increased use of disability accommodations.	Medium

Bialka et al. (2017)	Student led social experience programme including social and academic support for physically disabled students.	Type 2; Weak	Participants felt less isolated and more included, and they were more able to form meaningful relationships with same-aged peers.	Medium
Bundock et al. (2021)	A mathematics intervention to support development of problem-solving skills for a student with LD.	Type 2; Emerging	Improved student ability to solve rate of change word problems after the intervention, and continued improvement up to four weeks following the intervention.	Low
Hillier et al. (2019)	Peer mentoring first semester support programme.	Type 2; Emerging	No impact on academic outcomes of peer mentoring but input was focused on immediate transitions. Longer term impacts were found for mentees a year later in relation to university knowledge, time management and confidence.	Medium
Kinney and Eakman (2017)	Self-advocacy training to student veterans.	Type 2; Weak	Student veterans with higher self-advocacy skills had better academic performance. Students who took more credits tended to have higher level of self-advocacy, and these students also showed better academic performance.	N/A
Malagoli et al. (2021)	Investigated the most challenging tasks for inaccurate writers with LDs, and whether self-perceived difficulties in writing skills differed for inaccurate writers with and without learning difficulties.	Type 2; Strong	The high performing and inaccurate writers significantly differed in all the tasks administrated in articulatory suppression condition, but not in the tasks administered in a normal conditions with an exception of the text dictation task. Students with LDs reported more perceived difficulties in completing the given writing tasks than their inaccurate peers.	N/A

Marino et al. (2020)	Focused on executive function deficits and explored the impact of coaching for STEM students on performance, persistence and preferences.	Type 3; Strong	Participants who received the intervention reported statistically significant higher scores on cumulative GPA than the control group. In addition, students in the treatment group were more likely to persist in their STEM majors. A cost reduction model was implemented by graduate special education majors acting as EF coaches for the STEM majors.	N/A
Markle et al. (2017)	Explored impact of a mentorship programme for disabled students to support academic and social integration during their first year. Academic mentors received specialist training from disability services. (findings based on 9 year analysis >32,000 students).	Type 2; Weak	Disabled students who were paired with academics had better academic outcomes (retention, graduation) than disabled students not in the programme, and also students without disabilities. Engagement of DSP with faculty was critical in building organisational capacity.	Medium
Pistorio et al. (2021)	Evaluated the efficiency of a literacy based behavioural intervention (LBBI) on the development of self-advocacy skills for students with IDD	Type 3; Medium	All students who received the LBBI learned how to request an academic accommodation with 100% accuracy. All students maintained the skill during maintenance sessions after the intervention was removed, also with 100%	Medium
Ruble et al. (2018)	Focused on goal setting and goal realisation.	Type 3; Strong	Transition age students with ASD in the experiment group achieved significantly higher Goal Attainment Scores (GAS) with a large effect size.	Medium
Supporting Articles				
Bruce and Aylward (2021) Type 1	Explored staffs' and students' lived experiences of self-advocacy in terms of requesting for, negotiating, and implementing accommodations.	Relationships found between students' self-advocacy skills, knowledge of accommodation rights, and the ability to purpose the protection of those rights. Student experiences also pointed out the often-neglected relational complexities inherent in claiming accommodation rights, making sense of university accommodation process, establishing effective relationships with faculty and staff, and meeting unspoken expectations.		

Fleming et al. (2017) Type 2	Examined modifiable factors including peer support, disability services, faculty teaching, campus climate and self-advocacy and non-modifiable demographic variables (e.g., race, gender, parents' education), and their relationships with academic performance.	Self-advocacy was found to be the only modifiable predictor, and the strongest predictor of academic performance. Age and self-advocacy were predictors of academic performance: Participants who were older and with higher level of self-reported self-efficacy reported higher GPA.
Gurbuz et al. (2019) Type 1	Compared social and academic challenges and experiences of ASD students to those of non-ASD students.	The ASD group reported higher level of mental health issues and lower social skills than the non-ASD group. The biggest social challenge autism students faced was the difficulties with social interactions and insufficient interpersonal skills. Main support areas of need were non-academic in nature especially around social interactions, and the need for more expertise in understanding ASD and the ability to translate this understanding into support provision.
Torres (2019) Type 1	Focus on at deaf, first generation, Latino students and factors impacting success.	The importance of goals, taking advantage of support services, and personal characteristics of assertiveness and independence.
Zaussinger & Terzieva (2018) Type 2	Severity and type of disability, sense of belong and social integration impacted help-seeking.	Those who had severe disability conditions or a non-apparent disability were less like to seek help due to fear of stigma. Among the students refusing to seek support, those with stigma fear were less satisfied with their course in HE, had lower level of sense of belonging or social integration, and were more likely to have perceived financial difficulties.

The constructs implicated in self-advocacy behaviours are significant predictors of achievement (Madaus et al., 2021). While self-advocacy is known to impact disabled student success, few articles examined how disabled students engaged in self-advocacy training, and within specific disciplines (Kutscher & Tuckwiller 2019; Pfeifer et al., 2020). Ju et al.'s (2017) review on self-advocacy training and coaching services, to include self-awareness, problem-solving, and goal-setting, found from examination of 20 studies that such approaches improved disabled students' self-determination skills and attainment, and encouraged disabled students to utilize disability services and support systems to achieve academic success. However, findings are tentative as the quality of the articles reviewed was not evaluated.

Training to support disabled students' use of self-advocacy skills in accessing accommodations requires consideration of the social and cultural capital of disabled students, especially those from lower socio-economic backgrounds (Waterfield & Whelan, 2017). However, Showers and Kinsman (2017) found that while family background including socio-economic status influenced disabled students' attitudes and success, this only explained 13% of variance in how students did, highlighting social factors such as help-seeking, and the ability to train students in developing this.

Self-regulatory skills development enhances self-advocacy, so targeting variables associated with this (e.g., goal setting, self-efficacy, planning) has significant impact on student outcomes (Kim and Kutscher, 2021; Kutscher & Tuckwiller, 2019). Interestingly, while self-regulation is frequently mentioned, it is done so superficially and not in relation to key research on self-regulatory approaches to learning (Evans et al., 2021). Evidence gleaned from the data set included the following:

- The importance of attending to students' social relational skills development in addition to academic skills development as part of a holistic approach (Goegan & Daniels, 2019; Kutscher & Tuckwiller, 2019).
- That social support programmes that supported student integration, sense of belonging, and network development are important in supporting students' holistic development (Bialka et al., 2017).
- The identification of key strategies to support learning and training of students in the application of self-regulatory strategies to new and varied situations and social contexts is important (Kreider et al., 2019). Magrin et al. (2019) highlighted the importance of supporting students' development of cognitive flexibility, pursuit of goals and self-empowerment.
- Self-regulatory skills development needs to be focused within disciplines; there is a distinct lack of work looking at skills development within the disciplines (Evans et al., 2021).

Mentoring programmes can have benefits for mentees and mentors but the evidence base is mixed (Agarwal et al., 2021; Brown, 2017; Doyle, & McDowall, 2019; Hillier et al., 2019; Marino et al. 2020; Qian et al., 2018). As noted in previous sections where mentoring has been highlighted, the nature of peer roles in mentoring, and the specific context and approach to mentoring is not explicitly described in most articles to enable replication. Research in this area is frequently focused on one institution, at specific points in time with few longitudinal studies examining sustained impact of involvement (Carter & McCabe, 2021). What we were able to identify was the following:

- Academic-student mentoring can have considerable impact on disabled student success and this is very much linked to social and cultural capital development. Markle et al. (2017) in considering mentorship programmes for disabled students to support academic and social integration during their first year in university/college, based on >32,000 students, found that disabled students who were paired with academics had better academic outcomes than disabled students not in the programme, and also students without disabilities.
- One off mentoring type workshops were found to have limited value in impacting change behaviours (Agarwal et al., 2021). Martin et al. (2017) highlight the importance

of considering the focus of the mentoring, the underpinning theoretical base, and the need for an integrated approach rather than 'one off workshops'.

- Coaching to support socio-cognitive behaviours has been found to be effective in support working memory capacity management and development of self-efficacy in studies by Doyle, & McDowall (2019) and Marino et al. (2020).
- Positive impacts of peer mentoring on mentors have been identified (Hillier et al., 2019).

In sum, the literature supports self-advocacy development for disabled students but evaluative studies outlining the immediate and longer-term benefits of specific self-advocacy approaches are needed that also clearly delimit what core constructs are involved, and the relationships between them. There needs to be better intersections between disability inclusion literature and the extensive work on self-regulation within HE (Evans et al., 2021).

Implications for research

- Research is needed on how disabled students engage in self-advocacy within specific academic disciplines (Pfeifer et al., 2021).

Implications for practice

- Self-advocacy development needs to be embedded within curriculum design, and training provided for staff in how to achieve this.

6. Analysis of Access and Participation Plans (APPS) of Higher Education Providers in England

Data was examined on institutional disabled student lifecycle strategies from a stratified purposeful sample of 68 of 171 available English higher education provider access and participation plans (APPs) from the UK Office for Students (OfS) website 2020-2021. Stratified sampling ensured representation across FE colleges (n = 10), small and specialist providers (n = 5), Russell Group universities (n = 16), former 1994 group (5), post-92 universities, and metropolitan universities and alliance in England (n= 32). (APP analysis represented a 21% sample of English higher education institutions (n = 164) and FE colleges offering HE courses in England (n= 162)).

The Access and participation plan review involved analysis of the trajectories of students with different disabilities across the student lifecycle to include access to HE, continuation and attainment and progression into employment or further study. Differences in institutional approaches to reporting on DI were noted along with key themes, and the frequency of them within documentation (Appendix 2, Table 5).

Accessibility of reports

- Variation in the five-year timescales of the APPs needed careful consideration when comparing APP data.
- Inconsistency in the language of the APPs, including institutional acronyms, and the ways in which data are reported, impacts access to the information.
- Lack of uniformity in the methods of reporting on data were evident making comparisons between HEIs difficult, for example, benchmarks include comparisons to (i) national averages, (ii) previous institutional performance over varying time frames, (iii) disabled to non-disabled students within individual institutions, (iv) chosen comparator institutions, and (v) rates of increase and decrease over varied timescales etc.).
- Scales and data on diagrams and tables were often difficult to interpret visually and analytically.
- Student continuation data was often not clear as to whether it referred to disabled student continuation from year 1 to 2, or over longer-time frames.

Gaps in the data

- APPs are focused on institutional priority areas for inclusion, with approximately 50% of the APP sample not identifying disability as a priority. Absence of information, is indicative of priority status attached to disability but of itself, does not give us a full picture of what initiatives are being implemented to support disabled students, so caution is needed in interpreting findings.
- The **lack of intersectional analyses** may significantly underplay the very real gaps in attainment there may be for disabled students who are for example, part-time, have multiple disabilities, from lower socio-economic groupings and from ethnic minority groups.
- 90% of the sample APPs (n = 61) disaggregated data by disability 'type', however **lifecycle data for specific disabilities was limited** (data was either missing or reported in different and inconsistent ways making comparisons difficult) (See Table 7).

- **Few intersectional analyses of disability type in relation to ethnicity, social class or gender were found.**

Table 7: English Higher Education Provider Access and Participation (APP) Data Reporting of Disability Type

Disability type	Cognitive / learning disability	Sensory, medical, physical disability	Social communication disability	Mental health disability	Multiple disabilities
Stage in Lifecycle	Total N = 68; () = how many APPs reported on specific disabilities for each stage of the student lifecycle				
Access	40% (27)	10% (7)	15% (10)	56% (38)	13% (9)
Continuation	26% (18)	21% (14)	15% (10)	55% (37)	16% (11)
Attainment	34% (23)	18% (12)	10% (7)	38% (26)	16% (11)
Progression	25% (17)	22% (15)	9% (6)	35% (24)	13% (9)

Comparing the data

In comparing data across institutions from the focused examination of English University and College access and participation plans (APP) (n=68) mindful of the lack of consistency in reporting disaggregated data for disability types, several patterns were identified.

- Excepting students with sensory, medical and/or physical disabilities, all other disability types were predominately reported as having lower attainment compared to their non-disabled counterparts.
- Students with mental health disabilities were reported as doing less well than their non-disabled counterparts across the student lifecycle (continuation, attainment, and progression); this is contradictory to national data patterns in relation to attainment, where students with mental health disabilities performance is marginally better than that of non-disabled students (OfS, 2022). Patterns of performance for other disability types were more varied.
- Students with cognitive or learning difficulties were reported as generally doing better than their non-disabled counterparts in continuation and progression, but less well in attainment.

Data reporting patterns

- Disability was often not seen as a priority for action, it was not reported on in: (i) access initiatives of 51% of APPs; (ii) retention and attainment initiatives in 46% of APPs, and (iii) progression initiatives in 38% of APPs.

Data reporting of disability types

The number of students with mental health issues has greatly increased in many institutions (n=28), this pattern reflects the national UK pattern which has seen a rise of 180% in the numbers of students with mental health conditions since 2014-15 (Hubble & Bolton, 2021). Mental health initiatives were a key focus in 49% of the APPs, with 10% of APPs also focusing on initiatives for students with social and communication/neurodiverse attributes.

Within the APP data set, mental health was a disadvantage for continuation which is reflective of the national picture; where continuation rates are -2.9% for this group compared to their non-disabled peers (OfS, 2022). Among 36 institutions where this disaggregated level of comparison was made, 26 institutions reported that the mental health group had lower continuation rates than their non-disabled peers, and another eight institutions reported that this group had the lowest continuation rate in relation to other disabilities. However, in two institutions, the mental health group had a higher continuation rate than their non-disabled peers. 14 institutions also recorded poorer degree attainment levels for this group compared to non-disabled students (n=11) or those with disabilities (n=3).

A smaller number of institutions reported that students with mental health issues did similarly (n=3) or even outperformed (n=4) their non-disabled peers or did better than other disabilities (n=2). This finding aligns with national level data in that, students with mental health conditions do marginally better in attainment than their non-disabled peers at +0.2% (OfS, 2022). In our APP analysis, mental health negatively impacted progression of disabled students within 20 out of the 68 institutions.

Nationally, students with cognitive or learning difficulties continue to represent the largest group of disabled students; this was also the case in 10 of the 68 institutions sampled.

Of the 18 institutions reporting on continuation rates for students with cognitive and learning disabilities,14 reported that this group had a continuation rate either higher than (n=8) or broadly in line with (n=6) that of their non-disabled peers replicating national data trends. The remaining four institutions reported a lower continuation rate of students with cognitive and learning disabilities, compared to the non-disabled group (n=3) or sector average (n=1).

In considering attainment 23 of our 68 institutions mentioned cognitive and learning disabilities, and approximately half of these (n =10) reported lower degree attainment for this group of students, with only two institutions reporting a higher rate than for the non-disabled group (Table7). However, of the 17 institutions mentioning cognitive and learning disabilities progression rates, the majority reported a higher progression rate than for non-disabled students (n=10), with only three institutions reporting a lower progression rate for this group compared to the non-disabled group.

Only 11 (16%) of the sample mentioned students with multiple disabilities in their access and participation plans: seven reported lower continuation rates for this group compared to non-disabled students; one reported lower continuation than other disabilities; and three reported higher continuation (n=2) or similar continuation (n=1) compared to non-disabled students. Eight of the eleven institutions reported worse degree attainment for this group of students compared to their non-disabled peers.

Only seven institutions (10% of our sample) referred specifically to patterns of attainment of students with social and communication disabilities; attainment was worse for this group in five of the seven institutions.

Research-informed practice

Research into effective approaches to disability inclusion is mentioned by 11% of institutions. Use of **data** to monitor the effectiveness of disability inclusion is mentioned by 13% of institutions in supporting disabled student retention and attainment. Evaluation of initiatives to support disabled students' experiences at point of entry are not reported on in the APPs.

Clear communication strategies

Ensuring **effective communication strategies** to support disabled students at point of entry is a focus of 16% of the APPs analysed, but the role of communications strategies is only mentioned by 1.5% of institutions (n = 68) in relation to retention and attainment initiatives, and by 6% organisations in relation to employability initiatives.

From APP analysis (n= 68) there are examples of co-design, but evidence of **institutional co-ordinated approaches** to engaging with disabled students and staff in informing DI is limited. There are limited examples of student union engagement and disabled student engagement in curriculum design in research or APP analysis. However, **use of student feedback** to support access initiatives is mentioned in only 6% of APPs. 17% of APPs commented on the use of student feedback to support disabled student retention and attainment initiatives, with 2% of institutions commenting on the collection of student feedback to inform progression initiatives. The role of students' unions in supporting disabled student retention and attainment initiatives is mentioned in 13% of APPs with little reference to their role in access (6%) and progression initiatives (1.5%).

There are limited examples of student union engagement and disabled student engagement in curriculum design in APP analysis. Use of student feedback to support access initiatives is mentioned in only 6% of APPs. 17% of APPs commented on the use of student feedback to support disabled student retention and attainment initiatives, with 2% of institutions commenting on the collection of student feedback to inform progression initiatives.

Staff and student training

Only 13% of English institution access and participation plans (n=68) identify **staff and student training** in disability inclusion as a focus to support disabled students. Furthermore, survey data from UK HEI institutional leads (n=12) highlighted that DI training was predominantly developed by specialist teams, however ownership of DI is needed within academic and professional service teams. Training in DI needs to be aligned to institutional DI strategy and embedded within policy. There is no reference within the literature on strategic alignment of DI training with policy.

Supporting access: Reasonable adjustments

The APP data emphasized the importance of reducing the need for individual adjustments, promoting equality of opportunity, and enabling students to achieve their full potential through inclusive curricula. The vehicles suggested to achieve this change include inclusive and authentic assessment, flexible ways of working, increasing staff and student understanding of reasonable adjustments and mainstreaming them, development of inclusive materials, engaging disabled students in curriculum design, and varied approaches to mentoring. Strategic approaches to embedding such approaches, and the evaluation of them are less evident.

29% of the sample highlighted the importance of **inclusive curricula** in facilitating DI with varying emphasis on specific dimensions of inclusive approaches.

What the inclusive approach to learning and teaching involved was not explicitly defined in most APPs analysed, however, related aspects of practice highlighted included:

- Targeted progress tracking for disabled students including the use of analytics (6%).
- Five institutions identified the importance of research to better understand disabled student academic learning outcomes.
- Emphasis on peer support approaches was identified as a priority by six institutions. **Peer mentoring schemes** are mentioned in 16% of APPs, and professional mentoring from companies in 12% of APPs as part of employability initiatives to support disabled students. There is no mention of mentoring from academic staff to support disabled student retention and attainment.
- While ten universities place emphasis on central services support to assist disabled students, there is greater emphasis on the need to **embed inclusivity throughout the curriculum** (n = 15), and the importance of staff development as a central element in this.
- The need for **enhanced collaboration between central and academic faculties** in promoting inclusive curricula is highlighted by eight of the institutions.
- Eight institutions highlight the **role of technology within the curriculum** to inclusion, but mainly led by central services.
- 19% of the APPs highlighted the role of **assistive technology** development in supporting disabled student access, retention, attainment and progression, however base line standards regarding IT access were not addressed.

Transition support into university

Only 4% of our sample universities and colleges from APP analysis (3 out of 68) mentioned collaborative approaches working directly with disabled students, their families, and schoolteachers to support transitions. 26% of the 68 institutions ran some form of early transition support within HE for disabled students (e.g., enabling earlier registration, awareness days, orientation programmes, specialist modules etc.). Aligned with these findings, while 56% of institutions (n = 38) invested in access initiatives to support student entry (for example, information on disclosure process, making contextualised offers, financial assistance, support planning), only 4% of HEPs identified the provision of training for local schools in how to support disabled students in applying for HE, and 7% of our 68 higher education providers (HEPs) provided focused school-based skills development for pre-university disabled students.

Employment and employability

The APPs are rich with examples of employability initiatives. 47% of them outlined approaches to supporting employability of disabled students and there is much potential in evaluating the effectiveness of such approaches on students with differing profiles and patterns of disability and across professions. **Employability initiatives to support disabled students** place emphasis on internships (22% of APPs), professional mentoring opportunities with employers (24%), and specialist careers guidance (15%). 32 examples of employability initiatives being undertaken to support disabled students were identified. These include:

- Employability initiatives embedded within curriculum
- Specialist one-to-one support
- Online support programmes
- Initiatives with university partners to include local and national disability specialists and companies across different employment sectors
- Financial support to attend specialist workshops and undertake placements
- Specialist internship/placement opportunities
- Mentoring approaches (e.g., Students are matched with a mentor from a similar background, and or with a similar disability within or beyond the institution; reverse mentoring engages disabled students act as mentors etc.).

The University of Manchester, King's College, London, and Liverpool John Moores University provide examples of integrated approaches to employability initiatives aimed at providing comprehensive approaches to DI.

- **Targeted careers support** package consist of **work experience bursaries,** student **experience internships, mentoring and targeted events with employers**. **There are regular sessions on disclosure, disability friendly employers and extended careers guidance appointments**. Disabled students have been given **early access to all our careers fairs** plus specific help in using these events… Extended our **Student Experience Internship** (SEI) programme to include a targeted strand for disabled students, providing 8-week paid internships with local businesses at the end of their second year. The **Careers Service works closely with the Disability Advisory and Support Service** on a number of shared events' (University of Manchester Access and Participation Plan).

- **Employability will be embedded within the curriculum** to provide an overarching and inclusive approach to progression. **Dedicated Careers and Employability staff** to support disabled students. Specific activity to improve progression for disabled students through direct support, working with services across King's. Disabled students benefit from advanced booking for **longer 1:1 appointments**, **termly newsletters**, **online information** on subjects such as disclosure, a **dedicated email service** for queries and support and the Advance Scheme. The Advance Scheme enables disabled students to undertake **paid internships** with host organisations across London each summer with a view to improving progression outcomes (King's College, London, Access and Participation Plan).

- **Mentoring programmes** in which disabled students will receive insight, affirmation and **introduction to networks** from successful female professionals. Mentors will be drawn from both outside of the University (for example, leaders, practitioners and business owners active in Liverpool City's labour market) and from within. **Mentors will receive training and support** on establishing appropriate and transformative mentoring relationships. Disabled students can receive **fully funded short-term placements** participants will receive initial training that equips them to derive the maximum benefit from their experience. In tandem with this, those **employer partners who will act as the students' supervisors will receive training** on any needs the disabled students they will be hosting have and adjustments they should make to best accommodate them. (Liverpool John Moores University Access and Participation Plan).The relative effectiveness of different employability approaches on DI, and for specific groups of students is not provided in the APP analysis, but is an area of considerable and important research potential. Dominant themes included provision of internships, strategic careers guidance, targeted support and professional mentoring from employers and specialist agencies as noted in Appendix 3, Table 6).

Conclusion

This analysis highlights the discrepancy between the priorities highlighted in English HEI and College access and participation plans, and findings from research (see Appendix 3, Table 6). While the APPs focus on disability support from central, specialist teams, orientation programmes, communication strategies and focused study skills support, the research and expert reports emphasize preparing students for entry through alignment of school and university systems and processes (DfE, 2022; NADP, 2021).

Recommendations

Emphasis needs to be placed on adopting **coherent and systematic institutional approaches** to enhance access and success for all underrepresented groups (focused rather than diffused approaches): (a) embedded within curriculum and lived experiences of all students, (b) less is more co-ordinated approaches across faculty; (c) focused monitoring of application across all contexts, (d) effective methods to evaluate success, and (e) collaboration across the sector and with wider stakeholders.

Key considerations in developing access and participation approaches:

- **Standardised reporting** of data against agreed metrics to enable sector-wide comparison (accepting the impact of contextual variables).

- **Ensuring accessibility of APPs to a wider range of stakeholders** (e.g., engagement of student groups in the writing of APPs).

- **More granular analysis of disability data**
    - **Data reporting at the disability type level.**
    - Data reporting on **intersectional patterns** (e.g., to include socio-economic variables and ethnicity characteristics, and contextual variables.
    - **Disciplinary variations and at module levels.**

- Continuation data to **clarify patterns across the first- and second-year experiences** for disabled students and by disability category.

- The need for a wider **range of methodologies** to enable rich collection of data (e.g., mixed methodologies, longitudinal designs).

- **Clear baselines for reporting of data** to enhance quality of evaluation and with a focus on impact (e.g., provision of template to support HEIs in reporting on quality impact data utilising quantitative and qualitative approaches).

7. Confirming Themes with Stakeholders

A summary of the key themes identified within the literature and substantiated through triangulation with other sources of data included in this combined evidence review is provided in the following section. Through panel interviews involving 37 key stakeholders themes initially derived from expert reports, and substantiated through the extensive systematic literature review were further tested and affirmed with colleagues suggesting saturation of themes given the extensive review involved.

Feedback from panel members and from institutional surveys has been *blended* with the findings from the sources identified above to provide a focused summary of key themes discussion elements.

1. The importance of an institutional approach to disability inclusion (DI)

Significant training is needed to build leadership capacity at all levels (Hector, 2020; Martin, 2017). Currently, '*leadership is seen as too removed from practice.'* The support mechanisms for sharing good practice across the sector need to be strengthened (DSC, 2022). Disability leadership pathways are needed to empower people with disabilities (Harper & Szucs, 2022). Fundamental questions to consider include: (i) how are all individuals engaging with students and colleagues to ensure the inclusivity of what they do? And (ii) how is quality and parity of DI across all functions being achieved?

Panel participants confirmed wider findings concerning the relative lack of attention afforded to disability compared to other protected characteristics in HE where '*a pick and mix approach'* saw disability as an '*add on', '*a *luxury*, *and an afterthought'*.

'Lack of senior leadership buy-in and corporate ignorance of DI' were seen as issues within higher education and more widely by panel interview contributors. There was criticism of national schemes as being '*empty vessels'*. For example, disability confident scheme in the UK which, without an emphasis on outcomes, limits disabled colleague empowerment, and organisational effectiveness in DI. Similarly, the *Access to Work* Scheme in the UK was seen as a *'lifeline for disabled colleagues but with all the emphasis loaded on the individual to gain support without sufficient institution engagement'.* The Disabled Student Premium funding in the UK was seen as valuable but also '*heavily dependent on the quality of supports offered, timing of supports, and degree of agency afforded to disabled students to manage the process*.'

The role of senior leadership in managing DI was highlighted with concerns that DI gets '*kicked down the road'* with insufficient training of staff and students to support inclusive practice. The tendency for *'siloed thinking in working groups and competing narratives'* were seen as limiting the trickle down/spread of DI initiatives.

2. Investment in high quality research to ensure appropriate focus, quality, and sustainability of DI initiatives.

Building research capacity in DI underpinned by an understanding of rigorous research methods is imperative (DSC, 2022). Utilising methodologies and methods that best capture

the lived experience of disabled and non-disabled students is essential (Lipson et al., 2019). Harnessing these experiences of disabled students and staff requires granularity in exploring the specific nature of disability and the range of individual and contextual variables implicated (DSC, 2021a); mixed methodologies and longitudinal designs are important elements of this (DSC, 2021d). Investment in supporting student and staff research in disability inclusion is an important way of building DI capacity (Berghs, et al., 2016). A repository of high-quality research (CSJ, 2021; DSC, 2022) is needed and boundary-crossers who can convert research into usable tools across disciplines.

Panel contributors, noted a significant lack of joined up thinking within and across HEIs in bringing DI research together, although it was recognised that national initiatives are increasingly focusing on the need for more inclusive research and innovation spaces (UKRI, 2022); the issue is how such approaches are translated into practice within HEPs.

3. ***Evaluation of DI needs to be embedded within learning and teaching at module/course levels to ensure agile analysis of the implications of curriculum design on disabled students' experiences, and from intersectional perspectives*.**

High quality training in the use of appropriate data for evaluation purposes is needed for staff and students, and critical analysis of the use of such data and at a granular level (i.e., intersectional) to support informed DI agendas (Mitra & Yap, 2021). Such analysis needs to be agile to enable adjustments to provision in a timely fashion (i.e., enabling amendments during delivery of the curriculum). More attention needs to be given to understanding why certain groups of students appear less likely to request disability support (e.g., Black, Asian and minority ethnic students).

Panel members agreed on the importance of high quality evaluation, and issues with improving access to, and use of, data within HEPs. The importance of training to support understanding of data, and better understanding of high quality methodologies and qualitative and quantitative methods to support informed understandings especially around intersectional data were discussed. Lack of engagement with students in working with data to consider the impact of their approaches to learning on outcomes was noted.

4. ***An integrated approach to DI is needed to ensure an appropriate level of resource, and best use of it, to support the holistic needs of disabled students and staff.***

Better integration between specialist professional services and academic provision is needed (Williams et al., 2019). Clear mapping of how all relevant expertise intersects in the provision of DI is required to inform equal access to, and best use of resource. Specialist disability support services within the university and outside of it need to work collaboratively with faculty staff to ensure inclusion is fully embedded across all experiences for disabled students and staff (GDI Hub and Snowden Trust, 2021). University-wide disability management systems needs to be robust and agile in ensuring the effective sharing of disability information. Key performance targets and associated workload recognition for DI need to be addressed.

Panel members highlighted issues with cross-function/sector working in supporting DI along with a lack of integration of student and staff disability provision.

5. Investing in building a shared culture and language of disability inclusion.

Institutions must be transparent around the framing of disability and extent to which diversity is valued (Hill et al., 2020). Commitment to DI needs to be embedded within all layers of the organisation and the responsibility of all (academic and professional services staff and students) (John et al., 2019). Systems, structures, and processes need to echo this commitment (e.g., through acknowledging the importance of DI in student and staff appraisal, reward, and recognition processes). Bespoke accredited professional development pathways in inclusive practice are needed that address academic and social-relational dimensions of development.

Mechanisms for *'joining up the language of disability inclusion'* within institutions were described as 'unclear at best', highlighting the need for more integrated approaches to DI. Panel members discussed the psychological burden of *'carrying disability'* in terms of *'gaining and managing access'.* Issues around the discontinuity between proposed models of DI and practice within HEPs were identified. While most colleagues highlighted emphasis on the social model of disability within institutions, disconnects were evident across all areas of practice with '*pushing back to medical and legal models'.* Only two participants noted consideration of interactional and critical social models of disability within their institutions.

6. *Engaging disabled students and staff in framing DI approaches teaching and research.*

Greater attention should be on participatory designs engaging disabled and non-disabled students and colleagues together in maximising the potential of diversity within the university and beyond it (Bennett et al., 2019). Disabled students and staff need to be centrally engaged in informing learning and teaching, research, and enterprise activities (DSC, 2022).

Panel members noted a lack of a coherent approach to engaging disabled students and staff in developing services (education, research, social, physical) from anticipatory perspectives. Institutional buy-in to co-authorship varied.

7. Clarifying what constitutes high quality training in DI.

DI training needs to be available to all staff and students (DSUK, 2022) and be integral to professional development accreditation pathways (Hector, 2020). Rigorous evaluation is needed of the quality of professional development approaches aimed at enhancing awareness and implementation of DI approaches. Such developmental opportunities should be for all staff and students and should be embedded within disciplines. Links to specialist DI networks and ensuring currency of guidance are essential (Meeks & Jain, 2018). All staff and students need a routemap of where all key information can be found, supplemented with central communications to ensure alignment of focus with institutional strategic priorities.

Panel members noted that '*ideological and seismic cultural shifts were needed'* in moving DI forward. Systematic approaches to evaluating the effectiveness of DI training and engagement of students in such training required development. Institutional survey responses also highlighted concerns around staff training issues and lack of training for non-disabled students to enhance awareness of disability.

8. Ensuring equitable access to accommodations for all disabled students and minimising the need for accommodations for the majority of students/staff through mainstreaming good practice.

Greater criticality is required in scrutinising disabled students' use of accommodations (e.g., quality of accommodations, appropriateness, scaling potential) (Meeks & Jain, 2018). The intention should be to move to an inclusive model of DI where accommodations are built into curriculum design, thereby minimising the need to disclose, while also releasing capacity for specialist supports (Williams et al., 2019). Greater collaboration between universities, schools, and employers to support students' awareness of how to navigate disclosure within HE and employment contexts is required (DFE, 2022; NADP, 2021). Clearer signposting of supports available for all disabled students and staff is needed (Hill et al., 2020).

Panel discussions centred on how the model of service within HEIs could be shifted to enable students to have more control of the accommodations process. Disclosure was seen as a '*nasty word'* with stigmatisation as a key concern and not helped by *'academic policing'* around why a student needs an accommodation, and resulting in '*disabled students and staff apologising for doing well.'*

It was noted that disclosure operated at numerous levels within an institution involving '*multiple and varied acts of disclosure*'; how these different points of contact and differing experiences intersect to support disabled students is complex. Institutional survey responses noted increasing emphasis is being placed on the '*language of disability and how to encourage students to 'feel able to' disclose.'*

'Balance of load on specialist disability support services' was a key concern raised in panel interviews*. The* '*overloading of responsibility for DI on a limited number of experts needed remediating'* was highlighted*.*

9. Making the core features of inclusive curriculum delivery accessible and explicit, and ensuring a focus on inclusive assessment.

In spelling out the core features of inclusive practice (e.g., Universal Design for Learning): (i) the research underpinning the chosen inclusive approach needs to be accessible, (ii) the principles informing inclusive practice need to be transparent and particularly with regards to operationalisation at the discipline/specialism level, and (iii) the approach must be perceived as doable by staff and students alike (Evans, 2022).

Clear baselines are needed to ensure consistency in the quality of experience for all students. Principles of effective inclusive design need to be embedded within training for staff (e.g., clear signposting of key messages to reduce information overload; links to examples of effective practice to demonstrate how; opportunities to practice and embed ideas within one's own practice). Such training should involve all stakeholders in

collaboratively agreeing a unified approach (e.g., academics and students, disability, careers, mental health and wellbeing services, technicians, employers etc.) (Meeks & Jain, 2018).

An emphasis on inclusive assessment is essential in promoting inclusive approaches within the curriculum but this is significantly underutilised at present. Scrutiny is needed of the extent to which the nature of assessment (e.g., type, volume, distribution, focus, mode of delivery (online electronic versus face-to-face hard copy)) may have differential impacts on disabled students and staff (Tai et al., 2022).

Panel members confirmed the need for greater clarity on what inclusive teaching comprises, a sentiment echoed in institutional survey reports. Questions arise over the gatekeeping of inclusive approaches. What are the underpinning concepts informing inclusive practice? How are inclusive approaches prioritised and what evidence are they based on? How are students engaged in the design and evaluation of inclusive approaches? Concerns were also raised around misunderstandings of inclusion, and the need for quality training for staff and students in this area. Colleagues noted that *'reasonable adjustments should be a last resort as they should be built into curriculum'* aligned with expert report findings (Martin, 2017; Williams et al. 2019).

10. Training staff and students in the judicious use of assistive technologies (ATs).

Meeting web accessibility standards is essential. Critical examination of ATs is required to ensure the most appropriate use of technologies in support of learning. ATs need to be provided in a timely fashion, and the time needed to master the technologies needs to be accommodated within curriculum and assessment design to not overload disabled students and staff. The affordances of online provision for learning developed during the COVID 19 pandemic need to be maintained, and careful analysis of data generated through massive upscaling of technology used to inform enhancements in provision, and especially for those students who faced increasing barriers to access during COVID (e.g., those with cognitive difficulties, students with visual and/or auditory impairments, and intersectional factors –e.g., related to affordability of resource) (DSUK, 2022).

Panel members felt that the scale of assistive technologies in use was often underestimated. However a key question was around the '*portability of technologies'* across devices and sites, and evaluation of the quality of such resources. Colleagues noted effective approaches to promoting accessible materials employed by institutions but variable take up by colleagues and students, impacting equal access and opportunities for disabled students. Addressing '*cultural narratives'* that see disabled students as advantaged over their peers in using ATs need to be addressed at all levels within an organisation. '*Delays in training students in the use of ATs'* was noted as a significant concern in impacting student progress given the need to juggle course demands against the additional load on disabled students to learn how to use new technologies. It was felt that HEIs needed to support staff and student awareness on how to create accessible materials, and how this could be incorporated into assessment.

11. Maximising the effectiveness of transitions support.

Transition's support needs to be seen as a process and not as a point in time. Clear mapping of supports, signposting of requirements, opportunities for skills development and engagement of disabled students/staff in planning for transition with all relevant stakeholders is essential. Greater emphasis is needed in working with disabled students, their families, and schools to support students in self-managing their transitions. Efforts need also to be placed on ensuring disabled students develop the necessary networks and opportunities to maximise their progression opportunities into employment or further study.

Panel members noted the importance of specialist employability guidance and early opportunities for disabled students to participate in work-related learning. Varied opinions were voiced in relation to the amount of resource that should be allocated to supporting DI in schools to support transitions to university and the role of schools and HEIs in this process.

12. The development of self-advocacy skills needs to be integral to curriculum delivery.

Self-advocacy skill development is implicated in student success and involves numerous self-regulatory processes. In sum, it refers to an individual's ability to manage their environment effectively for themselves, and from an institutional perspective, the organisation's capacity to support all learners to be agentic and empowered.

Embedding self-regulatory skills development at the discipline level is beneficial for all students (Bembenutty, While, & Vélez, 2015; Dent & Koenka, 2016). A key issue is how curriculum is designed to enable all students to be able to manage their progression through it for themselves and to know where and how to utilise support from others in maximising their skills set (Evans et al, 2021). Attention primarily should be focused on academic and social skills development. Approaches addressing self-regulatory attributes such as goal setting are important while also addressing the neurobiology of learning materials (e.g., reducing cognitive overload through careful selection of materials, and clear signposting of core self-regulatory skills across and between modules/courses).

Panel members felt this area was largely overlooked but of interest. Concerns were raised that the '*language of self-advocacy can backfire'* in placing emphasis on what a student can do to be more resilient for themselves rather than stressing a joint approach to support a shared advocacy model. Self-advocacy was also seen as burdensome for disabled students and staff, and disability support teams in advocating on behalf of themselves, students, and other colleagues.

8. Conclusions and Recommendations

Conclusions

Despite the increases in the numbers of disabled students accessing higher education around the globe, disabled students remain underrepresented in higher education, with lower rates of retention, attainment, and progression into employment than their non- disabled peers (Hill et al., 2020; OfS, 2021; Pitman, 2022). There are considerable variations in disabled students' access to and success in higher education at national, regional, discipline, and course levels. Poignantly, there are also significant differences in how disabled students with differing profiles experience higher education (Safer et al., 2020).

The literature provides a rich narrative of the experiences of disabled students within HE and the factors impacting access and success. The fluid and complex nature of disability, and how disability intersects with personal and organisational variables requires more sophisticated analysis at an intersectional level to gain a more complete picture of factors impacting disabled student success (DSC, 2021a; Sprong et al., 2019).

Interpretation of what works to reduce equality gaps for disabled students is complex given the very context-specific and small-scale nature of much of the research making generalisations difficult. The different ways in which specific disabilities are defined and grouped makes also comparisons difficult. There is a notable lack of information on implementation procedures making replication problematic. Few studies disaggregate data to explore the impacts of university-wide professional and academic initiatives on specific types of disabilities.

Disability is a multi-dimensional, and dynamic construct. How individuals experience disability is personal. The research we explored provides a rich description of the lived experiences of disabled students in higher education with 35% of the literature considering facilitators and barriers to inclusion (n = 142). While experiences of disability are context specific, it is possible to aggregate findings to provide an overall picture of DI in HE. This synthesis of research suggests much more is needed to realise DI in HE, and especially for certain groups of students.

The lens of enquiry is important in exploring DI. In this review we explored national data and institutional DI data through analysis of university access and participation plans. While there are consistencies in national and institutional DI data patterns, there is also consideration variation. In-depth research is needed on disabled student experiences at the micro level, to explore the lived experiences of disabled students in pursuing academic study, and their holistic experience across the breadth of the university experience. The importance of high quality quantitative and qualitative research, that considers intersectionality, and the rich experiences of disabled students and staff, and that can inform provision in a timely way is essential.

A key aim of this combined evidence review was to explore causality: '*the use of methods which demonstrate that an activity has a 'causal impact''* (TASO, Type 3 evidence). Of the 408 studies reviewed only ten Type 3 studies were identified, with nine of these being of acceptable quality in terms of reliability and validity. Intervention studies were also explored, with 35 of 62 of these being of acceptable quality. In triangulating data from these sources with the wider literature, expert reviews, institutional reports and surveys, and stakeholder interviews, it was possible to

identify 12 key themes impacting DI within HE.

In privileging causal and correlational studies aligned with the remit of this review, activities that provided the strongest evidence of impact to enhance DI included: (a) accommodations, (b) assistive technologies, and (c) self-advocacy/self-regulation approaches involving the development of students' cognitive, affective and metacognitive skills, with associated impact on (d) transitions support approaches drawing on the aforementioned areas.

Use of support services contributed towards disabled students' retention, graduation, and attainment (GPA). Assistive technologies (ATs) impacted disabled students' access to learning, attitudes towards learning, independence, and performance (Alamri & Wood, 2017). The constructs implicated in self-advocacy behaviours were significant predictors of achievement (Madaus et al., 2021). Fleming et al. (2017) found self-advocacy to be the only modifiable predictor and strongest predictor of academic performance when considering a range of variables impacting disabled student performance. Kutscher & Tuckwiller (2020) highlighted the importance of transitions programmes supporting students' self- determination, linking with much of the research on self-advocacy (Goegan & Daniels, 2019).

In examining research in these core thematic areas (accommodations, assistive technologies, self-advocacy approaches, and transitions), key principles underpinning effective activities included the importance of anticipatory rather than retrofit designs in engaging *with* disabled students to enhance access to learning, teaching, and research (Cinquin et al., 2021; Nieminen & Pesonen, 2020), a shared language of disability (Pearson, et al. 2019), collaborative activities (Koushik & Kane, 2019; Moon & Park, 2021), attending to disabled students' academic and social integration (Goegan & Daniels, 2019); and a co- ordinated cross-function/sector approach (Evans & Zhu, 2022).

Significant gaps in research are highlighted. The importance of training to support understanding of DI and enhanced faculty awareness permeate the literature (Baker et al., 2021; Shaw, 2021). However, less than 1% of the highest ranked articles (n = 49) addressed this issue. In contrast while there is a significant body of work on inclusive approaches to learning and teaching including Universal Design for Learning, the relatively poor quality of interventions makes it difficult to make inferences about causal factors (Nieminen & Pesonen, 2020).

Recommendations

Implementation of effective DI policies and practices requires better understanding of 'what works' to reduce equity and attainment gaps for disabled students in post-secondary contexts (Kutscher & Tuckwiller, 2019; Tansey et al., 2018); understanding of disabled staff experiences of HE are an integral part of this.

From a research perspective:

To address the core issue regarding the use of research and evaluative techniques to inform practice and integrated delivery:

- more **sophisticated approaches to exploring intersectional individual and contextual variables** impacting DI are needed (Taneja-Johansson, 2021). Focus is needed on the causal processes implicated in DI in complex educational contexts, and understanding of the lived experience of disabled students through the generation of rich qualitative

reporting of evidence (Morrison, 2021).

- DI approaches need to be underpinned by **rigorous research and complex evaluation process methodology** need to be embedded within systems and processes including curricula from the outset (WECD, 2020).
- better understanding is needed of **processes** to support disabled staff and student self-advocacy and the **role of institutions in facilitating this** (Pfeifer et al., 2021).
- the need for focused research on **what inclusive practice is** and how to facilitate it effectively within HE (Shaw, 2021).
- **Rigorous evaluation is needed of the quality of professional development** in impacting knowledge and understanding of disability and use in practice.

From a practice perspective:

- Greater emphasis is needed on the **language around disclosure**, and the valuing of diversity, and from a realist interactional model of disability perspective.
- Emphasis on an **integrated approach** to disability that facilitates full co-partnership between academic and professional teams and external partners, and development of a culture whereby DI is the responsibility of all.
- Development of a **holistic approach** which considers the lived experience of disabled students and staff across all areas of university provision including partners (academic, social, mental health and welfare, physical/spaces, technological interactions).
- **Mechanisms** to assure **consistency in the quality of DI support** within and across programmes.
- Promotion of an **anticipatory approach** whereby accommodations are built into curriculum design from the outset.
- Integrating **self-advocacy development into curriculum design,** and providing training for staff and students in how to achieve this.

This review highlights the importance of leadership at all levels within an organisation in driving DI, however we found no articles that evaluated institutional disability inclusion strategies confirming the 'persistent void' in the literature identified by Lawrie et al. (2017). To address this gap in research relating to institutional leadership of disability inclusion, we highlight the importance of the overarching need for:

- research on the effectiveness of organisational approaches to scaling up DI within HE.
- testing the efficacy of integrated DI approaches such as the Disability Inclusion Institutional Framework (DIIF) (Evans & Zhu, 2022) with staff and students, within and across institutions, in supporting institutional DI change agendas.

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Appendices

Appendix 1: Technical details of Review

The systematic literature review involved a multi-stage process informed by Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines (PRISMA) methodology (Page et al., 2021). . Two databases were utilised: The *Education Resources Information Center* (ERIC) with its extensive reach of over 1.6 million records, and *SCOPUS* as one of the largest abstract and citation databases of peer-reviewed literature. Snowballing techniques identified additional articles and reports for inclusion.

Initial searches were undertaken in November 2021 by two members of the research team. Four researchers reviewed the articles, with the two lead researchers each responsible for analysing the full data set independently and then conferring. Ongoing inter-and intra-rater analyses were completed to ensure the completeness and integrity of the data sets.

Inclusion and exclusion criteria

To ensure breadth of coverage and to cover the entire student lifecycle into and beyond HE, the search terms used were: *Disability AND student access to higher education OR postsecondary OR College OR tertiary education; Disability AND student success in higher education OR postsecondary OR College OR tertiary education;* Disability AND Student continuation/retention in *higher education OR postsecondary OR College OR tertiary education*; *Disability AND student employability beyond higher education OR postsecondary OR College OR tertiary education*.

Our search terms were deliberately generic, mindful of considerable variations in policy surrounding disability support, the language used to describe disability, and differing categorisations of disability types across countries, all requiring care when comparing studies.

To ensure currency, articles were selected from the last five years (01 January 2017- 31 October, 2021). To be included in the review, articles had to be peer reviewed and written in English. Articles from a broad spectrum of disabilities were included: (i) Physical - impacting on an individual's mobility); (ii) Sensory (e.g., visual/hearing impairments); (iii) Mental Health* (e.g., depression, anxiety and eating disorders, schizophrenia, PTSD); (iv) Specific Learning Difficulties (SpLD) (e.g., dyslexia, dyscalculia, dyspraxia or non-verbal learning deficits, ADHD); (v) Social/Communication impairments (e.g., Asperger's syndrome/other autistic spectrum disorder (ASD); (vi) Medical Conditions and other disabilities (e.g., health issues including epilepsy, obesity, diabetes, cancer, HIV, chronic heart disease multiple sclerosis (MS) and asthma), and multiple disabilities (HESA data, 2021). *Mental health issues associated with other forms of disability were included in this review. However, studies focused solely on mental health issues were captured in a concurrent TASO review, as this was not part of this design brief.

While a key focus was on collecting TASO Type 3 evidence utilising robust methods to demonstrate that specific activities have a causal impact on outcomes for students with disabilities, Type 1 and Type 2 evidence involving a wide range of methodologies was collected to enable triangulation of findings. Empirical (qualitative and/or quantitative), theoretical and conceptual articles were included to ensure a thorough review of available literature encompassing perspectives from across different countries, disability types,

disciplines, institutions, and including intersectional data. Data analyses that used experimental/quasi experimental designs and demonstrated causal evidence, and literature reviews focused on analysis of causal studies were prioritised in the first step of the analysis process.

Exclusion criteria included:

- Lack of central focus on disabled students within higher education to include transitions to, through and beyond HE into employment
- Focused on tool/concept development without sufficient focus on disabled student experiences and/or outcomes
- Solely on mental health disability
- Not peer reviewed, not written in English; outside of specified time frame

Systematic Review Process

- We employed a 2 stage process in evaluating quality:

(i) The nature of evidence and what it can tell us about the *effect of 'x on y'* drawing heavily on TASO Type 3 causal, and Type 2 empirical research but also considering TASO Type 1 studies that provide rich description around context to add depth to understanding.

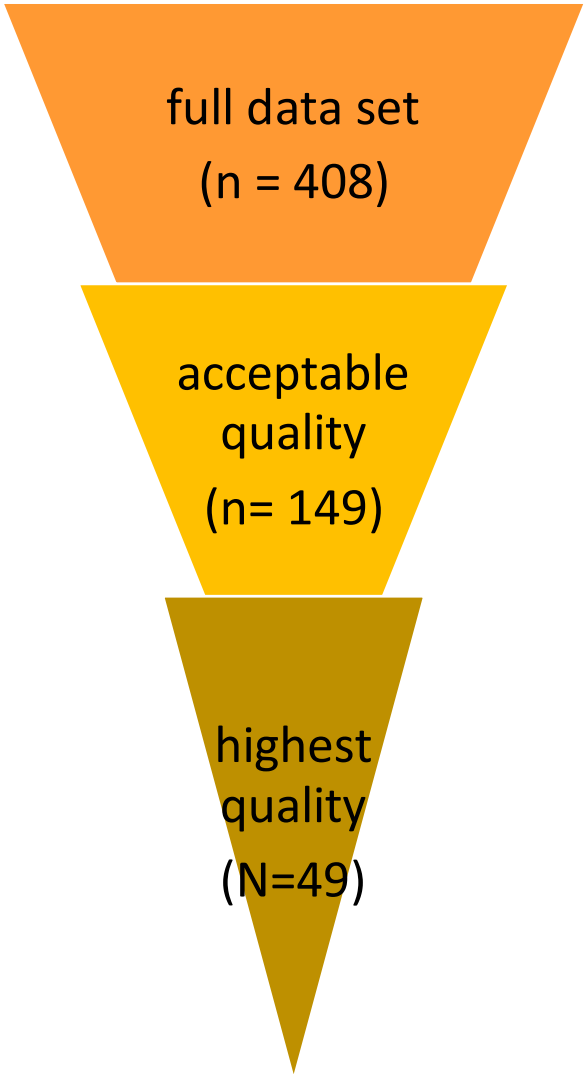
(ii) We explored all quantitative and qualitative methodologies according to international research standards of excellence around methodological quality (e.g., rigour and reliability), and overall quality of papers in contributing to understanding of DI (e.g., transparency, applicability across contexts etc.) (Evans et al., 2021); this approach could be applied to all Type 1- Type 3 studies.

Summary

In relation to measures of quality, 12% of papers (N = 49) met the highest standards of quality (AA rating), with a further 149 (198 in total) meeting our cut-off point (BB) of acceptable quality, including 30 of 63 possible intervention studies (Figure 2). The 198 papers include TASO Type 1 – Type 3 evidence to enable us to gain the fullest picture possible of the disability inclusion field, and respectful of different types of research, acknowledging their inherent value, and limitations. In sum, of the 198 papers identified as being of acceptable quality, 41.6% of Type 1 (n = 119), 62.5% of Type 2 (n= 70) and 90% of Type 3 (n=9) studies met this criteria.

The disability inclusion (DI) field places a strong emphasis on qualitative approaches featuring small sample sizes (78 papers had sample sizes of < 10). Emphasis on interpretative research is evident given the need to explore the lived experiences of students with disabilities within HE, privileging methodologies and methods deemed most suitable to enable access to disabled students' narratives. While the principal aim of this type of research is not about generalisation it is focused on trustworthiness through rich description to build understanding of the context and experiences of those within it (Carminati, 2018).

Figure 2 Systematic Literature Review Interrogation of Quality



C & D Methodological approaches implicit; lack of methodological congruence in relation to research aims, lack of evidence to support findings; lack of information on context and approaches used; lack of potential for transfer across contexts, lacking criticality.

BB Relatively strong methodology and focus on DI but lacks the rigour of type A.

AB Strong methodology but weaker on the details of the approach to support implementation in practice

BA Strong on disability inclusion approaches with good application to practice. Methodologically coherent but greater transparency needed.

AA Methodological approaches robust, valid, transparent and coherent, supported by a strong evidence base of how outcomes have been measured; findings accessible; high transfer potential; strong relevance to disability inclusion, clear rationale and explanation of context and approaches used.

Considerations around wider data sets

Supporting evidence: Survey analysis reports

- The small number of survey returns (n=16) with only 4 surveys from student groups limited the nature of analyses and inferences that could be made.
- Care was needed to ensure anonymity of sensitive information in line with GDPR requirements resulting in generalisations of sensitive data to protect anonymity of institutions.
- The questions required institutional oversight of all areas of DI, identified by senior HEP leads as challenging where numerous actors/stakeholders were involved.
- Data collected was predominantly descriptive rather than evaluative in nature.

Supporting evidence: Panel interviews

- Not all panel interviews were recorded following requests by stakeholders to not do so; ensuring all voices were heard was challenging within the group format.
- Ensuring anonymity of responses as requested by panel delegates.
- The panels were conducted online to support access but this impacted capture of some of the nuances that might have been more readily accessed in face-to-face meetings.

Appendix 2: Prevalence of Key Themes

Table 5: Key themes within the data set

Themes R = rank () = number	Full Data set central theme (n= 408)	*R*	*Full Data set* *Core themes* *(n= 408)* *(926)*	*R*	*Data set graded A & B* *Core themes* *(n = 198) (468)*	*R*	*Data set graded AA* *Core themes* *(n=49)* *(115)*	*R*	*APPs* *(Data reporting instances* *Core themes* *(n = 324)*	*Rank* *R*
1.Leadership	1% (4)	11	*1.2% (11)*	*11*	*1.3%* *(6)*	*12*	*1.7%* *(2)*	*11*	-	*12*
2.Evidence	3% (11)	9	*1.8% (17)*	*10*	*2.6%* *(12)*	*9*	*4.3%* *(5)*	*6*	*3.4% (11)*	*11*
3.Evaluation	1% (3)	11	*0.86% (8)*	*12*	*1.8%* *(8)*	*10*	*2.6%* *(3)*	*10*	*4.6% (15)*	*8*
4.Integration	8% (34)	6	*11.6% (107)*	*5*	*9%* *(42)*	*6*	*9.6%* *(11)*	*4*	*6.8% (22)*	*5*
5.Communication	1% (4)	11	*1.8% (17)*	*9*	*1.5%* *(7)*	*11*	*1.7%* *(2)*	*9*	*4.9% (16)*	*7*
6.Enabling Student/Staff Voice	4% (15)	8	*4.8* *(44)*	*8*	*4%* *(19)*	*8*	*3.5%* *(4)*	*7*	*5.6% (18)*	*6*
7.Training	9% (35)	5	*12.3% (114)*	*3*	*10.5%* *(49)*	*3*	*0.87%* *(5)*	*12*	*4.01% (13)*	*9*
8.Access	26% (107)	1	*22.7% (210)*	*1*	*24%* *(114)*	*1*	*23.4% (27)*	*1*	*18.8% (61)*	*2*
9.Assistive Technologies	13% (52)	3	*8.1% (75)*	*6*	*9.4%* *(44)*	*5*	*9.6%* *(11)*	*4*	*4.01% (13)*	*9*
10.Inclusive teaching	6% (24)	7	*7.7* *(71)*	*7*	*6.6%* *(31)*	*7*	*3.5%* *(4)*	*7*	*12.7% (41)*	*4*
11. Transitions	17% (70)	2	*13.2 (122)*	*4*	*13%* *(61)*	*2*	*20.9%* *(24)*	*2*	*21.6% (70)*	*1*
12. Self-advocacy and SRL	*12% (49)*	4	*14.1% (131)*	*2*	*10%* *47)*	*4*	*14.8%* *(17)*	*3*	*13.6% (44)*	*3*

Appendix 3: Transitions and Disability Inclusion (DI) - Access and Participation Plan Analysis

Table 6	Transitions into HE	Transitions through HE	Transitions beyond HE
Emphasis in APPs	1. DSA support from central teams 2. Orientation/transitions programmes 3. Communications strategies 4. Focused study skills support	1. Inclusive curriculum 2. Focused student support programmes 3. DSA support from central teams 4. Assistive technologies	1. Internships including financial supports 2. Strategic careers guidance 3. Targeted support 4. Professional mentoring
Research emphasis	• Need for high quality research and evaluation to support student/staff self-advocacy skills		
	• Impact of **academic** mentoring • **Timing of supports** and engagement with children, their teachers, and parents • Importance of **embedding skills training within the curriculum** • Need to address the **language of disability** and theoretical positioning of it • **Imbalance of 'load'** on disabled student and central teams • **Importance of disabled student ownership of the process**	• Value of **universal supports** • Importance of **first semester**/first year experience • Need for an **integrated team** approach • Need for **clarity around what an inclusive curriculum is**, and robust design and tools to measure the effectiveness of initiatives • Importance of **anticipatory design with disabled students** • Importance of **mapping key skills required within courses**, networks of support, and ongoing review of barriers to inclusion	• Importance of **social, academic, professional networks** • **Early opportunities** for internships • **Quality of experiences** / access • Importance of **access to research opportunities** • **Barriers to access** in certain professions/disciplines • **Lack of emphasis on positive attributes vs deficits**
Strategic responses	TIMING • Establishing **pre-HEI partnerships** and training with schools to support student self-advocacy development AWARENESS • **Clear route map of supports** available to all OWNERSHIP • Disability inclusion (DI) **embedded within induction/training** for all staff and students • DI **integral to performance review process, staff reward and recognition**	MAINSTREAMING DI • **Inclusive curricula key principles and elements explicit** within and across curricula • **Reasonable adjustments (e.g., assessment) embedded within the curriculum** • **Assistive technologies** (e.g., accessibility checking tools, automatic generation of alternative file formats (incl. audio), lecture capture, transcription and note taking software as **standard** QUALITY OF EVALUATION PROCESSES • **Evaluation of disability data integral to module reporting and at a granular level**	TIMING • **Early access** to internships/research opportunities ACCESS • Comprehensive **mapping of access** across phases/stakeholders • Ensuring **portability of supports** • Utilising alumni to support DI • Production of **inclusive products** as integral to assessments OWNERSHIP • Peer/academic mentoring programmes to support DI.

The citation for this evidence review report is as follows:

Evans, C., and Zhu, X, with Ruff, G., Smith, O., and Cheetham, W. (2023). Disability Evidence review with TASO. Eleanor Glanville Institute, University of Lincoln.

Further reading:

The Disability Institutional Framework (DIIF) developed from the systematic review of the literature and associated data bases is located at the following link, and is available under a creative commons licence to enable adaptation to local contexts.

Evans, C., and Zhu, X. (2022). The Disability Inclusion Institutional Framework, UK Version (DIIF) with international versions also available at inclusivehe.org