The accessibility of administrative processes: Assessing the impacts on students in higher education

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ABSTRACT

Administrative processes that need to be completed to maintain a basic standard of living, to study, or to attain employment, are perceived to create burdens for disabled people. The navigation of information, forms, communications, and assessments to achieve a particular goal raises diverse accessibility issues. In this paper we explore the different types of impacts these processes have on disabled university students. We begin by surveying literature that highlights the systemic characteristics of administrative burdens and barriers for disabled people. We then describe how a participatory research exercise with students led to the development of a survey on these issues. This was completed by 104 respondents with a diverse range of declared disabilities. This provides evidence for a range of impacts, and understanding of the perceived level of challenge of commonly experienced processes. The most common negative impact reported was on stress levels. Other commonly reported impacts include exacerbation of existing conditions, time lost from study, and instances where support was not available in a timely fashion. Processes to apply for disability-related support were more commonly challenging than other types of processes. We use this research to suggest directions for improving accessibility and empowerment in this space.

CCS Concepts

• **User Characteristics—People with Disabilities** • **Accessibility---Accessibility design and evaluation methods.**

Keywords

accessibility; disability; administrative burden; forms; administrative processes; education;

1. INTRODUCTION

In order to achieve a basic standard of living, and to achieve career and study goals, it is necessary to complete various administrative processes. It is apparent that disabled people typically have to complete additional administrative processes when compared with their non-disabled peers, and can often find particular tasks within such processes to be inaccessible. While particular instances of these processes are understood to be challenging, there is limited general evidence of the impacts caused by a lack of accessibility in administrative processes.

In a participatory research exercise conducted with the Students Association Disabled Students Group of The Open University UK, disabled students identified the impacts and design of these processes, and the communications required within them, as a key challenge that requires further research. As an outcome of this work, a survey was developed and deployed to gather evidence of these impacts and to understand the relative challenge of processes that the students commonly encountered.

We define administrative processes broadly, as encompassing tasks necessary in applying, claiming, registering, paying, booking, or being assessed, in order to achieve a particular goal. The term 'administrative burden' is commonly applied to consider the impact of forms of bureaucracy and legislation on businesses (e.g. [25]). Notions of 'respondent burden' and 'administrative burden' are also used to describe the impacts of the use of research methods on participants and on those administering the research [1]. An analogous notion of burden can be applied when individuals contend with substantial administrative processes to enable their study, work, or ability to live independently. However, the nature of these burdens, their impacts, and how they relate to the design of these processes, are not yet systematically identifiable or measurable.

Although administrative processes, and the potential for administrative burden, are pervasive in all our lives, students with declared disabilities appear to be required to undertake a greater range of these than most people. For them, processes such as registering to study are likely combined with disability-related processes for study support or reasonable adjustments. In addition, they will undertake processes related to other aspects of life or for employment. We therefore focus on analysing the processes that are commonly undertaken by students, but include the full range of these, with processes related to study and those needed to achieve a standard of basic independent living.

Approaches to evidence gathering and process evaluation could be useful in targeting work to improve processes and to better support

people in completing them. There may also be ways in which people and communities can be empowered to share reports, gather evidence, identify challenges and overcome the impacts together. The primary focus of this research is to identify the impacts and challenges associated with the administrative processes commonly experienced by disabled university students. The long-term aim is to build on this understanding to develop more general approaches and solutions that make these processes less of a burden or barrier.

2. BACKGROUND: IMPACTS AND ISSUES WITH ADMINISTRATIVE PROCESSES

Barriers and challenges have been identified in research that has analysed the various types of processes that need to be completed by disabled people in everyday life. For example, having disabilities results in greater problems in accessing healthcare, with similar types of barriers reported regardless of the person's disabilities [10]. Other research has identified barriers in areas from job applications [13, 17] to purchasing airline tickets [16]. All kinds of web-based administrative processes can create barriers. For example, Ruth-Janneck [20] identifies that registration across web applications or services was problematic for the majority of users with motor disabilities or visual impairments.

Taking part in education can add to the administrative burdens that a person faces. The challenges of 'getting through the gate' into higher education could be a factor in the gaps between proportions of disabled and non-disabled students in HE, and the additional challenges for disabled students do not stop when registration is completed [8, 14]. The migration of educational provision to be increasingly online presents opportunities to support inclusion, but also creates new challenges [24]. There are also concerns that, as new forms of low-cost online learning, such as Massive Open Online Courses (MOOCs) proliferate, the resources and support required to make learning opportunities accessible to all may be reduced by the desire to keep costs down [15, 21].

While some literature discussing accessibility and experiences across a range of administrative processes exists, this is fragmented and does not provide a general, systematic approach to evaluating administrative processes or their impacts on individuals. The literature does, however, provide a range of insights and examples of the types of challenges faced. From this, the following characteristics appear important.

2.1 Restricted pathways

Poor design of administrative processes often results in a lack of flexibility in terms of how they are completed, as well as inaccessibility in the channels or media that constitute the only paths made available to users. For example, Grussenmeyer et al. identified job documentation that was provided in inaccessible pdfs [13], and Blanck notes a range of restrictions identified by disabled people, such as a verification step that could only occur through a phone call [3]. Ellis et al. found that some of the negative perceptions of the Personal Independence Payments (PIP)[1] application process stemmed from reliance upon either printed text or telephone calls to proceed through certain stages [11].

2.2 Unequal outcomes

The lack of accessibility in processes can create inequalities in outcomes. These may mean that disabled people can complete a process but with an outcome that is not equivalent to that achieved by others, because of some form of inaccessibility. For example,

Lazar et al. identify that because websites for booking flights were inaccessible, those with disabilities would be charged more for their flights by being required to book through a phone call, and would therefore lose out on online-only deals [16]. Blanck describes further examples where special offers from online merchants required the use of inaccessible applications. These inequalities may be easier to identify and quantify in relatively simple transactions such as purchasing, but likely exist elsewhere in more complex ways. For example, Blanck also highlights an example where time constraints for an online job assessment were not adapted to account for the time required for a screen reader user to process the questions, leading to discrimination in hiring [3].

2.3 High effort

Processes can require levels of effort that appear unnecessarily burdensome. A review of the non-take up of benefits by eligible persons in the UK suggests a need to reduce complexity and simplify the language of application forms, and to reduce duplication in information or verification. Benefits involving any form of needs assessment may be particularly challenging. The level of effort against reward is identified as a reason for non-take up of benefits, as people decide, or assume, that the effort needed to apply is not worth making [12]. Other people may need to make efforts on the person's behalf, as there is a common need for assistance in areas such as job applications, where Lazar et al. found that only a minority of processes could be completed without assistance due to accessibility issues [17].

2.4 Time dependencies

Administrative processes commonly exist in relation to particular time periods or deadlines, and dependencies between processes can result in detrimental overlaps in burden, or problematic gaps before an application can proceed. In the UK higher education context, a process with particular time dependencies is the Disability Support Allowances (DSA)[2] which can cover some of the costs of specialist equipment or personal support for study for UK students. Students can apply as soon as they have submitted their application to study with an institution, but they may not do this immediately, perhaps due to a lack of awareness of what they will need for study, or lack of understanding of the opportunities for support. Because of this, and because applications take time to be approved, support may then not be in place for the student at the start of their course.

The timing of elements of processes may not integrate well with other parts of life. For example, Scheer et al. identify a lack of timely availability of appointments for healthcare, as these can clash with work or other responsibilities, as a process barrier for disabled people. In addition, processes may be relevant to a person during a particular time or event, at which point awareness may not exist [22]. In this regard, Finn & Goodship argue that to improve take-up of entitled benefits, it is necessary to ensure that people are informed at the key 'trigger points', where they become eligible and should apply [12]. Poor accessibility of a process itself creates additional time pressures on the person, and organisations may not stick to their targets or expected wait times for responses [11].

2.5 Cause of negative emotional responses

Many administrative processes are "high stakes", because of the importance to the person of successfully completing them. Concerns about the possible ramifications of a poor outcome, whether this be financial assistance or an adjustment needed for study to commence, can amplify the anxiety caused by the process itself. Processes to gain support may cause negative responses by

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[1] https://www.gov.uk/pip

[2] https://www.gov.uk/disabled-students-allowances-dsas

focusing on a person's deficits, because they are looking to assess what the person is capable of. There may be a dissonance felt, because efforts to be more independent may work against chances of succeeding in getting support. Conversely, there can be stigma attached to claiming any kind of benefit [11]. In summation, both the content of administrative processes, and their potential impacts on the individual, can cause a range of negative emotional responses.

2.6 Differing individual trajectories

Administrative processes may be designed with expected entry and completion points, pre-requisites, and key actions that should occur along the way. However, individual paths may be substantially different. This is apparent with regards to disclosure of disability in higher education, which often acts as a conduit into other administrative processes for gaining support. Students may choose to disclose their disability before or during registration with the university, or at any point during their studies. They may not recognise their condition as being defined as a disability, or may be strategic in choosing not to disclose information about it [18]. Their health conditions and type of study can change over time, leading to different support needs [8]. UK students may have had differing experiences and received different forms of support in their schools, where, for example, the term Special Educational Need (SEN), rather than disability, is commonly used. They may make assumptions based on prior experiences which do not reflect the new institution and set of processes they are entering into [14].

2.7 Multiplicity

There may be multiple processes to complete in certain periods or to achieve a particular goal, and these may create dependencies and larger impacts. Scheer et al. note the cumulative detrimental effect of multiple challenges in getting access to healthcare on the person's quality of life. These frequently create "a web of barriers… that compromised access to care" [22]. While getting through the "gate" of accessing higher education is perceived to be a big step, applying for financial support, achieving medical evidence of a diagnosis, and requesting support or adjustments related to a disability, are only some of the many gates students need to pass through during their journey [14].

These characteristics provide a useful starting point in suggesting some of the challenges inherent in undertaking, or designing, accessible administrative processes. They also suggest some of the diverse impacts that such processes might have.

3. METHODOLOGY

This work emerged through a participatory research exercise [7] conducted with disabled students at our university. The exercise involved collaboration in the construction of the research topic, and consultation in the development of the survey method. In order to develop an agenda for research aligned to the interests of disabled students at the university in their study and life, we conducted activities to engage with students in their own spaces. Members of The Open University Students Association: Disabled Students Group (DSG) set up a student-facilitated online forum for this activity, and invited their members to take part. Over a one week period, we provided daily prompts to identify and discuss issues in life and study. A face-to-face workshop was also held as part of the Students Association conference using the same themes.

The time and effort required to complete the administrative processes necessary in both study and everyday life emerged as an important theme from these activities. Comments from students suggested that challenges in these processes led to a variety of impacts on them. A related theme also emerged on the challenges raised when organisations required people to use particular communications channels to contact them. Building on this, DSG members were asked to provide narratives reflecting their own experiences of administrative processes. Using this material and the discussion comments, draft survey questions were constructed to capture the different types of impacts that were experienced, and the relative level of challenge found in different processes. These were then reviewed by students and university staff in disability support roles before being finalised.

3.1 Survey structure

The first stage of the survey asked respondents to rate four general types of administrative processes on a five-point scale from 'very challenging' to 'very straightforward'. This included processes for everyday life, general study processes at the university, and disability-related processes involving the university and / or external organisations.

In the second stage, respondents then used the same scale to rate 12 specific processes that are commonly experienced by Open University students and were selected for the survey with the participation of students and staff. These were as follows:

Registering for a module: Students can register to join a module or qualification through an online process or a phone call.

Disclosing a disability at registration: Students are asked to declare to the university whether or not they have a disability when registering. This initiates the two processes that follow in order to gather more information.

Disability Support Form: This is a university-generated form in which students provide details about their disability and to adjustments that they might need for online study, printed materials, tutorials or residential schools, or in communications with the university. It can be completed online or through filling in and submitting a word document.

Building a Disability Profile with an advisor: A staff member will contact the student to discuss needs and make recommendations, and can add information to their student profile based on this discussion.

Gaining medical evidence: In order to receive support in study or for other benefits it is commonly necessary for people to obtain recognised evidence from a medical professional or authority.

Requesting a reasonable adjustment for study: Students can request specific adjustments to be made to course materials, activities or assignments by contacting their tutor, student support team or other members of staff.

Requesting a reasonable adjustment for exams: Students taking an exam as an end of module assessment can request adjustments to be made by contacting the Exams team.

Applying for DSA (Disabled Student Allowances): These are grants provided by the UK government that pay for the additional costs of study for disabled students such as equipment and non-medical help. They requires evidence of the disability and commitment to study a qualification. The process include a needs assessment that produces a report of recommendations for support.

Registering for / attending a tutorial: Students register when they wish to attend face to face and online tutorials at specific dates and locations. There are often multiple options for these available and registration is done online.

Applying for PIP (Personal Independence Payment): This is a government process that can provide support for everyday living

for people with disabilities. It includes a form which is followed by an assessment to judge the level of support that will be given. PIP has recently been introduced as a replacement to a predecessor scheme (Disability Living Allowance).

Applying for a disability parking badge: This is a local council administered process to support people with conditions affecting their mobility to park their vehicle closer to destinations, either in specifically designated parking bays or using on-street parking with a reduction of restrictions that apply to other drivers. The application requires the provision of evidence of meeting criteria (such as an existing PIP assessment). It can be completed online or through posting a paper-based form.

Applying for a disabled person's bus pass: This is a process administered by local councils to provide free use of public transport. It requires provision of evidence of meeting one of several criteria (similar to the parking badge). The process varies depending on the council area in which the person lives.

The next stage of the survey asked respondents to state the impact that administrative processes had on them in 9 dimensions. Again, these dimensions were constructed with the participation of students and staff. In particular, we analysed narratives of experiences of administrative burden that were provided by students to identify different potential dimensions of impact from these processes. In order not to bias respondents and maintain balance, we included options to express the impact on a five-point scale from 'very positive effect' to 'very negative effect'. The impact dimensions were:

- Time spent on studies
- Quality of your coursework assignments
- Ability to succeed in exams
- Mental health
- Physical health or wellbeing
- Stress levels
- Effect on your disabilities
- Impression of the University
- Impression of council or governmental departments

In a final stage, respondents were asked about the help needed and support received through these processes, and at the end, whether they could suggest any other forms of impact or challenges from administrative processes in an optional open comment box.

3.2 Sample

1000 students registered with The Open University UK (OU) who have declared one or more disabilities were invited to take the survey, and 104 fully completed responses were received (a 10.4% response rate). A further 5 partially completed responses are included in results where whole stages of the survey were complete, but the respondent did not finish the entire survey.

The sample was considered representative across key demographics of age, ethnicity, gender, geographic location, socio-economic status (by postcode), occupational status and previous educational qualifications, with consistently less than 4% variance in the comparison of characteristics in the sample and the university population in these categories. There was a higher variance in the category of whether the students were new to the university, or continuing, with the sample containing 13% more continuing students (who had already completed at least one module) than the university population.

The responses include all categories of disability used by the OU. Some categories have greater representation in the responses, but the proportions are similar to that found across the whole OU student population. Table 1 provides more details on the disability categories declared by respondents. Multiple disabilities were declared by 24 of the respondents (22%).

These categories are used by the OU to align with the categories required by the Higher Education Statistics Agency (HESA) in order to enable analysis of disability statistics across the UK higher education sector. The OU records this information based on a combination of student self-declaration and as a result of a conversation between the student and a Disability Support Adviser, in which a disability profile is co-constructed and the relevant categories are logged.

Table 1: Categories of disability declared by respondents (n=109)

Category	Count	Proportion of responses
Autistic spectrum	4	3.7%
Fatigue and/or pain condition	22	20.2%
Deaf/hearing impairment	4	3.7%
Manual dexterity issues	10	9.2%
Mental health difficulties	20	18.3%
Wheelchair user / mobility difficulties	15	13.8%
Other	13	11.9%
Personal care support (i.e. carer required)	1	0.9%
Blind/partially sighted	7	6.4%
Specific learning difficulty (e.g. Dyslexia)	28	25.7%
Speech impairment	2	1.8%
An unseen disability, e.g. diabetes, epilepsy, asthma	21	19.3%

4. FINDINGS

This section details the results of the survey and provides summary interpretations of the findings.

4.1 Experiences of different types of processes

Respondents were asked "Overall, what is your experience of dealing with…" for each of the types of processes listed in Table 2. Responses were given on a five-point scale from 'very challenging' to 'very straightforward'. Alternatively, respondents could state that such processes were 'not applicable' to them.

These results suggest that the general administrative processes necessary in everyday life and study are less challenging than the processes specifically related to disability. This can be interpreted with reference to some of the characteristics identified in the literature review, particularly high effort, cause of anxiety, and time dependencies. Disability-related processes more often involve some form of needs assessment and medical evidence, and so are more likely to involve multiple steps and interactions. They are likely to cause anxiety by requiring a focus on a person's deficits and are likely to be fundamental to the person's ability to study or quality of life.

Table 2: Degree of challenge perceived in types of processes (n=109)

Question	Challenging or Very Challenging	No strong opinion	Straightforward or Very Straightforward	N/A
Administrative processes necessary in everyday life (such as paying bills or banking)	24.8%	17.4%	52.3%	5.5%
General processes at the Open University (such as registering for a module or updating your address)	18.4%	12.8%	68.8%	0.0%
Disability-related processes at the Open University (such as declaring a disability or asking for an adjustment to be made)	33.9%	19.3%	42.2%	4.6%
Disability-related processes outside of the Open University (such as applying for PIP, or a blue parking badge)	48.6%	11.9%	12.9%	26.6%
Administrative processes where you need to communicate with both the OU and with other organisations in order to complete them (such as applying for DSA)	45.0%	16.5%	18.3%	20.2%

Table 3: Degree of challenge perceived in twelve specific common processes (n=107)

Process	Challenging or Very Challenging	No strong opinion	Straightforward or Very Straightforward	N / A
Registering for a module	15%	7.5%	75.7%	1.9%
Disclosing a disability at registration	16.8%	13.1%	64.5%	5.6%
Disability Support Form	35.5%	9.3%	42.1%	13.1%
Building a Disability Profile with an advisor	28.0%	10.3%	35.5%	26.2%
Gaining medical evidence	37.4%	14.0%	25.2%	23.4%
Requesting a reasonable adjustment for study	23.3%	16.8%	29.9%	29.9%
Requesting a reasonable adjustment for exams	23.4%	12.1%	29.0%	35.5%
Applying for DSA (Disabled Student Allowance)	39.3%	8.4%	16.8%	35.5%
Registering for / attending a tutorial	34.6%	9.3%	41.1%	15.0%
Applying for PIP (Personal Independence Payment)	34.6%	6.5%	9.3%	49.5%
Applying for a disability parking badge	19.7%	2.8%	15.9%	61.7%
Applying for a disabled person's bus pass	16.8%	4.7%	14%	64.5%

Table 4: Effect of administrative processes on nine identified dimensions of impact (n=104)

Type of Impact	Negative or Very Negative effect	No effect	Positive or Very Positive effect	N / A
Effect on time spent on studies	37.5%	47.1%	14.4%	1.0%
Quality of your coursework assignments	25.9%	51.9%	15.4%	6.7%
Ability to succeed in exams	17.4%	34.6%	14.4%	33.7%
Mental health	45.2%	40.4%	7.7%	6.7%
Physical health or wellbeing	37.5%	46.2%	6.7%	9.6%
Stress levels	61.5%	29.8%	5.7%	2.9%
Effect on your disabilities	41.3%	41.3%	9.6%	7.7%
Effect of dealing with OU processes on impression of the university	27.9%	26.0%	42.3%	3.8%
Effect of dealing with council or government processes on impression of those departments	50.9%	18.3%	6.7%	24.0%

Administrative processes external to the university, and those that involve interacting with multiple organisations, are considered more challenging than those within the university. Disability-related processes from external organisations are challenging for almost half of the respondents, and 26% of the rest do not consider that they are applicable (i.e. they have not experienced them). The University's commitment towards accessibility and flexible processes may mean that, in comparison to other organisations, there is less likelihood of characteristics such as restrictive pathways. However, there are also likely to be benefits of familiarity between the individual and the university, which may not apply to processes that involve other organisations.

4.2 Experiences of common processes

Respondents were asked to rate a set of 12 specific processes that are commonly experienced by disabled students at the university on a five-point scale from very challenging to very straightforward, or to not be applicable to them. The survey asked respondents to 'tell us how you find each of the activities'. The results to these questions are shown in Table 3.

This provides additional detail in line with the findings described above in section 4.1. Disability-related processes that were external to the university, or involved multiple organisations (applying for DSA, gaining medical evidence, and applying for PIP) are the processes which are most commonly found to be challenging. Although the process was considered 'not applicable' by the majority of respondents, applying for a disabled person's parking badge was also challenging for the majority of those who did consider this applicable to them.

Within the university, disability-related processes are considered more challenging than general processes such as registering for a module. In recent years work has been undertaken to make the process of disclosure more user friendly, and users are now asked to select from a list whether one of 12 disability categories applies to them, or whether they do not have a disability. This process was considered straightforward by the majority of participants. However, the Disability Support Form that is used to provide additional detail about conditions and needs is considered to be challenging by more than a third of respondents. Building a profile with an advisor and requesting reasonable adjustments are also considered challenging by around a quarter of respondents.

4.3 Impacts on the individual

Respondents were asked to report 'any effect of dealing with administrative processes has had on you', according to the types of impact that were identified through discussions with students and staff. Respondents were asked to rate these from having a very positive effect to having a very negative effect on a five point scale, or to not be applicable. Responses to these are reported in Table 4.

These results identify a negative impact on stress levels as the most commonly reported impact (62%). Also common are negative impacts on impressions of government or council departments (51%), and impact on mental health (45%). The prominence of these issues suggests that it is appropriate to focus on reducing negative emotional responses and supporting the individual to feel more confident in undertaking processes.

A negative or very negative 'effect on your disabilities' for 41% of respondents is concerning, given that this is the opposite of what many of these processes are ultimately intended to achieve – providing a person with support to overcome their disabilities. This provides evidence that processes can instead exacerbate problems faced, and emphasises the need for a user-centred design focus to reduce burden and mitigate these impacts.

Of particular interest in the educational context is the potential for administrative processes to adversely affect student performance and capacity for study. Administrative processes had a negative effect on the time spent on study for 38% of respondents, and were perceived to have had a negative effect on quality of coursework assignments for 26%. For both time on study and quality of assignments, around half of students felt that the processes had no overall impact.

Interpreting the results around examinations is more complex, as many modules do not feature exams, and some qualifications only require students to take exams in the later stages of their study. While overall a negative impact on exams is less common, there is a large proportion of respondents who consider this question as not applicable. Of those who did consider administrative processes applicable to exam arrangements, 26% perceived that administrative processes had a negative impact on their exam success and more than half felt it had no overall impact.

While our focus is primarily on identifying negative impacts as evidence of burden on individuals, administrative processes could commonly have a positive impact on impressions of the university (42% of respondents). There were also substantial minorities of 14-16% who felt that completing administrative processes had a positive impact on time spent on studies, quality of coursework assignments, and ability to succeed in exams. This could be interpreted as a statement that the valuable positive impacts of the results of these processes outweighed any challenges associated with them.

4.3.1 Comments describing additional impacts and challenges

Respondents were asked if they could think of any additional impacts and were invited to describe these in an open comment box. 22 respondents left comments. Some comments add further detail on the types of impact, challenges, and characteristics identified previously, while others suggest additional areas for exploration. Themes in these comments included:

Burdens in communicating with multiple people: This included cases that required repetition by the individual due to a lack of effective recording, sharing, or reviewing of their information. Dealing with multiple people could also lead to inconsistencies in responses. Answers given by one person could be contradicted by others leading to frustration and delays.

Financial challenges: Various financial aspects can relate to administrative processes. Comments noted having to pay for an assessment in order to get medical evidence for subsequent application processes. Another noted that they had not applied for potentially valuable financial support through either the DSA or a hardship grant, as the person felt too overwhelmed and busy to take the time to complete the processes.

Forms and documentation challenges: Questions on forms were perceived to be inappropriate for capturing the issues that one respondent faced. For another respondent, gaining medical evidence documentation in a form that was acceptable for completing other processes had been a further challenge. In another case, the wrong form was initially provided creating additional effort and delays.

Changes to health conditions: Several respondents related to the notion that experiences in administrative processes could adversely impact on existing conditions, such as triggering panic attacks or slowing down thinking. Changes to conditions occurred during study and required further requests for support or adjustments. These could accumulate as problems over time.

Table 5: Reponses on questions on the theme of support and help with administrative processes (n=104)

Question	Always	Sometimes	Never	N/A
If support was requested, was this in place in time for when you needed it?	25.0%	28.8%	15.4%	30.8%
Does a helper support you with administrative processes?	7.7%	18.3%	28.8%	45.2%
Have you had to ask for help from other people (aside from a helper) when completing processes?	9.6%	25.0%	34.6%	30.8%

Delays in support: Comments provide several examples that back up the impacts caused by time dependencies. These included deferring study to a later date due to lack of available technology, and struggling to keep up because requested support arrived after the course had started. This links with findings described in section 4.4 below.

4.4 Help and Support

Participants were asked three further questions on the themes of timely support and help in completing processes. Responses to these are reported in Table 5. Responses were given on a scale of 'always', 'sometimes', 'never', or 'not applicable'.

44% of the respondents had experienced delays sometimes or always, such that support was not in place when they needed it. As noted previously, the impacts of such delays may be cumulative on other processes, or leave a student behind in their studies and needing to catch up from an early stage.

While some respondents had helpers to support them, more had to ask for help from other people. The majority completed processes independently. This may, however, only be reflective of the sample who completed this survey.

5. DISCUSSION

To summarise, this research has found that:

Processes designed to provide support for disabilities and health conditions are perceived to be particularly challenging for those people they intend to support, relative to other types of administrative process. This is likely to reflect the complexity of such processes, including demands for medical evidence or needs assessment, and for detailed information on conditions and needs.

Processes involving organisations external to the university, or multiple organisations, were also more commonly found to be challenging. The need to interact with different systems and people, and a lack of information sharing, are potential reasons for this.

Reports of a range of different impacts on substantial proportions of the respondents was found. These include negative impacts on the individual's health and wellbeing (e.g. stress or exacerbation of conditions), and on the capacity to study (e.g. time lost, support not available in a timely fashion, and perceptions of reduced performance).

Making a process less stressful could be achieved in various ways, such as simplifying communications, remembering and reusing previously provided information, or reducing the potential for time dependencies to cause problems for the individual.

The identified impacts and challenges raised through this research can be mapped to areas for accessibility and assistive technology development work. In the following sections, we first consider how this complex space for accessibility work can be conceptualised. We then identify avenues that appear as important in making the most of new and existing technologies to reduce the impacts found.

5.1 Conceptualising the space

Conceptualising the whole space of relevant concerns when seeking to improve administrative processes is a fundamental challenge for accessibility work in this area. A holistic view encompassing multiple actors, processes and tools over time is necessary in order to fully understand how accessibility is experienced, and how processes impact on a person [6, 8]. As this may be overwhelming, it could be usefully broken down by considering these issues from multiple perspectives. In this section, we suggest several views on the space and essential elements within these.

5.1.1 Stakeholders view

Factors such as organisational decisions, policies, staff, and service design impact on the experiences and outcomes of administrative processes. A range of different stakeholders have a role in the accessibility of education [24] and this section does not attempt to provide an exhaustive list. Instead we highlight how several views appear essential with regards to the accessibility of administrative processes.

Designers: Urquhart & Rodden argue that the designers of systems have important regulatory roles, because they make choices on the particular ways in which to implement systems to achieve legal compliance or accepted standards. They also choose whether and how to exceed these standards to reach an ethical position [26]. In some cases it can be clearly demonstrated that legislative requirements are not being met in administrative processes (e.g. [16]). However, the complexity of the impacts identified in this research suggests that meeting any minimal requirements might not create equity in practice. For example, a process can be accessible, but take substantial time away from a student's study in relation to their peers, therefore creating unequal outcomes by reducing their ability to succeed. A job application process could be similar in creating additional arduous requirements that reduce chances of success, but in the terms of legislation this could be obscured or irrelevant. The potential for other types of impacts of processes on the person, such as exacerbation of health conditions, also require user-centred understanding to address or mitigate.

Inter-organisational representatives: The processes that were most commonly considered challenging were those where respondents had to deal with organisations other than the university, and those involving more than one organisation. People facing these processes are more likely to encounter unfamiliar situations. Organisational silos and a lack of integration can be expected to cause substantial differences from prior experiences, and previously successful strategies or ways of receiving help may not be applicable. Greater consideration of aspects such as supporting consistent expectations across a process, using the same terminology, information sharing between organisations, or simpler information reuse for the individual applicant, appear necessary. Staff within organisations should look outwards in order to achieve this together.

Assessment and medical practitioner organisations: Gaining medical evidence, or forms of functional assessment, are tasks that are commonly perceived to be challenging. These are an aspect or requirement of many high-stakes disability-related processes. It is therefore essential for health professionals, assessors, and those who design or implement processes in their organisations to evaluate accessibility and reflect on the broader impacts of their practices. Reducing repetition of information or tasks, and improving information sharing or integration with other parts of processes appears as a focus for improvements.

Front-line contacts: Due to the diversity of people who need to apply, and the complexity of many processes, the availability of support that is consistent and well-informed appears essential to successful completion of processes, and to overcoming the potential negative impacts caused by misinformation or unwarranted high effort.

5.1.2 Individual empowerment view
As well as evaluating the responsibilities of organisations, and the need for inter-organisational integration, it is fruitful to consider how individuals can be more empowered as they undertake these processes, or for them to gather evidence and advocate for improvements. This perspective could aim to develop new and improved technologies that combine human and computer strengths to overcome challenges, such as repetition of personal details, information overload, and gathering and use of medical or functional evidence.

Our findings show that most respondents completed these processes independently, but that this had various impacts on their wellbeing and study. As noted previously, individuals often need to interact across multiple organisations, documents, and forms to complete processes. While greater consistency and integration between these could be advantageous, supporting the individual may be an achievable alternative to expecting organisations to be consistent and aware of each other's implementations of processes. Section 5.2 suggests directions for tools that would, for example, look to increase resilience or support better planning and monitoring by the individual.

5.1.3 Journey-based views
Data from processes and from individuals may be able to provide insight into the journeys of individuals through specific processes and the points of failure or difficulty. It should, for example, be possible to identify points in processes where substantial drop off occurs using analytics. In some cases, this data may not currently be publically available, but the capacity to develop understanding using it inside organisations or through forms of auditing would be valuable. This would provide important additional insights, particularly by providing representative data where a survey sample could be more representative of those who have succeeded in overcoming barriers. While the survey tool and survey content was assessed for accessibility, there may remain a respondent burden that impacts on the sample. Complementary methods for data collection could provide insight into the interactions of those who fail to complete processes and ultimately disappear out of contact due to this.

An analytical approach based on behavioural or system-generated data may also help to separate out understanding of the impact of the outcomes of the process from the barriers found in the processes themselves. While the language of our survey questions was devised to focus on 'dealing with' the process, it could still be a matter of respondent interpretation to distinguish perceptions of undertaking process, from their perceptions of the outcomes. The

importance of the outcomes of these processes, such as receiving technology or support that is fundamental to study or everyday living, means that a successful application could leave a positive impression, whereas a negative outcome may lead to a negative impression, regardless of the accessibility of the process itself.

Analytics-based approaches could be a powerful tool to identify problems where suitable data is available. However they may lack the explanatory power of contextualised views of experience [8]. Structures for individuals to report their journeys through administrative processes could provide a means for richer and more specific understanding of the impacts of particular elements of processes.

5.2 Directions for improvement
In this section we suggest directions through which technological innovation and accessibility work could reduce the negative impacts of administrative processes and empower the individuals undertaking them.

5.2.1 Design of web-based information and forms
Online guidance and form design is an area for attention, particularly as many organisations increasingly provide and prioritise online means to complete processes. There may be low hanging fruit for improvement here. For example, Wentz et al. found consistent accessibility violations in websites for US utility providers, including most commonly, a lack of support for keyboard navigation, and a lack of text alternatives for non-text content. They argue that most of these problems identified only required minor modifications to create accessibility [28]. Using a website to access the static information necessary to follow an administrative process can still be a barrier.

Web-based forms are a key element in completing processes online, as these are used for tasks such as registration, applications, maintaining a profile, or often for communications. HTML-based forms are presentation-orientated and mix up the presentation with function and data. Better separation of presentation from function in the frameworks underpinning forms should improve the compatibility with users and their personal technologies [19].

However, as well as identifying many accessibility problems caused by technical problems with forms, Ruth-Jennick also find cognitive problems, where forms and the information around them lack clarity or have an overly complex design [20]. Basic guidance for creating accessible forms is available and should be followed, e.g. [27]. But our survey findings suggest that some of the more complex issues could be addressed through design and through technical means. For example, form-related technologies such as Autofill browser plugins could reduce the need for repetition of information entry. Equally, forms should be designed to support these tools by asking for information in consistent ways.

5.2.2 Interfaces for communication and guidance
There is notable potential for interfaces other than forms to be designed to create more accessible processes and reduce the burdens stemming from limited channels for communication and input, or possibilities for errors or misinterpretations, associated with these interactions. For example, Brinckley et al. describe a voice-based interface for job searching, created as an alternative for those with visual impairments [5].

Another avenue to reduce the high effort and requirements to understand complex guidance could be the application of conversational agents or chatbots. This could draw inspiration from bots developed to provide simplified support for legal claims [9], and from research showing that agents designed to explain complex

medical consent documents can perform as well or better than humans [2]. Given the prominence of stress and mental health related impacts from administrative processes, it could also be fruitful to consider research that has explored how conversational agents can play counselling and motivational roles (e.g. [23]).

5.2.3 Medical and functional assessments

Attention should also be drawn to systems and processes for assessing needs based on functional abilities, or for producing and using medical evidence in administrative processes. The processes that were most commonly found to be challenging all included some type of these.

Designers should be sensitive to the potential negative impacts of situations in which a person is required to focus on and emphasise deficits. There may be potential to reduce the instances of this or improve experiences in assessments through technologies that play a role in diagnosing or monitoring conditions or providing better experiences when evidencing needs. At the same time, trust in the impartiality of such systems, and the storage and sharing of sensitive personal data, are key concerns for any innovation.

5.2.4 Process management tools

A number of the impacts and challenges raised in research relate to effective timing of steps and understanding of processes, inter-dependencies, and the need to avoid or reduce delays. Without removing the responsibility of the process owners to make their processes accessible, designers could look to empower individuals to manage these processes. Such tools may, again, have the potential to reduce anxiety, provide guidance, and present reminders. While process management and planning tools are numerous, inspiration could be taken from innovative assistive technologies, such as Brain in Hand, which focus on supporting a personalised approach to developing strategies and routines for independent living [4]. Shared information from such tools could provide both evidence of challenges and improved guidance. This could be valuable for the journey-based and individual empowerment views described above.

6. CONCLUSIONS

By focusing on identifying the impacts that individuals experience from administrative processes, we can develop an evidence base to direct attention towards problems in the design of administrative processes, and opportunities to develop better support that can allow people to overcome the barriers and impacts. This study provides initial insights and direction for accessibility work and for the design of new technologies.

In particular we can emphasise the importance of designing in mitigation of, or in response to, the negative impacts of processes on stress levels, mental health, and exacerbation of existing disabilities. The findings also emphasise that processes using medical or functional assessments, diagnoses, and forms of evidence are particularly challenging. As are those that require interaction with organisations external to the university, or multiple organisations. Requirements for repetition of information, miscommunication, or inconsistencies, could be resolved through greater consideration of accessibility in a holistic way in these processes.

The nature of these impacts and challenges highlights the potential for innovations that empower the user of these processes or change the nature of the interactions. Process management tools, and conversational agents, provide two feasible examples that could target these problems. This project arose through participatory research, and participatory design work to explore the nexus of process design, policy, and technological assistance will provide a

means for translation of the understanding we have developed into action.

The previous research detailed in the background section has shown that challenges with administrative processes are found across a variety of settings beyond education, including employment and healthcare. Respondents to this survey were students enrolled in a distance learning university which increasingly uses online forms for its administrative processes, alongside phone calls and document-based forms. In comparison, campus-based educational institutions, and some other organisations, may conduct more of their processes through face to face exchanges. However there is increased expectation that all kinds of administrative processes will be completed online. This trend makes it imperative that we devise principles for evaluation and guidance on accessibility for this space, research the potential for new forms of assistive technologies, and identify how existing technologies can provide better integration.

Having identified and evidenced a set of types of impact, further work should broaden and deepen the evidence base and capacity for evaluation and improvement of administrative processes. The processes experienced will vary according to both the country of residence and the individual person. However we expect that the impacts identified have wider generalisability. We can now explore how such impact dimensions occur within specific processes, or in combinations of specific processes. As noted above, analytics should be harnessed to identify points of tension, drop off within a process, and as another means to evaluate the impacts where appropriate. Structured means to represent journeys through administrative processes could provide a further means of evidence gathering to support design work. Through expanding this work, it should be feasible to more broadly identify both the best and worst aspects of existing administrative processes, and accordingly, to develop practices and guidelines that reduce the impacts they create.

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