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Developing an inclusive learning environment for students with visual impairment in higher education: progressive mutual accommodation and learner experiences in the United Kingdom

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Abstract

Drawing on the findings of a unique longitudinal qualitative study, this article investigates the experiences of 32 young people with visual impairment (VI) in higher education (HE) in the United Kingdom (UK) to explore how well they were able to participate on their courses. We propose and apply a Bioecological Model of Inclusive HE to interpret these experiences and examine how accommodations were made to facilitate participation. Focusing specifically on 'curriculum access', the results highlight the importance of accommodations that are progressive and mutual. The accommodations come in many forms and include: the provision of resources through nationally based schemes (e.g. the Disabled Students Allowance in the UK); the support, adjustments and anticipatory adjustments HE institutions should provide; and the study skills and independence skills individual students should be able to act upon. The findings showed that while the majority of participants reported that their HE institution made some adjustments to enable them to access their course, a lack of anticipatory adjustments created barriers. The most common compensation for this barrier was to provide deadline extensions, often resulting in additional pressure on other aspects of the course. Interviews with university staff highlighted limited specialist knowledge and resources within their institutions to enable accommodations for students with VI and, more broadly, understanding of how to develop an inclusive learning experience. The findings also highlighted expectations made of the learner, particularly being able to explain their required adjustments and having well-developed independent study skills.

The paper has particular relevance to HE institutions in that it provides a model to aid interpretation of their role in creating an inclusive learning experience for students with VI. It also offers a reference point for professionals supporting young people with a broader range of disabilities in considering how best to prepare them for life after compulsory education.

Keywords

Inclusive education, Higher Education, Visual Impairment, Bioecological systems theory

Introduction

The UK Equality Act (2010) is central to the support system for students with disabilities in the United Kingdom (UK); it requires education providers to make ‘reasonable adjustments’ (including *anticipatory* adjustments) to remove barriers and ensure no student is put at a disadvantage.

<INSERT BOX 1 HERE>

Underpinned by these requirements, inclusion of students with disabilities in higher education (HE) within the UK is supported by a range of interrelating services and responsibilities including:

- The Disabled Student Allowance (DSA) (Gov.UK, 2016), a non-means tested scheme available to UK-based students to fund specialist equipment, non-medical support (e.g. note-takers, mobility support) and general expenses associated with a student’s disability.
- HE institutional support (including that funded by DSA), often coordinated by a central Disability Support Office (DSO) or equivalent with responsibility for determining and directing the ‘reasonable adjustments’ required for a student to access their course.
- Departmental support provided by welfare tutors or equivalent with responsibility for ensuring reasonable adjustments are made for individual students in line with the Equality Act.
- Non-medical support provided by external agencies that recruit, train and manage staff.

In July 2015, the UK government’s Department for Business, Innovation and Skills (BIS) launched a consultation regarding the future of DSA, proposing a new system where HE providers take greater responsibility (both practically and financially) for the non-medical support disabled students receive (BIS, 2015). The rationale provided for this proposal was that:

- (1) HE providers should take more responsibility for creating inclusive learning environments by making anticipatory adjustments for students with disabilities in accordance with the Equality Act, and
- (2) Students with disabilities can and should make greater use of assistive technology to access their courses.

The proposals by BIS, however, appear to be based upon a number of drivers or assumptions: HE providers are equipped with the necessary resources, knowledge and desire to create ‘inclusive’ learning environments for all students; and students with disabilities have the necessary skills to embrace a more inclusive learning environment. It is in this context that we examine the inclusion of students with visual impairment (VI) within UK HE institutions.

Aims

Drawing upon a longitudinal study that has followed a cohort of young people with VI as they left compulsory school education, we examine the experiences of 32 participants who made the transition into HE. Specifically, this paper explores three key questions to investigate the changes proposed by BIS (2015):

1. To what extent does HE in the UK currently offer an inclusive learning experience for students with VI?
2. How well equipped are HE providers in the UK at present to enable a more inclusive experience for students with VI?
3. To what extent are students with VI entering HE equipped with the necessary skills to embrace such changes?

We begin the article with a brief overview of the longitudinal study outlining the background context, methods, participants and format of data analysis. We then propose a Bioecological Model of Inclusive Higher Education (based upon Bronfenbrenner, 1979, 2005; Anderson, Boyle and Deppeler 2014). This model is used as a lens through which we interpret young people's experiences of HE and the *enablers* and *barriers to participation* they faced.

Longitudinal qualitative study

Background

The Longitudinal Transitions Study was designed to investigate the transition experience of young people with VI from compulsory education through to the labour market. The study was proposed in response to concerns about poor employment outcomes for young people with VI. In 2010 over 80 participants aged between 14 and 16 were recruited to the study through local authority sensory support services and specialist schools based in England and Wales. Whilst it is common for young people with VI to have additional (and often complex) special educational needs, this study focuses on those who met the inclusion criteria of being able to 'independently complete a questionnaire'. The participants have been educated in various educational settings including mainstream and specialist schools. The sample was judged to have a good representation from the population (Hewett, Douglas and Williams, 2011). At the time of writing, participants have been surveyed through semi-structured telephone interviews twice a year for six years and 65 young people remain active participants. These interviews have covered both the participant's transition pathways and specific factors believed to be significant for successful transitions of young people with VI (e.g. skills to access information independently, mobility skills and ability to self-advocate). Specifically, interview schedules used with participants in HE included the following topics: application process; support packages; access to the curriculum; assessments; and living independently in HE. A more thorough breakdown is provided in Hewett, Keil and Douglas (2015a). Prior to initial participant recruitment, the project received ethical approval through University of Birmingham Ethics Committee and additional ethical approval has been sought prior to each data capture. The project followed usual protocols for participant confidentiality, anonymity and informed consent (which was revisited at the beginning of each interview to ensure continued willingness to be involved). An important consideration in this longitudinal study was how to respond to those participants experiencing difficulties who could potentially benefit from some form of intervention. The project adopted a policy to signpost these participants to relevant services (including seeking advice from the project steering group where necessary). These referrals have been recorded as part of the project.

Whilst there are other studies which have investigated the experiences of students with VI and disabilities in HE, this study provides a unique perspective in being, to our knowledge, the first qualitative longitudinal study with this group.

Data collected on HE experiences

Since leaving compulsory education, the participants have followed various routes including FE, HE, apprenticeships, voluntary work and employment (or seeking employment). One common destination has been HE, with half of the participants (32) pursuing this option. Interviews were conducted with the participants in HE at several points: at the time of initial application, shortly after starting their studies and at the end of their first year of study. Further information about these young people is presented in Table 1. The severity of the participant's VI ranged from individuals requiring few adjustments, to individuals who have no vision at all. They attended a variety of HE institutions including 'pre-1992' universities, which tend to demand higher grades, and smaller institutions offering specialist courses. Case study work was also carried out with five participants. This involved site visits and additional interviews with key people who had had a role in their transition into HE, including four parents/carers, five Disability Support (DS) officers and five welfare tutors.

<INSERT TABLE 1 HERE>

Data analysis

The data collected in the study was analysed through both basic summary statistics and thematic analysis (using NVivo 10) following a three-stage approach. Stage 1 involved Author 1 gathering the data into broad sequences of events experienced by the participants and to some extent reflected the structure of the questions used in the various interviews. These findings are presented in full technical and summary reports (Hewett et al., 2015a, 2015b). Stage 2 involved the researchers working together to rearrange and combine codes. The researchers drew upon two frameworks to support their analysis. The first was the World Health Organization's (WHO) International Classification of Functioning, Disability and Health (ICF). We have used this approach extensively in our previous research as "it keeps 'participation' at its centre, and emphasises the importance of removing barriers to disabled people's participation" (Douglas et al., 2012: p19). Key terms are summarised in Table 2, and these terms were being used as a source of language when developing the interview schedules and for analysing and reporting the research findings (as reflected in use of ICF language in the results, in particular identified 'barriers'). The second framework used was the Bioecological Systems Theory of Human Development (BST) described below. Finally, Stage 3 considered how well the system works as a whole, what lessons can be learnt, and what implications of proposed policy changes to DSA these findings might predict.

<INSERT TABLE 2 HERE>

Bioecological model of inclusive education in HE

The Bioecological Systems Theory of Human Development (BST) was developed and refined by Bronfenbrenner throughout the course of his career (e.g. Bronfenbrenner, 1979, 2005). The theory was originally intended to explore how human development is influenced by the environment in which an individual is situated, with later versions placing greater importance on the role individuals play in their own development (Tudge et al., 2009). The later version of the theory (e.g. Bronfenbrenner, 2005) consists of four key interrelated elements: 'process' (human development through interactions with the environment around them); 'person' (personal characteristics that impact on development, e.g. age, skills and temperament); 'context' (the environments in which the person sits); and 'time' (the time in which this process occurs) (Tudge et al., 2009). The context in which the individual sits is described by Bronfenbrenner with reference to five systems: microsystems (factors in the environment immediately around the individual); mesosystems (interactions between factors within the microsystems); exosystems (factors outside the individual's immediate

environment that impact upon their development); macrosystems (factors and culture outside the physical environment); and chronosystems (human development over time). A more detailed overview of Bronfenbrenner's work is provided in McLinden et al. (2016) and Anderson et al. (2014).

Anderson et al. (2014) developed BST further to propose a Bioecological Model of *Inclusive Education*. The ecological model outlined by Anderson et al. (2014) has a focus on inclusive education in schools and serves as a useful framework in interpreting the “complicated, messy and changeable” (p31) environments and various influences on a child's participation in education. Given the wide ranging and interacting influences on a learner's participation in HE, we have found it valuable to use a similar conceptual framework in the form of a Bioecological Model of Inclusive HE as a lens through which to analyse data from the study. Such application has been found to be beneficial by other academics. For example Anderson et al. (2014) argue that the ecological systems theory provides an “invaluable framework within which to organise the environmental factors and understand their influence on inclusivity by placing the learner at the centre” with each contributory factor “located in relation to the learner's educational ecosystem” (p28). Similarly, May and Bridger (2010) found it to be “a useful model to describe the layers of influence operating in a given situation”. Further, not only does the model add a greater sophistication in relation to the educational systems for this analysis, but it also allows us to draw upon the language of the ICF and the concern to identify and remove barriers to participation.

In the next section we outline this model, which has been shaped through our research findings, before presenting findings within this framework.

The application of a Bioecological Model of Inclusive Education to the experiences of students with VI in HE provides an original way in which to view the experiences of students with disabilities. This is particularly true in the context of the longitudinal qualitative study as we are able to consider the development of the young people over a period of time, rather than at a particular time-point.

Analysis of findings

Outlining a Bioecological Model of Inclusive Higher Education

<INSERT FIGURE 1 HERE>

At the centre of the model is the learner with VI in HE. Each learner will have particular characteristics and needs, which it is important to acknowledge in any analysis of his or her participation in HE. As an example, there are many types of VI, affecting individuals in different ways. VI can affect visual acuity and central/field vision (for the criteria used to determine whether an individual can be certified as having a VI, see RNIB, 2016), or an individual may have a condition that affects their visual processing. It is not uncommon to have more than one condition causing VI, emphasising the importance of considering individual needs. It is also common for participants with VI to have additional disabilities or learning difficulties. For example, Keil (2012) found that approximately 20 per cent of children and young people with VI in the UK have ‘additional’ special educational needs and/or disabilities (SEND). Some learners may be restricted in getting around independently and require mobility training/orientation or a sighted guide to get to and from learning facilities. VI learners typically access information using different methods from their sighted

peers – e.g. using a larger font size or braille. Technology provides different opportunities for making material more accessible, including screen readers, which verbalise text, and braille devices, which convert electronic material into braille. It is likely that these learners will require adjustments to participate in visual aspects of their courses, such as practical sessions (Douglas et al., 2011).

Situated around the learner are a series of interrelated systems (Figure 1):

- **microsystem** – factors that directly impact the learner, e.g. DSO, welfare tutors, lecturers, support staff, peers, curriculum and assessment practices, and relevant institution infrastructure.
- **mesosystem** – representing the interactions that take place between these factors in the microsystem.
- **exosystem** – factors that do not impact the learner’s immediate environment but still affect their experience, e.g. inclusion policies.
- **macrosystem** – factors external to the HE institution, e.g. the Equality Act, HE funding and societal perceptions of VI.
- **chronosystem** – time and the development of the individual and their movement through various stages of life and changing systems (e.g. from early years through to the labour market, as represented in Figure 2).

<INSERT FIGURE 2 HERE>

Macrosystem: factors and culture outside the physical environment

Equality Act

The UK Equality Act requires educational institutions to make reasonable adjustments to enable learners with disabilities to participate on their courses. This is important empowering legislation for students with disabilities. However, a relatively high proportion of participants (25%) were unaware of the Equality Act, whilst others had limited knowledge of its contents. Of 15 participants asked, eight felt that the institutions had observed the requirements of the Equality Act, whilst seven did not. One participant in particular believed that institutions’ responsibilities are not sufficiently defined:

“In practice, probably not all that well, on paper, fairly good. I think the thing is, it’s the problem with the Equality Act in general isn’t it – reasonable adjustments is a bit of a loose term, and is very subjective. So they have probably done everything that they possibly could to do [what] they think is a reasonable adjustment.” (Blind student, pre-1992 institution)

Societal attitudes

Whilst difficult to quantify, interviews with DS officers and lecturers illustrated how societal perceptions of VI had an impact upon their initial judgement of the young person they were working with. For example, a DS officer was initially concerned that one severely sight impaired student would not be able to get around independently without a guide dog, showing a misunderstanding about independent mobility. A lecturer shared how he had made the assumption that the student he was working with would not misuse extended assessment

deadlines on the basis that they were VI, indicating that he had had different (higher) expectations for this student, to those he had for other students.

Policies

One DS officer identified how the government policies towards HE were centred on a medical model of disability (making compensations on an individual basis), which can act as a barrier to students who may not wish to identify themselves as disabled:

“...it’s based on the medical model of disability, rather than the social model of disability as well, so for some students that’s a struggle as well; they don’t want to be providing evidence and all that sort of stuff, but you have to do it to get the support that you require.” (DS officer, post-1992 institution)

Exosystem: factors outside the learners immediate environment

Approaches to inclusion

Positively, all of the DS officers interviewed reported having published guides for staff to describe reasonable adjustments as part of inclusive learning policies. An Education Support Manager with responsibility for disabled students at a departmental level described how normally the adjustments required for students with learning difficulties and disabilities are covered by their inclusive teaching policy:

“There’s quite a lot of students that are covered by our inclusive teaching policy. This is something that the DSO are hoping to run out across the university, and it’s something that has been created. So things like copies of lecture notes in advance, quite a lot of student support packages are covered by that.” (Education Support Manager, pre-1992 university)

However, DS officers and academic staff highlighted how challenging it can be to meet these requirements due to limited staff resource:

“You talk to most staff and they would say ‘yeah, yeah, of course we want to support’, but they are busy, and they don’t like to be told that they have to do a lot of extra work.” (Welfare tutor, pre-1992 university)

Moving towards more inclusive practice

Both DS officers and students observed that DSOs have limited power in the HE institution hierarchy to ensure that student support agreements are adhered to. DS officers suggested that more resources needed to be invested to develop inclusive learning practice, with one officer arguing this needed to be at the core of the institution:

“I think it would be the Pro-Vice Chancellor setting up a team of people, to ensure that the university is fully accessible to anybody, whatever their disability... Everything that is done, is done with accessibility in mind.” (DS officer, pre-1992 university)

Microsystem and Mesosystem: interacting factors in the immediate environment

Applications

Prospective HE students submit applications on the Universities and Colleges Admissions Service (UCAS) website. Whilst 17 participants were able to access this process (e.g. by using assistive technology), 13 participants experienced difficulties with the accessibility of the website and in some cases were unable to complete applications independently. Similarly, three participants experienced barriers when applying for DSA, having been sent paper copies of forms, which they could not complete without sighted assistance:

“It’s not very accessible. All the forms and stuff we get sent out in print. That was a bit frustrating. We didn’t get email copies of anything, and I wasn’t able to fill it out myself, so I had to have someone else do it for me or with me, so that was frustrating...” (Young person, screen-reader user)

Disabled Student Allowance (DSA)

BIS (2015) state that many of the barriers faced by students with disabilities in HE can be overcome with assistive technology. Despite this, many of the participants were limited in the equipment DSA was prepared to fund. Ten participants received compromised equipment due to the cap on funding, whilst others were not permitted to use DSA to fund certain ‘mainstream’ equipment like tablet computers, despite their inbuilt accessibility benefits (e.g. Hewett and Douglas, 2015). Participants also experienced problems with the reliability of the laptop computers they were given, which was particularly challenging for those reliant on their computer to access information:

“It had ups and downs. Most of the downs you could link very directly to technical issues I had – laptop failure... I had technical issues in all three terms. The first term it was concerning and worrying. The second time it was ‘oh no, not again’, but I think the second term was the more problematic one as it left me with days where I didn’t have a laptop...” (Young person, screen-reader user)

Despite these challenges, participants emphasised how important DSA was to them, seeing it as an essential means for participation on their course:

“I wouldn’t be able to access my course without this equipment that I [purchased] through DSA because I didn’t have it otherwise. I couldn’t have just bought it off my own back.” (Young person, screen-reader user)

External agencies

Many students spoke positively of the external agencies that provided their non-medical support, equipment and training. A particularly positive account came from one student whose university worked with the external agency to identify a research assistant with the necessary expertise to support him in practical sessions. The agency in turn provided training for this research assistant to enable them to support the student.

However, a number of participants experienced problems with external agencies. Several started their first academic year without their equipment in place making it impossible for them to participate fully in their courses. Others found that despite receiving funding for non-medical support (e.g. a note-taker or library support), the supplier was unable to provide the

staff required and almost all participants requiring mobility support (e.g. to learn routes around the university) had difficulties accessing it:

“And then last summer I rang up, and I then got blamed for apparently leaving it until the last minute, which I felt really upset and really patronised about because I had done the opposite...it impacted on my studies, rather than it being nice and relaxed, and it was awful.” (Young person, long cane user)

The most positive mobility stories came from participants who received their mobility training prior to the start of the term, enabling them to develop their independence:

“...I learned how to get to uni [university], how to get around uni, how to get into town, how to get to Sainsbury’s, a few places in the first week. [...] I am glad I did that, because it meant that when everyone else arrived I was able to move around, and I think the worst thing you can do is leave it and not get training until after everyone arrives, because otherwise it relies on other people.” (Young person, guide dog and long cane user)

Disability Support Office (DSO)

The first point of contact for students with disabilities is often the DSO whose responsibility it is to develop a support plan (student support agreement) detailing the adjustments the institution will need to make to enable that student to be able to participate in their course. Participants had mixed experiences with regards to how well the DS officer was able to understand their VI:

“Terribly, terribly. I think the reason why they had so much trouble providing things for me is because they didn’t understand my visual impairment in the first place.” (Young person, partially sighted, pre-1992 institution)

Implementation of support plans

Welfare tutors and DS officers reported large numbers of students in receipt of support plans, making it challenging for academic staff to put these plans into effect, e.g.:

“... [support plans] get ignored. [...] So it just turned out a lot of times I would be going into lectures and seminars and they wouldn’t even know; they would have no idea that there were these issues.” (Young person, partially sighted, post-1992 institution)

None of the academic staff interviewed received any institution-led training or guidance on how to adapt their teaching practices to create a more inclusive learning experience. Whilst academic staff looked towards the DSO for such guidance, interviews with the DS officers revealed that none of them had received any specific training on supporting students with VI.

“The inclusion plan would make reference to [participant’s] condition, and it would say that these are the reasonable adjustments that staff must make. But they largely related to provision of materials, [...] so there wasn’t any guidance on how to rethink your lectures. Pedagogically it’s quite a big thing to rethink that.” (Lecturer, post-1992 university)

One DS officer shared how she felt academics were scared at the prospect of supporting students with severe VI:

“They are scared actually, and I don’t blame them, I really don’t blame them. I would panic if I was in their position, because there is no one to go to...” (DS officer, pre-1992 institution)

Case study interviews identified tensions between DS officers and academic staff. DS officers were frustrated at what they perceived to be a lack of engagement by teaching staff, whilst academics found DS officers to be unrealistic regarding the adjustments they expected lecturers to make:

“The problem we are having now is the [department] just haven’t done what they need to do, and this is always the frustration, always, always the frustration.” (DS officer, pre-1992 university)

“I said ‘look, I am going to be honest with you here, I really want to be supportive, but I know what can and can’t be done, academic staff won’t do these things, so you have to work with us.’” (Welfare tutor, pre-1992 institution)

Accessible curriculum and assessment

The participants identified various positive adjustments made by lecturers to enable them to participate in teaching sessions. These included describing diagrams in lectures, writing descriptions of visual content on lecture notes and demonstrating equipment through one-to-one sessions. Many of these adjustments were the product of discussions between the student and staff before modules commenced – i.e. anticipatory adjustments.

Barriers students encountered included not having lecture material in accessible formats; no adjustments to visual elements; and fast paced lectures. In some cases lecturers were unable to make components or even entire modules accessible to the student. Rather than addressing this, at the start of the academic year, these barriers were sometimes ignored and extended into the assessment period at which point examinations were delayed to enable the student to ‘catch-up’ and provide the lecturer time to determine how to make the teaching accessible.

“I just spoke to the lecturer and said ‘is it worth it?’ and most of the time we decided that I just wouldn’t bother going [to lectures].” (Blind student, pre-1992 institution)

Some participants required alternative formats for course textbooks. A common challenge faced was obtaining these with sufficient time to be able to participate in lectures and seminars, and complete assignments. These barriers often stemmed from institutions not meeting their responsibility to make anticipatory adjustments by supplying reading lists with sufficient notice. Additionally, some support staff did not understand the format the students required, and sometimes even adjusted material remained inaccessible. Positive accounts came from students who were given copies of reading lists prior to the start of term, allowing sufficient time for library staff to obtain accessible copies of texts. One student described how not having accessible copies of texts made her feel excluded from the course and from her peers. This student’s experience illustrates how a lack of anticipatory adjustments can

impact upon students in multiple ways. Engagement with peers is an important aspect of HE, as recognised in including peer-to-peer support in the microsystem:

“No, it makes a big difference as well, because it makes you feel more included in what’s going on, but it makes you feel more sort of welcome, and gives me more of an incentive to... bother I guess.” (Blind student, post-1992 institution)

Additionally, several students experienced barriers when taking exams, including: inaccessible copies of exam papers; not being given the correct room information; not being allocated the correct amount of extra time; and not being given the correct assistive technology.

“...they gave me the wrong [format] paper in picture PDF form. And I had a bit of a meltdown because I was so nervous. It was so frustrating because I have been there for two years now, and it’s such a basic thing. It’s on every... it’s on my inclusion plan, or whatever it is, it’s like the first thing that is on it, that I need stuff in Word.” (Blind student, post-1992 institution)

In contrast, one student described a very positive experience. Instead of her exam arrangements being communicated on an ad-hoc basis, they were incorporated into the university’s main examination system:

“And then when it comes to getting my exams, they automatically factor in the extra time. So it will say start time and end time [on my timetable on the VLE], it will automatically factor in my extra time, and automatically puts me in one of the alternative rooms.” (Partially sighted student, pre-1992 institution)

Infrastructure

Positive accounts came from some students of an inclusive teaching experience facilitated by the standard teaching approaches their institutions used. A clear example was when students were able to access course notes in advance of lectures through the institution’s virtual learning environment (VLE) and electronic copies of books or journal articles through their library’s online database:

“It just meant that I could... when we were sat in the lecture if I couldn’t get close to the front, I didn’t have to be sat close to the front, I could sit wherever I liked and could keep up with what was being said. That was quite beneficial. [...] A lot of people took laptops to lectures as well, so it wasn’t like in school where you are the only one, it’s just normal at uni.” (Partially sighted student, post-1992 institution)

However in contrast, some students experienced additional barriers due to inaccessible VLEs. As well as being restricted in accessing course notes, participants had problems with accessing their timetable, email, exam results and module choice forms:

“And I had an issue with picking my modules for next year, because the module selection process wasn’t accessible, so I had a delay in being able to do it because I needed sighted assistance to be able to do it.” (Blind student, post-1992 institution)

Chronosystem and the learner: development over time

Preparation for HE

When considering transitions and the need for the learner to be prepared to move from one setting to the next, very few participants had received guidance from school teachers or specialist teachers from local authority Sensory Support Services to support their transition to HE. Instead they tended to rely on the guidance of the DSA assessor to develop a support package. However, eight participants questioned the quality of their assessment.

“It was clear she hadn’t worked with a blind person before, and it was clear that...because she said it herself, basically ‘I don’t know what I am doing, you have got to tell me what you need’, rather than... I was like ‘actually, I think that’s your job!’” (Blind student, post-1992 institution)

Both university staff and students viewed the transition into HE as an ongoing process, during which the institution developed a better understanding of required adjustments, and the student learned how to manage their support.

“Like I say, there was kind of an acknowledgement, right from the beginning [...] I was quite clear about this, and [participant] was clear about this, that we would come across, there would be a case of adjustments as things developed, because we wouldn’t be able to pre-empt and plan for everything.” (Welfare tutor, post-1992 institution)

Some students who experienced problems in the first year found that by the second year they had a better understanding of what was needed for them to participate on their courses:

“I was much happier because I knew my way around better, and myself and my library assistant had a routine going for getting books done on time, and getting things managed in that way. I think as well, I understood what I needed [better]. So at the beginning of the year I met with all my new tutors and went to talk to them about what I needed and stuff like that.” (Blind student, post-1992 institution)

The experiences of the participants also highlighted the necessity of the learner to have an understanding of the types of adjustments they required, the ability to be able to advocate for these adjustments and the skills to benefit from these adjustments. We now consider the importance of the development of these skills for a successful transition into HE by focusing on two specific examples – self-advocacy and accessing information.

Self-advocacy

Interviews with DS officers and welfare tutors revealed how support systems in HE rely on the learner being able to self-advocate and act as ‘expert’ in their impairment:

“I am not a specialist with visual impairment at all, so my knowledge and understanding of what she needs is very limiting. From a general point of view as a disability advisor, I could also do what’s needed, but she was able to tell us exactly what, so it was very good.” (DS officer, pre-1992 institution)

The interviews also demonstrated a reliance on the student to take responsibility for their learning and to make staff aware if they experienced problems. For example, one DS officer said he assumed that the participant he supported was having a positive experience as he had not heard from her since early on in the first year.

“And what we do say to all students, you are an adult now, you have left home, you have come to university, we are going to treat you as an adult... we do expect you to tell us when there is a problem...” (DS officer, post-1992 institution)

In reality this student was having a very challenging time as lecturers were not adhering to her support plan. The student was restricted by firstly not having the confidence to address this, and secondly by externalising the responsibility:

Researcher: “Is there meant to be someone in the department who is responsible for ensuring that people get the support agreements?”

Participant: “Apparently, but I don’t know who they are. I know one student knew who they were because they contacted them, but they have never done anything to contact me.” (Partially sighted student, post-1992 institution)

As previously noted, very few participants had been facilitated to act as self-advocates in HE. Consequently, the participants experienced a number of barriers including not knowing how to explain their impairment and how it affected them and not knowing how to explain to staff how to prepare accessible materials.

“...basically, I went from an environment where everyone was visually impaired to an environment where nobody had a visual impairment... I didn’t think about having to explain to people that I was visually impaired, so I didn’t quite have a sense of how to do that, that was one of the adjustments that I had to make.” (Partially sighted student, pre-1992 institution)

Independent access to information

In comparison with school, studying within HE normally requires students to be more independent learners, able to extend their knowledge through participation in lectures and seminars, supplemented by independent research. Interviews demonstrated that many participants benefited from a range of skills they learned at school including choosing the most appropriate method for accessing information according to the task in hand. For example, whilst most participants with severe VI preferred to use screen-reader technology to listen to large volumes of text, some found it helpful to follow their lecture notes using braille displays, which enabled them to read and make notes and listen to the lecturer at the same time.

However, some participants appeared to have less developed skills for accessing information, thus restricting their ability to work independently. This included one student who relied on sighted assistance to complete online research and a student who had not received any formal training in using her screen-reader prior to HE. At the most extreme, were a small number of students who had not previously used any assistive technology in school and were finding it difficult to adapt to incorporate these into their normal working practice.

“When I had my training session from DSA, I found I kind of realised quite a lot, but at the same time, I don’t know very much if you know what I mean! [I do quite well given that] I never had any training, but in terms of everything that [the technology] has to offer, I know very little, realistically... The trainer was like ‘do you know how to do this?’ and I was like ‘yeah, yeah’, and then she would go ‘oh, so you know how to do that?’, and I was like ‘nooo!’” (Blind student, screen-reader user)

Discussion

The Bioecological Model of Inclusive Education in HE outlined above provides a valuable framework with which to examine the experiences of the participants in HE through a holistic view that takes into account the individual learner and the surrounding systems. By adopting this broader perspective, we have identified a range of potential barriers to inclusion in HE. In discussing these barriers we refer to our original research questions. We then draw the analysis back to the Bioecological Systems Theory of Human Development (BST) and end by considering the future policy context within the UK.

Do UK HE Institutions offer an inclusive learning experience?

Anderson et al. (2014) recommend assessing the inclusivity of an educational experience by looking at the three key principles of ‘participation’, ‘achievement’ and ‘value’.

Participation

Having faced barriers in participation on their courses, four of the participants failed to complete their first year. In each case the HE provider accepted responsibility for not having made reasonable adjustments. Other participants persevered with their courses, but in many cases faced challenges.

The UK Equality Act (2010) requires HE providers to make reasonable adjustments to enable participation for students with disabilities. In many ways the HE providers appear to take this requirement seriously; for example, by providing dedicated teams to devise support plans to facilitate course access. However, from our evidence for students with VI, a significant barrier appears to be a lack of *anticipatory adjustments*. Examples of anticipatory adjustments (as demonstrated by some providers) include ensuring that infrastructure (e.g. the VLE) is accessible to *all* students from the outset, ensuring that *all* relevant documents are produced in accessible formats, and providing reading lists in sufficient time for alternative formats to be sourced. Failure to make anticipatory adjustments led to various challenges such as not being able to discuss a text in seminars, not being able to make module choices and even, in one case, not being able to take an exam.

Achievement

Many of the participants spoke positively with regards to their achievements, although these did not always follow the same timescales as their peers. It was common for academic staff to rely on students’ use of deadline extensions to compensate for the barriers they experienced, thereby adding pressure onto other deadlines and often extending the student’s academic year. A small number of participants expressed disappointment at the grades they obtained, which they attributed to the barriers they encountered. Achievement, however, is broader

than simply academic attainment per se. For example, one participant was disappointed not to have been able to learn to use statistical software she considered a core component of her course, whilst another participant spoke positively of having had the opportunity to learn to use equipment in practical geography sessions as a result of the careful and considered planning of his department.

Value

Anderson et al. (2014), citing Aspin (2007), define value as “being accepted, respected and seen as important and capable of doing” (p25). Positively, interviews highlighted that the participants were largely treated in the same manner as their peers, and held to the same expectations. However, whilst many of the participants expressed that they did not feel any different to their sighted peers, this was less true for participants with severe VI. One DS officer described academic staff as ‘scared’ of working with students with severe VI, substantiated by a parent who observed ‘panicked’ reactions from staff at open days. Three participants identified times in which they felt left on the fringes during group work with their peers. They attributed this to barriers to accessing course material, as well as their peers’ apparent perception of them having a lower ability, and being cautious about interacting with VI students in case of causing offence. Linked to this, the consequences of working to different timescales (e.g. deadline extensions) meant that some connections with peers were lost. Academic staff would have liked to provide greater support to students with disabilities, but felt limited by the resources available to them.

How prepared are HE institutions for developing an inclusive learning experience?

Interviews with lecturers and DS officers at six institutions highlighted a lack of specialist knowledge of how to make accommodations for students with VI. Whilst DS officers look to the DSA assessment of needs report to shape the support offered, some participants questioned how well equipped DSA assessors are to provide such guidance. Additionally, some participants felt that the DS officers struggled to understand the implications of their VI.

Support plans provide basic guidance on the adjustments that lecturers are expected to make to enable participation. However, two lecturers found these plans did not provide the pedagogical guidance they required in order to create a more inclusive learning environment. Both lecturers and DS officers highlighted that limited resources meant that lecturers were restricted in how much time they could devote to developing an inclusive curriculum.

How prepared are learners with VI for the transition into HE?

Bronfenbrenner (2005) emphasised the importance of considering the role of the developing learner. We have observed that the current support system for students with disabilities relies on the individual entering HE with independence skills in place. Firstly, as in the case of all students, it relies on them having the skills to be able to work relatively independently in comparison with their school education. For students with VI this can often mean having a range of skills to call upon to enable them to adapt to the demands of a particular task. Whilst most participants generally felt prepared to access information in a variety of ways, some were limited, having received minimal training or experience in using assistive technology. Although the methods that the participants had used in school or college had been sufficient for those contexts, it was noted that some had difficulty with the volume of reading required

(both in terms of reading speed and with fatigue), and a small number had difficulties using online academic databases in HE. Secondly, the system relies on the young person being able to self-advocate. In terms of practical implications, Hewett, Douglas and Keil (2016) identified four ways in which students with VI are required to advocate in HE: negotiating support packages; negotiating support arrangements; explaining VI; and challenging if things go wrong. It is partly preparation that enables and empowers students in HE to self-advocate in this way: having had opportunities to self-advocate when younger; having a good understanding of one's own VI; and being well informed of the specialist support and equipment available. Many of the participants did not feel equipped to self-advocate in one or more of these scenarios, and several identified ways in which this had a negative impact upon their experience of HE. Other examples of independence skills include mobility and independent living skills, aspects of this project that will be explored in future publications.

Progressive mutual accommodations

A central tenet of the Bioecological Systems Theory of Human Development is the notion of *accommodation* within and between the different systems in which the individual is operating over a given timeframe. Bronfenbrenner (2005) referred to this as “*progressive mutual accommodation*” (p107). Different factors within and between systems mutually accommodate one another to ensure successful inclusion and development of the individual. The accommodations in HE come in many forms as outlined in this paper.

Our interest in educational transition and the longitudinal design of the research adds an important dimension to this analysis – *time*. As indicated above, ‘mutual accommodation’ is necessary for a young person to successfully participate in a given environment. However, implicit to this success is that they are able to develop the skills necessary to transition from one environment to another. Bronfenbrenner (1979) called these “ecological transitions which are described as occurring whenever a person’s position in the ecological environment is altered as the result of a change in role, setting, or both” (p26). Gaining a place at an HE Institution (HEI) is typically linked to a prospective student gaining appropriate grades in relevant academic subjects. Implicit also is that all students, including those with disabilities, have broader skill sets to enable them to live and study independently when at university, such as skills to self-advocate, access information and live independently. In the context of the education of VI children, these skills come under the umbrella term of what is referred to in the UK as the ‘additional curriculum’. This is used to describe all areas that would not typically be taught in schools as part of the core curriculum – see, for example, the review by Douglas et al. (2011) and McLinden et al. (2016). Particular areas highlighted are: mobility (e.g. being able to independently navigate around the school and community); low vision and information access (e.g. using technology and strategies to independently access printed material, the use of low vision aids, learning to read through braille and the use of computers with appropriate access technology); and social skills (e.g. having friendship groups and self-advocacy skills). In the US, the term ‘expanded core curriculum’ (ECC) is used in a similar way (e.g. Hatlen, 1996).

Importantly, there is evidence that the presence of independence skills is associated with positive progress after school including into employment for people with VI (e.g. Capella McDonnall, 2011; Wolffe and Kelly, 2011). This is hardly surprising given that systems beyond school have different expectations and make different accommodations. The *progressive* nature of the mutual accommodation in relation to HE is drawn out in two ways

in our research presented here: firstly, what takes place before and in preparation for HE; and secondly, what continues while in HE (and beyond).

Examining what takes place before HE involves close attention to the balance of school education throughout childhood as described above. There may also be targeted and specific preparations just prior to going to HE – with occasions where it is necessary for students with VI to learn new skills to enable them to fully benefit from the adjustments made by their HE institution. For example, in the summer prior to entry, one participant committed to learning a new piece of software through which he could access his course notes electronically. In turn, his department produced all course notes in an electronic format compatible with this software.

In terms of continued progressive mutual accommodation whilst in HE, this is clearly illustrated by acknowledgement that things change and develop over time (e.g. the welfare tutor who described “adjustments as things developed”; the blind student who “met with all new tutors and went to talk to them about what I needed”). Therefore the skills and requirements of the disabled student will change and develop during their time at university, as will the response and anticipation of the people and systems around them.

Conclusion

The BIS consultation on changes to DSA in the UK places greater emphasis upon anticipatory adjustments and the use of assistive technology to enable better access to university courses by disabled students. For students with VI at least, the findings presented raise concerns about this strategy. Firstly, there is an assumption that students with disabilities arrive equipped with the skills to use such technology. The research findings, however, identified a number of barriers faced by the participants in doing so, including: having limited knowledge of the equipment available; not being equipped to advocate for equipment; not having received formal training to use specialist equipment; and not having had the experience of incorporating such equipment into their working practice. Linked to this, literature elsewhere raises concern that the teaching of independence skills is often not given appropriate emphasis in school education (e.g. Sapp and Hatlen, 2010; Douglas and Hewett, 2014). Further, whilst many of the participants identified ways in which they are able to access their courses through assistive technology, several were limited in the amount of funding available to pay for equipment, the quality of equipment provided and the type of equipment they were provided. Therefore, whilst technology does offer some solutions for students with disabilities, this suggests more consideration is required by BIS regarding their funding policies. Secondly, our findings raise concerns about how well equipped HE institutions are to provide a more inclusive learning environment. Our research evidence indicates that many UK HE providers focus on making accommodations on an individual basis (individually-focused model approach), rather than ensuring learning is accessible to all (socially-focused model approach). As the costs of making individual accommodations will be passed directly to the HE provider, we anticipate such changes would bring about difficulties in the shorter term. In the longer term it may act as a catalyst for bringing about improved access and support for students with disabilities. Nevertheless, given the extra costs involved this would need careful monitoring to ensure the reverse was not the case.

The findings described in this paper mirror the findings of other studies investigating the experiences of students with disabilities in HE. For example, relatively old research by Hall and Tinklin (1998) outlined a number of recommendations for HE institutions to improve their support for students with disabilities (p89) and it appears 20 years later much work is

still required. More recently Bishop and Rhind (2011) investigated barriers and enablers faced by visually impaired students at a UK HEI and identified factors at multiple levels, including factors relating to institutional provision, external factors, and factors unique to the individual.

Seale's (2013) analysis of students with disabilities and their experiences also chimes with our findings – not least that both studies highlight the significance of technology to the successful inclusion of these students. A central theme of Seale's analysis was that of 'digital capital' which "is exemplified by individuals investing time in improving their technology knowledge and competencies through informal or formal learning opportunities, as well as a socialisation into technology use and 'techno-culture'" (p259). She concluded that while digital capital was not enough to guarantee inclusion, it was a vital component of a broader social and cultural capital people with disabilities need in HE. This concept of an individual's social and cultural capital is a powerful one and it is in keeping with our findings and model because it values the importance of past and ongoing experience in the development of this capital. This supports our argument that whilst it is important to consider the responsibilities of the HE institution (including the provision of accessible materials and technology), this must not be done in isolation; prior experiences and education have a critical role.

Although this paper focuses specifically on the experiences of students with VI in the UK, many of the findings are applicable for students with other disabilities in other contexts. Applying Bronfenbrenner's model as a Bioecological Model for Inclusive HE has provided a valuable framework, allowing the researcher to take a more holistic view of the learner's experience in their immediate and broader context, and the progressive mutual accommodation between learner and educator. This approach captures the dynamic nature of HE – while there should be clear expectations of the reasonable adjustments required to be in place and the study skills individual students have, there is also an acceptance that this will develop over time. Such an approach also makes a more explicit link with the transition *into* HE (often from school or college), the student learning journey *within* HE and the eventual transition *from* HE, often into the labour market.

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Box 1: An overview of the legal responsibility of HE providers to make reasonable adjustments (adapted from the UK Equality Act 2010)

The responsible body in relation to a course to which this section applies must not discriminate against a person

- (a) in the arrangements it makes for deciding who is enrolled on the course;
- (b) as to the terms on which it offers to enrol the person on the course;
- (c) by not accepting the person's application for enrolment.

The responsible body in relation to such a course must not discriminate against a person who is enrolled on the course in the services it provides or offers to provide.

The duty comprises the following three requirements.

- 1) The first requirement is a requirement, where a provision, criterion or practice of A's puts a disabled person at a substantial disadvantage in relation to a relevant matter in comparison with persons who are not disabled, to take such steps as it is reasonable to have to take to avoid the disadvantage.
- 2) The second requirement is a requirement, where a physical feature puts a disabled person at a substantial disadvantage in relation to a relevant matter in comparison with persons who are not disabled, to take such steps as it is reasonable to have to take to avoid the disadvantage.
- 3) The third requirement is a requirement, where a disabled person would, but for the provision of an auxiliary aid, be put at a substantial disadvantage in relation to a relevant matter in comparison with persons who are not disabled, to take such steps as it is reasonable to have to take to provide the auxiliary aid.

In relation to the second requirement, a reference in this section or an applicable Schedule to avoiding a substantial disadvantage includes a reference to:

- (a) removing the physical feature in question,
- (b) altering it, or
- (c) providing a reasonable means of avoiding it

Table 1: Overview of participants in HE (N=32)

Variable	Total (N)
Gender	
Male	18
Female	14
Registration type	
Sight impaired (partially sighted)	13
Severely sight impaired (blind)	11
Not registered	5
Participant does not know	3
Preferred reading format	
Standard font size (up to pt 14)	4
Large print (Pt 16-22)	15
Very large print (Pt 24+)	4
Braille/Electronic	9
Type of secondary school education	
Mainstream school	19
Special school	11
Both mainstream and special school	2
Type of HE institution attended	
Pre-1992 institution	12
Post-1992 institution	17
Specialist institution	3

Table 2: Key terms used in WHO ICF, adapted from WHO (2001 pp 9-10)

Terminology	Description
Impairment	Problems in body function or structure such as a significant deviation or loss.
Activity	Concerned with performances in activities at an individual level.
Participation	Concerned with involvement in life situations on a society level
Participation restrictions	Problems an individual may experience in involvement in life situations
Environmental factors	Concerned with variables which can be manipulated (whether physical, social or attitudinal) which might improve performance on activities and/or increase participation
Barriers	General term describing environmental factors which may cause 'activity limitations' and 'participation restrictions'. Similarly, ' <i>facilitators</i> ' (or ' <i>enablers</i> ') may remove such limitations or restrictions

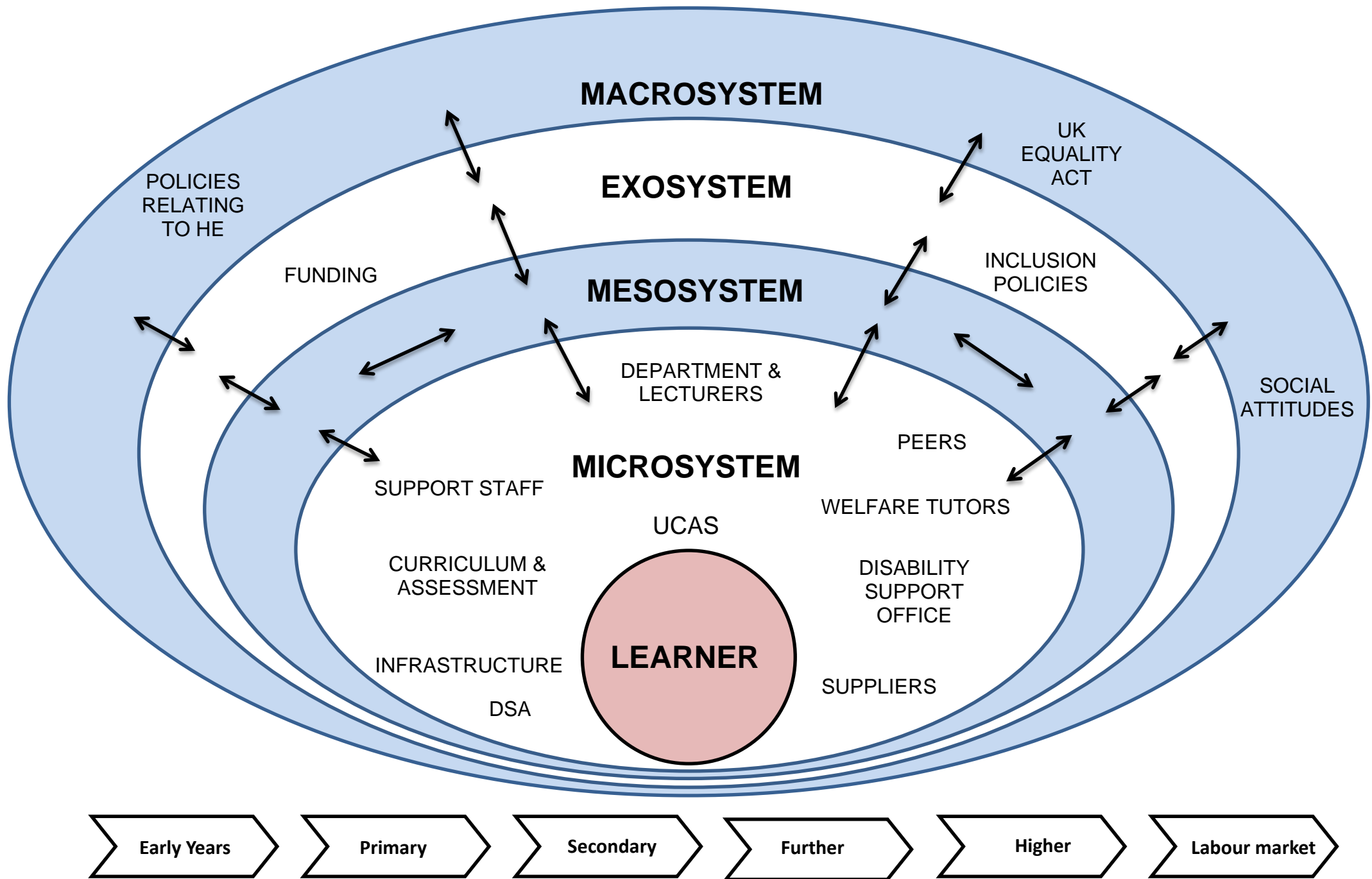


Figure 1: Bioecological Model of Inclusive HE

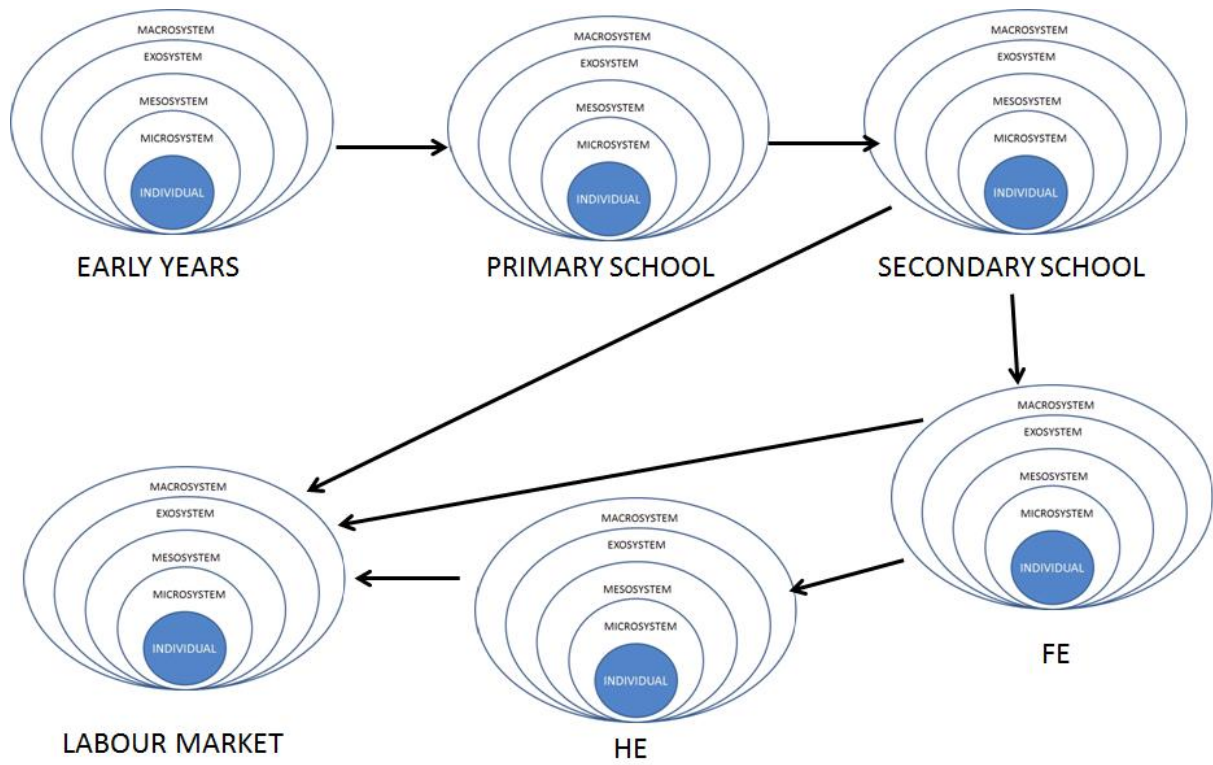


Figure 2: The Chronosystem illustrating the individual experiences changing systems at different stages of their life