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National Centre for Student Equity in Higher Education

Curtin University

ACCESS AND BARRIERS TO ONLINE EDUCATION FOR PEOPLE WITH DISABILITIES

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Contents

1. Executive Summary

This paper reports on a study conducted in 2014 and 2015 that explored the accessibility of eLearning for students with disabilities studying fully online in Australia. The study looked at students studying through Open Universities Australia (OUA). OUA brings together 15 different independent higher education institutions to teach students fully online across a number of different fields. This diversity of institutions allowed a number of different eLearning environments, technologies and learning and teaching strategies to be canvassed.

The study had two phases. Firstly, a survey that explored students' experience related to the accessibility of online learning and teaching platforms, and students' approach to disclosure of their disability and the effectiveness of any accommodation offered by the different institutions. The survey had 356 responses. The second phase of the research consisted of a series of 143 interviews that expanded on the information collected in the surveys and also explored the accessibility of different approaches to learning and teaching and assessment.

Open Universities Australia invites students to nominate one of eight broad impairment categories when they identify themselves as a person with a disability these categories – mental illness, medical impairment, mobility impairment, hearing impairment, learning disability, vision impairment, acquired brain impairment (ABI) and intellectual disability – were used in the survey and interviews to provide different perspectives from students with these different impairment types. Each of these eight broad categories is individually addressed in this report.

The findings of this research indicated that student with disabilities found that online study through OUA was a preferred way to access higher education. There was an unexpectedly high incidence of students with a mental illness (44.9% of survey respondents) and medical impairments (39.2% of survey respondents), with mobility impairments rounding out the top three categories (25.3% of survey respondents). The finding of this prevalence was one of the major findings of this study, along with the impact of different impairments on learning technologies, learning and teaching strategies and attitudes towards disclosure.

The report presents a number of recommendations related to policy and compliance, staff training, unit design, and assessment design and implementation. It also calls for further directions for research including the development of universal design in eLearning, and the need for further research to provide a voice for staff at universities in relation to access for students with disabilities.

2. Background to the study

Open Universities Australia (OUA) brings together 15 different higher education institutions to teach students fully online across a number of different fields. Online education is a rapidly growing part of the higher education sector (Allen & Seaman, 2014). When students are studying fully online we often will not meet them in person until they graduate. In this context, making sure what is offered is accessible to all is vital.

Students with disabilities are under-represented in tertiary education (see Sachs & Schreuer, 2011; Wentz, Jaeger & Lazar, 2011), and this seems to be particularly the case in Australian higher education. Some estimates put the number of students as low as 4% (Ellis, 2011) compared to between 8-14% in the United States and United Kingdom (Sachs & Schreuer, 2011). In this context, OUA has 6.4% of the student body identifying as having a disability.

There are a number of advantages to studying online for students with disabilities (see Dobransky & Hargittai, 2006; Fitchten, Ferraro, Asuncion, Chwojka, Barile, Nguyen, Klomp, & Wolforth, 2009; Kent, 2015a; Kent, 2015b; Roberts, Crittenden & Crittenden, 2011). However, online students with a disability can become invisible and this can lead to unintended accessibility problems (Kent, 2015a; Kent, 2015b). The documentation of these problems with access will allow universities to better tailor their online educational environments to be accessible to all students, regardless of disability.

This study explicitly employs the social model of disability and the notion that it is the constructed environment that disables people with impairments (Oliver, 1996). This is particularly relevant online – how the online environment is constructed determines its level of accessibility or exclusion for people with disabilities (Ellis & Kent, 2011). The study involved two phases. Firstly, an online survey that sought to gather a broad understanding of what factors impacted on the learning and teaching of students with disabilities studying through OUA, and then secondly a series of interviews, also conducted online and over the telephone, to gather more qualitative data to give greater depth and understanding to the quantitative data gathered through the surveys. Students from each of the eight categories of impairment used by OUA to classify its students with disability – mental illness, medical impairment, mobility impairment, hearing impairment, learning disability, vision impairment, acquired brain impairment (ABI) and intellectual disability – were selected to provide a range of different perspectives on issues that affect this part of the student body.

In Study Period 3 of 2014 (October), a survey was conducted that was sent to all the students enrolled through OUA that had registered for disability support. Of the 1444 students the survey was sent to, 356 responded. The survey gathered demographic information about the respondents and explored two key areas. Firstly, the survey focused on the accessibility of the different online platforms used by the different institutions for learning and teaching. Secondly, the research focussed on the students' level of disclosure to each institution, looking at what motived students to disclose their disability or not. Questions of disclosure are important in this context, one of the benefits of online study for students with a disability is their ability to control their level of disclosure about their disability, however when students choose not to disclose it can also hide the need for accessible and inclusive online design. Within this context, students who did decide to disclose their disability were asked to consider the effectiveness of the accommodation and support offered to them. Students were also asked to discuss their proposed future directions and were given the opportunity to make recommendations for service improvement.

OUA invites students who register as having a disability to select from eight separate categories of impairments. By using these broad categories, the survey was able to look at the specific impacts of these impairments as they relate to the key areas of the study – accessibility, disclosure and the effectiveness of any accommodation offered. The survey sample closely matched the total student body with a disability, particularly in terms of spread of age, gender and types of impairments reported. Significantly, of the 356 respondents, more than 60% (226) responded that they would be willing to take part in further research in the form of interviews to provide more detailed qualitative data to expand on the quantitative data provided through the survey. From the high response rate

to both the survey and the invitation to take part in follow-up interviews, it seems that this student body is keen to have their perspectives heard.

In 2015 students who had volunteered as part of the survey were emailed and asked if they would like to participate in a second interview phase of this research. Students were then interviewed either online via Skype, via an exchange of emails, or over the telephone. An unexpectedly large group chose to take part via an exchange of emails, with more than half of all the interviews taking place in this manner. Twenty-nine interviews were conducted from this group. A follow-up request was then sent to all students who had been invited to take part in the survey initially, with a focus on the ability to complete this interview in a written format – this second round had a very high response rate, with 114 interviews being completed in this round.

The interviews allowed a more in-depth understanding of the accessibility of different online platforms, the motivations behind disclosure – both students who choose to disclose a particular impairment and those who chose not to – as well as the effectiveness of any accommodation offered. They also extend the survey by looking at the accessibility and appeal of different teaching strategies. The diversity in online teaching across the different institutions working through OUA allowed a broad range of different teaching methods and platforms to be canvased.

These interviews were also able to explore in more depth the impact of different impairments on these areas, particularly as many students identified impairments in more than one category. Even with this overlap, the survey and interview results indicated that different impairments had different impacts. These interviews help to answer the question of why these differences occur.

Each of the following eight sections of this report will focus on one of the impairment categories, both from the perspective of survey and interview findings as well as providing context though some of the existing academic and statistical literature on the topic. Each section of the report is written to be read independently of the full report. To give an overview of the first stage of the research, the next section of this report will provide an overview of the survey results.

2.1. Survey questions and results

Note that these survey results were first published as Appendix A in a paper for the *Journal of Interactive Technology and Pedagogy* (see Kent, 2015b).

2.1.1. Demographics

Question 1 “In what year were you born?”

The average age of the respondents was 42 years, with the oldest 85 and the youngest 15. This is compared to the average age of 36 years for all students registered with disability support through OUA.

Question 2 “What is your gender?”

There were 71.4% female responses, 27.5% male and 1.1% preferred not to say. This was broadly in line with the gender ratio for all students registered with disability support through OUA of 70.4% female, 29.6% male.

Question 3 “What is the highest level of school you have completed or the highest degree you have received?”

Less than high school degree	10.8%
High school degree or equivalent	18.3%
Some college or university but no degree	52.0%
Associate degree	3.1%
Bachelor degree	12.1%
Graduate degree	3.7%

Question 4 “What type of disability or impairment, if any, do you have?”

Hearing impairment	10.2%
Vision impairment	7.2%
Mental illness	44.9%
Learning disability	8.7%
Medical impairment	39.2%
Intellectual disability	1.8%
Mobility impairment	25.3%
Acquired brain impairment	4.5%

There is some variation, particularly in the higher representation of vision and mobility impairments when compared with the overall numbers for all students registered with disability support through OUA as listed below.

Hearing impairment	4.8%
Vision impairment	5.3%
Learning disability	7.5%
Medical impairment	37.3%
Mobility impairment	16.9%
Other	54.2%

2.1.2. Studying through OUA with a disability

One third of students were in their first year of study through OUA. The majority of degrees run for three years, which was reflected by the fact that 85.6% of students had studied through OUA for three years or fewer.

The majority of respondents were studying courses in the field of Arts and Humanities, although this may reflect the fact that there are more arts and humanities courses offered through OUA than any other field.

Question 5 “How long have you been a student through OUA?”

Less than 1 year	34.2%
1 year	14.4%
2 years	18.9%
3 years	17.2%
4 years	7.1%
5 years	2.8%
6 years	1.4%
7 years	1.7%
8 years	0.6%
9 years	1.1%
10 years or more	0.6%

Question 6 “What is your chosen field of study?”

Arts & Humanities	57.4%
Business	13.3%
Education	6.7%
Health	5.5%
IT	6.7%
Law & Justice	11.0%
Science & Engineering	5.5%
Not specified	1.4%

2.1.3. Accommodations and disclosure

Participants were asked to respond to a number of questions about disability and eLearning, including accessibility (of online course content), support (from university disability support services and teaching staff), and teaching platforms.

Surprisingly, the majority of students surveyed indicated that they were unsure or not aware of the type of accommodation (assistance or lenience from the university) offered to students with a disability by unit providers.

Question 7 “Are you aware of the type of accommodation that can be offered by the unit providers in relation to your disability/impairment to help with your studies?”

Yes	28.7%
No	43.9%
Unsure	27.3%

Question 8 “Have you received any accommodation in relation to your disabilities in relation to your study?”

With all units of study	6.6%
With most units of study	7.5%
With some units of study	16.1%
With no units of study	69.7%

Question 9 “Did you find this accommodation was adequate and appropriate?”

Yes, always	9.7%
Mostly	10.3%
Sometimes	9.2%
Never	0.9%
Have not received any accommodation	69.9%

Question 10 “Have you informed the institution(s) where you are studying that you have a disability?”

Answer options	Yes	No	Percent yes
Curtin University of Technology	100	53	65.4%
Griffith University	115	47	71.0%
Macquarie University	77	39	66.4%
Monash University	6	15	28.6%
RMIT University	33	25	56.9%
Swinburne University of Technology	56	40	58.3%
University of South Australia	51	37	58.0%
Australian Catholic University	6	7	46.2%
Charles Darwin University	4	11	26.7%
La Trobe University	1	8	11.1%
Learning Network Queensland	3	5	37.5%
Murdoch University	40	25	61.5%
Polytechnic West	1	5	16.7%
The University of New England	3	7	30.0%
The University of Western Australia	4	5	44.4%
Total Response	**504**	**334**	**60.1%**

Question 11 "When you have not disclosed that you have a disability to an institution, what are the factors that caused this?"

I did not think it would help	51.8%
I did not know I could	13.1%
I did not know how	13.9%
I did not need any accommodation	26.5%
I did not want any accommodation	9.0%
I did not want to disclose my disability/impairment	17.6%

2.1.4. Learning technologies

Question 12 "How do you access the internet for your studies?"

Desktop computer	46.2%
Laptop computer	74.9%
iPad / tablet	27.3%
Smartphone	23.9%

Question 13 "Have you had any problems accessing online learning platforms due to your disability/impairment?"

Yes	17.9%
No	82.1%

Question 14 "If yes, which platforms have you experienced difficulty with?"

	Not used	No prob-lems	Minor prob-lems	Major prob-lems	Unusable	Percent with problems
Moodle	99	26	13	1	0	35.0%
Blackboard	17	68	51	12	1	48.5%
Facebook	58	63	13	3	1	21.3%
Twitter	92	37	3	1	1	11.9%
Slideshare	116	15	0	2	0	11.8%
Prezi	110	20	2	1	1	16.7%
Lectopia	105	18	7	5	0	40.0%
Echo 360 / Echo Centre	64	39	28	8	1	48.7%
PDFs	22	81	27	6	1	29.6%
Blogger	105	21	6	1	0	25.0%
WordPress	100	27	4	1	0	15.6%
WebCT	118	12	1	2	0	20.0%
YouTube	37	78	14	6	1	21.2%
University websites	14	78	42	17	1	43.5%

Question 15 "Please list any other online platforms that you have had trouble accessing as part of your studies."

Seventy students responded to this. Twenty indicated that there were no other platforms they had trouble with, and the remaining 50 predominantly took the opportunity to expand on the problems they had with the platforms suggested above, and also to highlight problems with inaccessible course material.

2.1.5. Recommendations / future involvement

Question 16 "Would you recommend Open Universities Australia (OUA) as a place to study for people with disabilities?"

Yes	75.9%
No	3.1%
Maybe	21.0%

Question 17 "Would you will be willing to participate in later stages of this research, including online focus groups or interviews? If so, please leave your email address. Please note this is not part of the survey and further participation is strictly voluntary (you can also change your mind and decide not to participate further at any point)."

A total of 226 students, 63.4% of the people who took the survey, responded to this.

2.2. Interview categories

For each of the survey responses and interviews, individuals nominated different impairment categories, in many cases more than one. The overall responses can be seen broken down in this table.

Impairment type	Survey responses	Interview responses
Total responses	**352**	**143**
Mental illness	149	54
Medical impairment	130	64
Mobility impairment	84	43
Hearing impairment	34	8
Learning disability	29	8
Vision impairment	24	16
Acquired brain impairment	15	5
Intellectual disability	6	3

This report addresses each of these separate categories in order of their prevalence in the survey. Mental illness was the largest category identified in the survey, making up 44.9% of the respondents. As the survey results above show, when OUA releases data on the classification of students the categories of mental illness, ABI and intellectual disability – along with other students who have an

impairment that does not map onto the other five categories – are all labelled together as ‘other’. It is a disturbing finding that such a significant impairment category is hidden (see Kent, 2015b).

The next category addressed is medical impairment – this was also the one with the largest number of interview responses, making up 32.9% of the survey responses. This is a complex category of impairments with as yet limited research into the potential impact of online learning and teaching. The third major impairment category is mobility impairment. It made up 25.3% of the responses to the survey, and seemed to be quite over-represented compared to the OUA figures of 16.9% of all students with a disability, 43 of the students interviewed identified in this category.

The fourth category addressed is hearing impairment. This category is noticeably smaller in the survey, making up only 10.2% of responses, and it had the lowest ratio of interview responses to survey responses of all the impairment categories, with only eight interviews being completed. Learning disabilities make up the fifth impairment type. Here the report uses the term disability rather than impairment as a label to better mirror the literature that surrounds this impairment type, as is later repeated for intellectual disability. Vision impairment makes up the sixth category addressed. In contrast to hearing impairment, this category had the highest ratio of interviews to survey responses, with 16 interviews completed after 24 survey responses were recorded.

The last two sections – ABI and intellectual disability – make up the other two groups, along with mental illness, that are released as the ‘other’ label when OUA releases their official statistics. While these categories both had relatively low numbers of survey and interview responses, both categories still represent an important group of actual and potential students in online learning and higher education whose needs should be considered when looking at accessibility overall for students with disabilities.

The survey completed by OUA students with a disability indicated that comorbidity – that is “the presence of more than 1 distinct condition in an individual” (Valderas et al., 2009, para. 6) is extremely common. While there are numerous, often conflicting, definitions for comorbidity, understanding the nature of this overlap of multiple impairments is essential for advancements in clinical research, epidemiology and public health, and health services and policy. In relation to the latter, they argue that “coexisting diseases need consideration when deciding on the allocation of resources” (Valderas et al., 2009, para. 18-20). While this quote clearly invites a medical rather than social approach to disability it does illustrate the varied nature of disabilities – both in terms of person-to-person variances and the broad categories used to classify disabilities in research – and the prevalence of multiple impairment types in one individual adds to the complexity of determining best practices for providing equal standards of teaching and learning to students with disabilities. There was considerable overlap again in the interview responses, with some students appearing in a number of groups. In these cases, this report has attempted to include the relevant interview responses in the relevant section.

3. Mental illness

3.1. Introduction

From the survey results, students with a mental illness were the largest single impairment group. The size of this group is a surprising result. In 2008 the United States Department of Education found that only 15% of students in higher education institutions who identified as having a disability reported having a mental illness (as cited in Lee, 2014). In the wider Australian community, the Australian Bureau of Statistics (2008) has found that 17.6% of men and 22.3% of women have a mental illness of some sort. Three quarters of people who develop a mental illness do so between the ages of 16 and 25 (McLean & Andrews, 1999), so it could be argued that this would be an impairment type that is of particular relevance to university students. However, even with the relatively high numbers of these students represented in the survey, this would still indicate a significantly low representation of only 3% of the total student body studying through OUA.

Despite its size, this impairment group has received little attention in relation to how it can be best accommodated in a higher education setting, let alone in an online eLearning environment. Indeed, as noted previously, mental illness is one of the impairment categories normally classified by OUA under 'other' when reporting on disability. This serves to hide the size of this group of students and, as such, impede any focus on what steps can be taken to make online learning more accessible to this group of students (see Kent, 2015b). A study in 1999 by McLean and Andrews on Australian university students with mental illness studying on campus found that they faced significant problems in completing their course of study. The students found it hard to regularly attend classes due to fluctuating symptoms, difficulty in completing assessments within the required timeframe, and stigmatised treatment both from other students and university staff. Studying online would seem to present the opportunity for students to have a greater control over both disclosure of their impairment and their ability to manage time when they can focus on their studies. As one student observed in the interviews:

> *"My previous learning experience was with on campus study. I was unable to complete the daily travel needs and ended up almost killing myself trying to manage it all. I was failing my grades and having daily panic attacks so I decided to quit and look for another option. Online study through OUA saved me in that regard."*

Another also spoke of their experience:

> *"Studying on campus caused me so much grief and anxiety that I didn't expect. As I started the degree on line, I found I flourished with the challenge and could work more freely without the bullying that one experiences from some of the lecturers on campus in an art school. As I suffer from anxiety attacks, I was not able to cope with the personal attacks that are so unprofessional and actually make one want to never paint again… At least online study offers some protection from this."*

While the term mental illness has been used throughout this report to adopt the same language of classification as disability services at OUA and their partner institutions, it must be acknowledged that this is a large category that has a diversity of impairment types. The American Psychiatric Association's *Diagnostic and statistical manual of mental disorders* (2013) lists 48 different categories of mental illness with numerous sub-classifications. This language also invites a medical as opposed to a social approach to the students' disability, and it is important to acknowledge the moves to find alternative language to use when talking about this type of impairment such as neurodiversity and madness (see McWade, Milton, & Beresford, 2015).

3.2. Survey results

3.2.1. Demographics

This group represented the largest number of respondents to the survey, with 149 of the 356 respondents – or 44.9% – identifying as a person with a mental illness. There was a slightly higher representation of women in this impairment category, making up 74.7% of respondents as opposed to 71.4% in the overall survey. The mental illness sample had a similar response to the overall survey in relation to educational background.

Q3: What is the highest level of school you have completed or the highest degree you have received?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than high school degree	7.3%	10	10.8%
High school degree or equivalent	24.8%	34	18.3%
Some college or university but no degree	48.9%	67	52.0%
Associate degree	1.5%	2	3.1%
Bachelor degree	12.4%	17	12.1%
Graduate degree	5.1%	7	3.7%
Other (please specify)		22	69
answered question		137	
skipped question		12	

There were also a number of people with mental illness who also identified with other impairment categories, with nearly a quarter also identifying as a person with a medical impairment.

Q4: What type of disability or impairment, if any, do you have?		
Answer options	**Response percent**	**Response count**
Hearing impairment	5.4%	8
Vision impairment	3.4%	5
Mental illness	100.0%	149
Learning disability	6.0%	9
Medical impairment	23.5%	35
Intellectual disability	2.0%	3
Mobility impairment	11.4%	17
Acquired brain impairment	0.7%	1
Other (please specify)		10
answered question		149
skipped question		0

3.2.2. Studying through OUA with a disability

People in this impairment type in general had spent slightly less times studying though OUA.

Q5: How long have you been a student through OUA?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than 1 year	40.8%	60	34.2%
1 year	15.6%	23	14.4%
2 years	17.0%	25	18.9%
3 years	15.6%	23	17.2%
4 years	4.1%	6	7.1%
5 years	2.0%	3	2.8%
6 years	1.4%	2	1.4%
7 years	0.7%	1	1.7%
8 years	0.7%	1	0.6%
9 years	1.4%	2	1.1%
10 years or more	0.7%	1	0.6%
answered question		147	
skipped question		2	

They also tended to be slightly more likely to be studying in the arts and humanities.

Q6: What is your chosen field of study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Arts & Humanities	60.4%	87	57.4%
Business	12.5%	18	13.3%
Education	4.2%	6	6.7%
Health	6.9%	10	5.5%
IT	9.7%	14	6.7%
Law & Justice	10.4%	15	11.0%
Science & Engineering	1.4%	2	5.5%
Not specified	0.7%	1	1.4%
Other (please specify)		8	
answered question		144	
skipped question		5	

3.2.3. Accommodations and disclosure

They were also less likely to be aware of any accommodation that might be available to them for their disability.

Q7: Are you aware of the type of accommodation that can be offered by the unit providers in relation to your disability/impairment to help with your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	25.5%	38	28.7%
No	48.3%	72	43.9%
Unsure	26.2%	39	27.3%
answered question		149	
skipped question		0	

Despite this, they overall had a similar rate of having received any accommodation and the effectiveness of that accommodation.

Q8: Have you received any accommodation in relation to your disabilities in relation to your study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
With all units of study	8.2%	12	6.6%
With most units of study	4.1%	6	7.5%
With some units of study	18.4%	27	16.1%
With no units of study	69.4%	102	69.7%
answered question		147	
skipped question		2	

Q9: Did you find this accommodation was adequate and appropriate?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes, always	8.2%	12	9.7%
Mostly	12.2%	18	10.3%
Sometimes	8.8%	13	9.2%
Never	0.7%	1	0.9%
Have not received any accommodation	70.1%	103	69.9%
answered question		147	
skipped question		2	

This group also had a noticeable lower rate of disclosure of their disability to the different institutions where they were studying.

Q10: Have you informed the institution(s) where you are studying that you have a disability?						
Answer options	**Yes**	**No**	**Have not studied with this institution**	**Response count**	**Percent disclosed**	**Full survey response**
Curtin University of Technology	35	28	69	132	56%	65%
Griffith University	43	29	59	131	60%	71%
Macquarie University	23	18	86	127	56%	66%
Monash University	5	10	103	118	33%	29%
RMIT University	11	15	100	126	42%	57%
Swinburne University of Technology	27	25	76	128	52%	58%
University of South Australia	13	22	88	123	37%	58%
Australian Catholic University	2	6	114	122	25%	46%
Charles Darwin University	2	7	111	120	22%	27%
La Trobe University	1	6	114	121	14%	11%
Learning Network Queensland	2	4	114	120	33%	38%
Murdoch University	13	13	101	127	50%	62%
Polytechnic West	1	4	116	121	20%	17%
The University of New England	3	4	114	121	43%	30%
The University of Western Australia	2	4	115	121	33%	44%
Other (please specify)				5		0%
Total response	**183**	**195**			**48%**	**60%**

It can be seen from the responses to the next question that this could be attributed to both a higher rate of not wanting to disclose their disability and also a lack of awareness of any disclosure procedures in this group.

Q11: When you have not disclosed that you have a disability to an institution, what are the factors that caused this?			
Answer options	**Response percent**	**Response count**	**Full survey response**
I did not think it would help	46.6%	55	51.8%
I did not know I could	15.3%	18	13.1%
I did not know how	21.2%	25	13.9%
I did not need any accommodation	24.6%	29	26.5%
I did not want any accommodation	5.1%	6	9.0%
I did not want to disclose my disability/impairment	23.7%	28	17.6%
Other (please specify)		21	
answered question		118	
skipped question		31	

3.2.4. Learning technologies

The distribution of technology used to access their studies was similar to the overall sample, although students were less likely to use a desktop computer or tablet to access their studies.

Q12: How do you access the internet for your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Desktop computer	40.9%	61	46.2%
Laptop computer	74.5%	111	74.9%
iPad / tablet	23.5%	35	27.3%
Smartphone	24.2%	36	23.9%
Other (please specify)		2	
answered question		149	
skipped question		0	

Students were also slightly less likely to have had problems accessing their online learning, and this was reflected in all but four of the platforms that the survey addressed.

Q13: Have you had any problems accessing online learning platforms due to your disability/impairment?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	16.8%	25	17.9%
No	83.2%	124	82.1%
answered question		149	
skipped question		0	

Q14: If yes, which platforms have you experienced difficulty with?								
Answer options	**Not used**	**No prob-lems**	**Minor prob-lems**	**Major prob-lems**	**Unusable**	**Response count**	**Prob-lems**	**Full survey response**
Moodle	44	14	5	0	0	63	26%	35%
Blackboard	10	32	20	5	1	68	45%	48%
Facebook	26	32	4	1	1	64	16%	21%
Twitter	40	21	2	0	1	64	13%	12%
Slideshare	58	4	0	1	0	63	20%	12%
Prezi	55	6	0	1	0	62	14%	17%
Lectopia	55	5	1	2	0	63	38%	40%
Echo 360 / Echo Centre	38	14	9	2	1	64	46%	49%
PDFs	13	37	9	2	1	62	24%	30%
Blogger	49	9	3	1	0	62	31%	25%
Wordpress	48	11	2	1	0	62	21%	16%
WebCT	56	5	0	1	0	62	17%	20%
YouTube	18	41	1	3	0	63	9%	21%
University websites	7	39	15	6	1	68	36%	43%
answered question						69		
skipped question						80		

3.2.5. Recommendations / future involvement

This group was also marginally more positive about OUA as a place to study for students with a disability.

Q16: Would you recommend OUA as a place to study for people with disabilities?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	76.9%	113	75.9%
No	2.7%	4	3.1%
Maybe	20.4%	30	21.0%
answered question		147	
skipped question		2	

This group of students were also noticeably more interested in being involved in the interview stage of the research, with 71.1% responding positively to Question 17 as opposed to the overall survey response rate of 63.5%.

3.3. Interview responses

Fifty-four people who responded positively to this request to participate in this further stage of the research were interviewed. Twenty-seven of these people had depression-related conditions and 23 had anxiety-related. There were also 10 people with post-traumatic stress disorder (PTSD), seven with bi-polar and five with schizophrenia related impairments and one with obsessive compulsive disorder. Seventeen of the interviewees had more than one type of mental illness and 15 also identified in other impairment categories, most commonly medical – and mobility – related impairments. This is consistent with the Australian Bureau of Statistics' finding that anxiety – and depression – related impairments are the leading types of mental illness in Australia (Australian Bureau of Statistics, 2008).

More specifically, the interviewees identified their specific impairment type as listed below:

1. Depression
2. PTSD and depression (and medical and vision)
3. Anxiety (and mobility)
4. Depression, anxiety, OCD
5. Chronic depression (and medical)
6. Major depression disorder and generalised anxiety
7. PTSD (and medical and mobility)
8. PTSD (and medical and mobility)
9. PTSD, anxiety and major depressive disorder (and physical and medical disability)
10. General anxiety disorder
11. Anxiety
12. Depression
13. Anxiety and depression (and medical and physical)
14. Anxiety, autism spectrum (and medical and physical)
15. Anxiety (and mobility)
16. Mental health issues
17. Bipolar affective disorder
18. Bipolar disorder and anxiety
19. Generalised anxiety disorder, panic disorder and major depression
20. PTSD (and medical)
21. Depression and anxiety
22. Mental illness
23. Schizophrenia
24. Depression and anxiety
25. PTSD, clinical depression and borderline personality disorder (and mobility)
26. Depression
27. Depressive and anxiety disorder
28. Schizoaffective disorder, anxiety and depression
29. Manic depression
30. Bipolar disorder
31. Bipolar affective disorder
32. Depression (and medical)
33. PTSD
34. Bipolar type 1 disorder
35. Depression
36. Major depressive and anxiety
37. I find it hard to go outside the home
38. Major depression disorder (and medical)
39. Bipolar II disorder
40. Depression
41. Schizophrenia and depression

42. Paranoid schizophrenia
43. Depression and anxiety
44. PTS depression and anxiety
45. Class 1 mental illness
46. PTSD
47. PTSD (and medical)
48. Anxiety and depression
49. Anxiety disorder
50. Bipolar disorder
51. Schizo affective disorder (and medical)
52. Anxiety and depression
53. Anxiety
54. Depression and anxiety

3.4. Interview responses: accessibility

3.4.1. How does your disability impact on your daily life?

As Liz Crow observed in 1996, while the social model of disability placed the cause for disability on society, rather than just on the individual, the impairment will nonetheless have consequences for the individual. A number of the interviews brought out the impact of the individuals' mental illness on their lives in terms of depression:

> *"Depression: a perpetual state of sadness that fosters feelings of worthlessness, which leads to a state of demotivation. On good days, it is a constant sense of tiredness and lethargy and on bad days it is debilitating to the point where I cannot get out of bed. Which prevents me from engaging in even the most mundane aspects of the daily grind, let alone undertake uni work."*

> *"On good days, I'm 'neurotypical' and get on with getting on, facing the ups and downs in a logical manner, I have a bright and bubbly personality, able to engage with other people easily. I prefer to move in familiar surroundings, with people I know and situations I am confident in.*
>
> *On a not-so-good day … I lose confidence in my abilities and require emotional support and encouragement to continue in normal living patterns. I withdraw into a safe space (usually my home), and limit human interaction. I can physically shake and stutter. My ability to see my own self-worth is limited and I can become fearful of the irrational. I think I spent most of my degree worried that I'd be kicked out of Uni for impersonating a student! I don't adapt quickly (or well) to sudden changes, preferring set patterns and logical processes."*

> *"I suffer from a severe depressive and anxiety disorder and I am on a cocktail of medication. I see my psychiatrist regularly (every 3 weeks) and my GP regularly (weekly). Depression can be quite debilitating. My mornings are difficult and it's hard to function and it's not until mid-afternoon that I am able to study or do anything else. I also have instances where my doctor puts me on a new medication and the side effects are horrendous. I can be sick for days. My anxiety can prevent me from going out or meeting new people. Routine is my friend."*

> *"Depression and anxiety, I get very worn out easily. I don't have very much confidence or self-esteem. I don't sleep well. I can get very emotional. I need constant positive reassurance."*

And anxiety:

> *"I suffer panic attacks, mainly when I can't understand something, which puts my brain into what I call "frozen mode." This disability I find most distressing and challenging in regards to study."*
>
> *"General Anxiety Disorder (GAD) impacts on daily life as some form of anxiety is always present, be it the deadline of getting to work on time, dealing with people and life's unavoidable challenges."*

And PTSD:

> *"I have Complex post-traumatic stress disorder and every day is a challenge, high anxiety flashbacks panic attacks depressive episodes."*
>
> *"I have PTSD. I don't trust anyone, I startle easily, I don't sleep well. I don't like leaving home and I no longer drive. I have a lot of medical appointments."*
>
> *"PTS Depression and anxiety attacks make every day hard to face. Few things can distract you from this horrible infliction. Study tends to make you concentrate and can help by distracting you from the depression and anxiety."*

And bipolar:

> *"I have bipolar disorder and it affects my life in many ways. Two of the main areas are depression and anxiety. Of course my family would say mania is a problem also, but it's a problem for them, not for me. My anxiety is the worst and sometimes this isolates me from others. I feel overly anxious and cannot leave the house. Which is a contradiction to how I am when I am up. People find someone like this difficult to understand. Sometimes, well actually a lot of the time I appear stressed and overly anxious about things that haven't happened. This causes grief to my family. But overall I am pretty good. I am on the medication and if I can manage to eat, sleep and rest I do OK. But bipolar is unpredictable and managing my stress levels is the utmost importance."*
>
> *"Bipolar Affective Disorder. Reasonably well controlled through medication, however still experience periods of low motivation, memory problems, difficulty concentrating, low energy, excessive sleep, insomnia, elevated levels of anxiety for, on average, a week and a half per month."*
>
> *"I have bipolar disorder and I can get a lot of anxiety especially about my course. But when I am doing well I am relaxed."*

And schizophrenia:

> *"I was diagnosed with paranoid schizophrenia after a psychotic episode in 1995 and have had several hospital admissions. Basically I'm finding it hard to go outside and have withdrawn from many normal activities. Haven't seen my mother for five years and cut myself off from my family friends and relatives because I thought they were in the occult."*
>
> *"I have been diagnosed with schizophrenia and depression. My days are filled with fears and loneliness. I don't know if I should disclose my illness to people I meet. I'm lonely because I know of no one who is going through the same thing so that I chat with them."*

And the specific impacts on people's daily lives:

> *"Due to my disability I have trouble with concentration and memory. From a mental health perspective, my daily life has been heavily impacted to the point that it's difficult to do daily activities, leave the house, and deal with daily stressors. Added into this is the high level of pain due to physical injury. I am also heavily medicated for both conditions and the medications have their own side effects."*

Others also highlighted the nature of mental illness as an invisible disability:

> *"The symptoms can be debilitating; however, as with many of the invisible illnesses/conditions, you get very good at faking it!"*

3.4.2. How does your disability impact on your study?

The people interviewed were generally positive about the impact of studying online through OUA:

> *"In a way Online learning suits me because people cannot see who I am. They cannot judge me for looking one way and acting another. I look like a normal person but comes undone a bit. In real life people makes judgements. Studying online suits me as I can communicate with my fellow students and tutors in my time. So , if I am not feeling well, I can deal with the blackboard another day."*

> *"I heard about OUA and thought this might suit my lifestyle better (in addition to the illness for personal reasons I need to work full time) as it gave me the opportunity to work around my bad habits and insomnia."*

However, for others, their disability also presented significant challenges. Two of the people interviewed reported that they had developed suicidal thoughts in response to their studies:

> *"I had to withdraw from a unit due it bringing on my depressions, including thoughts of self-harm and suicidal thoughts. It was a philosophy unit in metaphysics the meaning of life etc. The university did not accept this disability as an adequate reason to withdraw. It was the content, rather than the way the material was presented that caused the problem."*

Students also reported that anxiety could have a significant debilitating effect on their studies:

> *"Social anxiety prevents me from getting involved in group activities – including in online discussions and even group assessments. It causes a fear of being judged unfavourably by others and can cause worry, and even cause a feeling of nauseousness depending on the extent of social exposure. This type of anxiety has also affected assessments where I am required to record/video myself. Not only do I get anxious about being exposed in such a manner to lecturers, tutors etc … but I get anxious over self-reviewing my work and as such have submitted such forms of assessment without proof viewing/editing for fear of self-judgement. General anxiety causes a constant state of worry and tension that I am not good enough to be 'at uni', 'pass the assessment/unit' and therefore I am more likely to avoid putting myself in situations that will trigger these feelings. General anxiety also leads to a sense of irritability and restlessness or a feeling of being on edge and thus I find it hard to concentrate because I am un able to sit still or 'rest my mind' long enough to form cohesive thoughts. Which is not very conducive to undertaking assessment work – as this requires long periods of attention."*

> *"OCD plays into aspects such as not being able to sit down and do uni work or undertake study until everything is in order. Sometimes this includes things like not being able to do uni work if I haven't been to the gym, because it 'throws my cycle off'. I then become anxious about satisfying a mental checklist so that my mind is at ease so I can complete my study."*

Others also noted significant problems related to both their ability to concentrate and also to retain information:

> *"Also given some of my issues I know my grades are not what they used to be. My first degree I graduated with distinction; however, this degree I put in twice the effort, and get half the grades. That is mainly due to my memory, concentration and also I often think one word and write another. I am aware my assignments do not flow as they used to, and I have learned to accept this; however, many other students are very grade focused, so it's hard when I know I have limitations to quality and time constraints."*

> *"The most unpleasant effect of anxiety on my study is the impact it has on my memory. When I'm feeling overwhelmed with the workload and the difficulty I have with my memory seems to turn off. I can be reading, underlining and summarising and feel that I haven't taken anything into my memory – especially when in the back of my mind, I know I will be needing it for the final exam."*

3.4.3. In terms of online learning and teaching technology – what works well and what doesn't?

Following on from the survey questions relating to technology and online learning platforms, interviewees in this category had a number of both positive and negative comments. In terms of what worked well, the students commented:

> *"Blackboard interaction with tutor/peers is helpful, enables discussion in an open and accepting forum. E-mail communication with tutor is also helpful, as allows me to narrow areas of concern and focus on requirements."*

> *"I personally prefer the typed text or pre-recorded lectures. This is twofold, one I again struggle in group environments. Two, due to concentration issues, I can only maintain focus for around ten minutes before stopping for around ten minutes then starting again. Therefore pre-recorded, or typed lectures are much easier to stop and start as needed."*

> *"I love the flexibility of being able to access the study information at all hours, as opposed to the old fashioned experience of 'school hours'. This has allowed me to incorporate my study into an already busy life that revolved around work and home. Most of my online access is done out of work hours. I enjoy the Discussion Board forum, which is quick and easy."*

> *"The combination of lectures, slides and readings (although sometimes the amount of reading leads to boredom which affects learning) works well for me along with the knowledge that I can contact my tutor if a problem arises."*

> *"I like using Blackboard on my phone which means that I can do my studies on my breaks at work. We create Facebook groups and help each other. Because I don't have to be at home in front of my computer to do my studies which is a good thing because I can pack my stuff and go to the local library and spend time studying."*

The students also found there were a number of elements that they had trouble with:

> *"I have sometimes struggled with universities that do not use blackboard but rather their own websites to obtain information. Ultimately it results in having five log ons, five passwords and trying to navigate your way around many different sites. While this wouldn't normally be an issue, when confusion and memory are major issues, it can be hard to try and resolve how to use these differing sites."*
>
> *"The 'Collaborate' function which allows for personal communications has not been successful for me as I am uncomfortable with this platform and it leaves me feeling inadequate."*
>
> *"When I am expected to use social media."*
>
> *"I have had problems with Yammer. It seems to take so long to get into Yammer and this can be a pain as you seem to miss out on at least the first week of the study period. It's just finding the link and getting it all set up can take time that you don't really have to be waiting for this. I also get very frustrated when this happens"*

Other students found a mixture, with one noting both the benefits and drawbacks of Blackboard. Further, in relation to the comments above regarding social media, the OUA website and Blackboard, it was noted that, within this impairment category, some of the same elements can be simultaneously of benefit and a problem, sometimes for the same person.

3.4.4. In terms of teaching and instruction methods – what works well and what doesn't?

Expanding from the survey's focus on the technology, the next section of the interviews looked at the impact of pedagogy and different learning and teaching technique on students with mental illness. There were a number of areas where students highlighted what worked well for them:

> *"I like the OUA system of providing reading material, guided discussions/mandatory db posts and written assessments/online quizzes. I am able to work at my own pace without having to wait for others. Allows me freedom to race ahead, then circle around and start from the beginning again."*
>
> *"Two of the units I have recently completed was effective in two ways: the next week's content would only become available to you once you were able to complete a short quiz on that week's readings. I found this effective as it ensured everyone had to do the work weekly to progress – mimicking on campus uni as much as possible (ie: you get the lecture notes, readings etc each week you attend the lecture, it is not all thrown at you at once).*
>
> *The second unit I speak of employed the use of a portfolio for two of its assessments. Which was (ideally) worked on each week and marked at two intervals throughout the study period. An activity was completed for each week's learning, for a total of 12 portfolio pieces of which a select few were randomly chosen and graded. As someone who becomes quite anxious and suffers performance anxiety this was a great idea as it took the extreme pressure off as you essentially had 12 chances to prove yourself, and you were getting tested on everything learnt so you were going to have your strengths and weaknesses and it caused less anxiety as the task could be broken down in to 'smaller' sections as opposed to the ominous ASSESSMENT!*
>
> *Interestingly enough both these units were arts units. I think something can be taken from this. They really demonstrated in their practices what they were preaching ie: self-expression, addressing multiple intelligences, alternate methods of communication, opportunity for self-reflection."*

"Collaborate sessions and video tutorials."

"When a teacher takes the time to email you personally to see how you are doing. When a teacher gives you an open door policy if you have any questions. If they have a turnaround of less than 24 hours for a response. Communication is the key. We are isolated enough and need more support I believe."

There were also other areas where students found that things did not work as well for them. A number of students mentioned issues around group work and group assignments:

"Group projects (ARGH) … too much unknown, and reliance on other people. Own self-imposed high standards do not always translate across a shared assessment platform."

"Individual assignment rather than group assignment; however, I know this is just a factor of university. Anxiety disorders and relying on others with group work don't function well together. Anxiety isn't always rational and can be very hard to navigate your way through a group assessment."

Staying with assessment, a number of students indicated that they struggled when confronted with exams:

"Studying, especially for exams can be difficult with retaining information."

"Disabilities affect how and when I can work, especially in exam situations."

"If I have a choice between electives I will always try and find a unit that doesn't have an exam but rather assignments as these can be done over a period of time.

"Exams are another problem. If my exam is scheduled for the morning, I panic. I worry that I may not be able to perform as well. I also have to overcome the anxiety of worrying whether I'll make it to the venue on time etc."

Conversely, other preferred this type of assessment over essay writing:

"I hate writing essays – give me multi choice any time."

Students also made reference to course design and structure as well as style of online interaction that they found difficult:

"The online systemic approach is too hands off than on, an easy way out for many tutors, with their own more important agendas and formulaic time frames. Harder therefore for students in general, especially harder for those with a disability. Because my part disability leads to extreme anxiety and confusion when my challenge is battling rather than learning."

"I have found that those units where the lecturer in charge tends to provide copious amounts of study material or weekly readings to be the hardest to learn from. Not because of the readings themselves (the readings and the actual 'learning' are for me the easiest/most comfortable part), but because I find that they are generally throwing so much resources in because the unit has been poorly organised or laid out and in fact it causes more chaos.

I find that in these cases, I am reading a whole heap of articles that repeat the same information over and over whilst the lecturer has not particularly had a great input in to the content. Then when it comes time for assessments discussion boards are a bit of a mess with everyone not clear on what is expected of them. They seem to be using readings/viewings etc … as a way to compensate for a lack of structure – as someone who gets overwhelmed it caused feelings of avoidance because it just looked messy."

"Some units, to be honest mainly unisa, there has been minimal interaction and answering from tutors and often was students teaching students. This flared up my anxiety, and for example, aboriginal studies, I required heavy assistance from support people to help me understand things due to lack of response."

3.5. Interview responses: disclosure of disability

Moving on from the accessibility of the online learning experience, the students were asked about their attitudes to disclosing that they have a disability. As the survey showed, students with mental illness are significantly less likely to disclose to the institutions where they are studying that they have a disability. This may relate to the high level of stigma that is often attributed to this impairment type, both by people with mental illness themselves as well as others (Corrigan & Rao, 2012; Holmes & River, 1998). This was certainly reflected in some of the interview responses:

"I haven't actively applied for assistance mostly due to a feeling of shame and inadequacy regarding my disabilities. Therefore the tutoring staff are probably not aware of my difficulties with comprehending what is required of me at times."

"This was a massive decision for me. First mental health has a stigma still and it's hard to admit to this to others. Second it has been hard to accept my limitations when I have always been a very academic person who used to read and study for hours on end."

"Mental Illness is frowned upon by the community. Also, my disability is not immediately apparent so most people I come across are not sympathetic."

"Because I want to be taken seriously. I want a teacher position one day, perhaps online. I don't want to ruin opportunities for myself. Despite what people say or do, they still judge you."

Others found they had problems with the disclosure process itself:

"The first dealing with Macquarie Disabilities Services sent me into a depression spin that put me out of commission for a week. Their style of questioning was intrusive and insensitive."

"I don't remember if I have disclosed my depression to the institution. When I did reveal my depression the institution was reluctant to accept my disability. Once they did it helped and the university facilitated me seeing a councillor."

"There is minimal contact between admin at university and tutors regarding students with disability. This means that I either have to repeat my condition over and over to different people, or bring it up when I have issues, in which case it appears I am using it when it suits me which isn't the case.

When registering the disability I provided reports from my psychiatrist and doctor which has been used for the exam conditions. I had to repeat this process for every university that I attended. It would be more efficient for students if this process could be completed with OUA then that's then forwarded on to universities. Or if not possible, once provided by student to all universities that this info is provided to tutors so that they have an understanding of the struggles we may have.

I have withdrawn a couple of times now, because it's all been too difficult me to sort out, and I didn't know who to contact, and having to explain everything over and again was too hard. Making it easier to withdraw and start again with a different subject."

Others recall a more utilitarian approach to this disclosure process:

> *"Disclosed to both OUA and institution they were studying at to obtain information for their study that they otherwise could not have obtained."*
>
> *"I decided that I needed to provide this information so that it was understood from their perspective why I have some of the issues that I have with study."*
>
> *"I disclosed to the disability office so I could get help with exams."*
>
> *"The Curtin Disability Support unit and each new tutor I have. Because sometimes I might miss a week's interaction and I like to notify them of this possibility beforehand. Also if I have any problem arise from my anxiety etc the tutor will have been forewarned."*
>
> *"The Academic Co-ordinator for The School of Education in 2012. During this study period I failed 3 units (I then went on to withdraw from the next SP after Census date). The reason for the failure was due to a personal matter that triggered a lapse in my recovery (I had been hospitalised in 2011). I did my best to 'pick up' and carry on but unfortunately my situation got the better of me and I was in a depressive state which included insomnia, I was fidgety and could not concentrate and as such I was unable to do so. I submitted all assessments but they were all late submissions and definitely not my best work. I was too proud and stubborn to ask for an extension on my assessments. Once the results were clear to me I contacted the School of education and let them know of the situation to see if there was any way I could have these fails wiped from my record. Unfortunately at the time I was not in a good place and failed to do anything with this information as it all seemed too hard and complicated and required energy I didn't have. The next time I interacted with OUA/Curtin again was in 2014 and I figured it was too late by then to do anything about it."*

Others reported finding the process positive in its own right:

> *"I have disclosed my disability to OUA, as well as RMIT and UniSA – Knowing that I have the option to vary the conditions gives me greater confidence that I can actually pass the tests."*
>
> *"It did help me as disclosure is a part of insight and a willingness to ask for help from others in overcoming my fear of the unknown."*
>
> *"I disclosed my anxiety to Open University Australia and Swinbourne University. I did so because I see this problem of mine as a difficulty to be overcome when starting something new. I did not disclose this to Macquarie, Griffith or SA University as once I had an understanding of what online study entailed, I believed I was able to manage my difficulties without the need for disclosure."*

Other students noted the useful results of seeking out support for their disability:

> *"The disability support section has been exceptionally helpful in providing special provision in exams. This was exceptionally important for anxiety of being around others, as I am allowed to sit my exam in the same venue but not with all other students. Also they have provided and additional writing time, which means that my consistent stopping hasn't impacted my ability to finish my exam."*

Still others found more mixed results:

> *"Of the three universities I studied at, I disclosed to Griffith and Macquarie. Did not disclose to Curtin. I did not have a need for extra support/help with Curtin units, whereas other universities had different assessment criteria. Disclosing to Griffith was helpful, the DSO was supportive and saw me as a person, rather than a disability or a number. Macquarie … meh."*

> *"Because I am majoring in philosophy and it is not uncommon to be involved in discussions that can have a 'trigger' effect. I hoped by disclosing I would circumvent the need to explain to my tutor the exact details of why I was struggling with a particular topic. However I have no idea if my disclosure has ever been passed on to the tutor for a particular unit and have always tried to explain why."*

The students interviewed seemed to be very aware of the both the disclosure process and of the consequences of how it is approached:

> *"Because I was/am an external student, what I disclose is my choice, therefore … my condition/disability can be unviable by choice. At Griffith and Macquarie I was indicated as a student registered with Disability Services, and if I required assistance, I notified the various staff members. However, Murdoch gives you the ability (encouraged) to share chapter and verse with the tutor prior to starting the unit, in anticipation of any special requirements. One is based on* ***IF*** *the other is based on* ***WHEN.****"*

Students also seemed to be aware as to what results they could expect and what would be unacceptable:

> *"There has only been one case where a tutor insisted I do group work despite my medically diagnosed anxiety as, in her words "everybody gets a bit nervous, just do it, you'll be fine." This lack of understanding is unacceptable."*

3.6. Interview responses: future directions

3.6.1. Have your learning experiences changed your future study choices?

This was not a topic that students with mental illness spoke about at length, many indicating that this was not an issue for them. When it was addressed at any length, responses were inconsistent. One student who spoke of having to withdraw from a unit due to their depression leading to thoughts of self-harm was still keen to continue with her chosen course of study:

> *"No I have stayed with the same degree and course – I am planning to go back and take the unit that I had to withdraw from."*

Other students indicated that they preferred some universities over others and managed their study program around this:

> *"Yes definitely. For example, after doing all compulsory units for unisa, I structured all electives around not having to use this university. I have structured it so that all units are now RMIT and Macquarie."*

3.6.2. What are your biggest challenges?

When the interviews turned to what students found as their biggest challenge with online study many referred directly to mental illness:

> *"Trouble focusing on written material due to my disability."*

> *"Anxiety is also a major issue."*

> *"My concentration, memory, focus issues. They impact my study, my study load, exam ability and quality of work."*

"Convincing myself that I am worthy enough to be doing the course. That I do deserve to be there and that I am capable of being a teacher/completing the degree. I become overwhelmed with feelings of failure. This could be in week one – I could read ahead about the assessments, become overwhelmed because I don't understand it and I start to get anxious and worry I will fail which puts me in a negative mind frame and causes me to withdraw or avoid completely.

With depression it feels like the mind is racing a mile per minute and I can barely stay focused on one thing at a time for long periods. This often then leads to procrastination, which then causes panic which causes anxiety and essentially a lapse in my mental state or a breakdown."

"Finding motivation to complete assessments, particularly after not doing so well with a previous assessment etc. For example, I recently failed a unit and as a result I received a notification from Curtin advising I received a change in academic status to conditional. I received this just before I had my most recent assessment due and it set me back considerably. It was a mental and emotional blow and caused a bit of anxiety and panic about my place in the cause and essentially my thoughts were on that as opposed to getting the assessment done which lead to a serious decrease in motivation and will to complete my current unit."

"my biggest challenge is my disability"

Other students responded with the challenges that many students studying online would be familiar with, regardless of any disability:

"Isolation, motivation."

"My own understanding of challenges, and self-imposed pressures. However, that may require a complete personality transplant!"

"Isolation. I would also like to study on campus, but I feel my lack of English would make it hard to access face to face lectures."

"Time to study, fear of failure."

"Organising a schedule and some elements of class interaction."

"Just the weekly tasks need to be done by a certain date. I understand the assignments having a due date but I wish we could go through the other activities in our own time."

3.6.3. What would you change to make study easier?

When the interview turned to this question, one student took the opportunity to demonstrate their satisfaction with the existing system:

"I think it works really well."

Another raised issues around isolation:

"Nice if you could meet-up with other students occasionally."

Flexibility and assessment were a consideration:

"Access to extensions to provide 'breathing space' and a mental safety net. Locally invigilated exams. To be treated as a person first."

> *"I would like to see more exams. I wouldn't say I enjoy exams but I feel more comfortable with exams. I know I have done the work and that I have within me as a result the knowledge required to be an educator. I retain this information and I know that I can explain it and apply it in a classroom. Assignments unfortunately are not my specialty and unfortunately I've found with online education there is not an even ratio or even a ratio at all. It is 3 assignments a unit."*

And pacing and explanation were mentioned:

> *"More clearly written plain language instructions on what is required."*

> *"I would need more personal mentoring in certain areas, because some things take me longer to understand fully."*

> *"Make the units a bit more at-your-own pace (for want of a better term)."*

As well as issues around disclosure and awareness:

> *"I think every tutor should be given an 'heads up' about each students special requirements. I know this would represent yet another level of compliance but it would help if at the beginning of a unit I was acknowledged as a person with some special needs. It would save having to each time explaining my situation to someone I do not know."*

3.6.4. What other recommendations would you make?

The final section of the interview asked students for any additional recommendations or comments. There were a couple of suggestions of how the use of trigger warnings would help some students with mental illness know what a particular unit might provide in the way of challenges in terms of content. Others suggested that greater financial support for students studying online, particularly those with disabilities, would make it easier to succeed. Students also made comments that reflected on their disability and also issues around stigma, disclosure and awareness:

> *"I know it is not easy with online study, but my strongest recommendation is to enable a variety of assessment methods – I would like to see more exams (for the reason outlined above) or other assessment methods."*

> *"I hope and recommend that when you have a compilation of insights and valid responses to these studies and surveys please pass it on to all tutors and learning institutions.*

> *I am aware that I have made my problem worse by not asking for help, perhaps there should be stronger awareness that people with disability are battling stigma and a lack of respect and patience."*

> *"I don't know whether I will ever be in the 'right frame of mind' to complete a uni degree, this is not something I wish to live with and I am taking all the necessary steps to overcome it, but unfortunately I get bogged down by the illness but feel that I am in no position to ask for help or assistance. Not being a physical or noticeable illness, there is a lot of stigma attached to depression and its associated conditions and as such you just have to 'push through'; unfortunately this at times can be more detrimental for you personally. But it is often the case where we are told just harden up, which then makes you feel worse as a person.*

> *I remember a Doctor once telling me when I was in hospital that I was sicker than most people I was in there with, but mine was a silent illness and as such people will never understand it, and even when you come across people who say they understand or offer help, or even this survey as an example, you never quite feel like anyone understands and you begin to question yourself, am I just being lazy?"*

"I provided my disability information as knowledge is power. Therefore, I figured if people were aware of my issues, and why I freeze mid conversation, or can't get my words out they would understand and it would be less uncomfortable for everyone. As long as the student is happy to sign authority for this information to be distributed to different parties, it would be very beneficial in my opinion for everybody concerned.

Also due to the stigma of mental health, while I have had no issues, it's potentially worth advertising, or conveying that OUA and associated universities are understanding and considerate regarding mental health disabilities. This would potentially help people feel more comfortable revealing this information."

"It would be nice if I didn't have to work in order to support myself while I study, but I appreciate the opportunity to study online as it allows me to remain in the fear-free environment of my home and access an education that has been denied to me previously because of financial and personal limitations. Thank you Open Universities Australia."

"The beauty of OUA study is gives me flexibility, on those days I cannot cope I don't have to except when it comes to exams that is. So far I have managed to avoid invigilated exams the thought of which fills me with dread, I have to perform on THAT day! I have found doing online study at uni level has been such a plus, it gives meaning to my life and allows me to interact with others from the safety of my own space."

"I think that this opportunity is a great way to overcome the barriers presented by the stigmas of disabilities. Thank you for giving me a chance to view my opinions and feelings."

"I would like to thank the lecturers that I have had so far as they have all been really wonderful in making my study through OUA a much better and more interesting time"

"I wish there were more support and programs that can help people with mental illness. For example, classes teaching life skills would help, or teaching how and what to say when finding employment helps too, so would more employment opportunities for people with mental illness"

"I was always afraid to ask for help. I'm not now. I know that the playing field isn't level. People with mental illness must overcome so many personal challenges in order to participate in the university environment. I feel I have."

3.7. Conclusion and summary

Mental illness is the largest impairment group in the survey, representing a number that approaches one in every two students that registered for disability support through OUA. Given this prevalence, it is disturbing that the size of this cohort remains relatively secret, appearing as part of the 'other' group of impairments when statistics are officially released. This relatively hidden nature may also explain the relatively limited research that has been done into this area.

The interviews were useful in revealing the nature of many of the lived experiences of the students with this class of impairment. Both the survey and the interviews indicate that this group are less impacted by some of the features of the learning technology, but are impacted by the design of learning and teaching, and even the content that is presented in a unit.

The interviews and the survey also illustrated the importance around disclosure for this group. The stigma often associated with mental illness makes this particularly salient, but issues around difficulties in having the disability recognised by institutions, having to have multiple disclosures to multiple universities as part of the OUA privacy policy, and having a respect for students' ability to avoid disclosure have all been highlighted.

Given this, it is unsurprising that some of the students' recommendations relate to these issues, particularly in terms of improvements when dealing with stigma, disclosure and awareness. More specifically, these include making it easier for registration as a person with a disability across multiple institutions; promoting institutions as places that are aware of, and accepting of, people with mental illness as students and that support is available if required; and designing both learning and teaching environments, and the content of what is taught, with this group of learners in mind.

4. Medical impairment

4.1. Introduction

A study by Druss et al. (2000, p. 1487) of mental illness and medical disabilities revealed that the most common kinds of medical condition causing disablement include "1) diseases of the musculoskeletal system, 2) respiratory conditions, 3) diseases of the nervous system, 4) endocrine conditions, and 5) hypertension." As can be seen from the breadth of this list, the category 'medical impairment' is broad and the experience of medical disability is nuanced and individual in nature.

The term medical impairment encompasses numerous illnesses, diseases and disorders – including such things as chronic fatigue syndrome (CFS), Crohn's disease, diabetes, kidney disease and congenital diseases – each of which affects individuals differently. Accordingly, the impairment group formed a large minority of the total survey responses (36.5%).

Katsiyannis et al. (2003, p. 43) note that "there is an ethical obligation for faculty members to identify and apply best practices in providing reasonable accommodations and effective instructional strategies that better meet the learning characteristics and needs of students with disabilities". Despite this, and surprisingly given the size and scope of the medical impairment category, little research has been done into the experiences of students with medical disabilities. Duquette's study (2000) of students with disabilities' experiences covered medical impairments in some detail, reporting that many students with medical disabilities felt that universities and colleges were not accommodating to disabled students' needs. The frustrations of participants in Duquette's study were echoed in this impairment group. Further, Herts, Wallis and Maslow's (2014) study compared the first year college experiences of healthy students and students with chronic illnesses. According to Herts et al. (2014, pp. 477-478), chronically ill students experience greater isolation and are less likely to disclose their illness to friends or disability services than other disabled students. Skofield (2014, p. vi) reported that "students with chronic illness were engaged in a balancing act as they managed the dual roles of being a student and living with a chronic illness at the same time".

The experiences of eLearning students both reflect and diverge from those of on-campus students. This is an area in which research has been particularly quiet, suggesting the need for a study such as this one. Wilkie's (2011) study of technology-facilitated learning for chronically ill school students looked at teaching and learning in the secondary school context, but detailed studies of online post-secondary education are yet to broach the topic of medical impairments. As such, the findings of this survey and the outcome of the interviews conducted – about tertiary, online students – are of particular interest as medically disabled students are presently a group without a voice in academic literature.

4.2. Survey results

4.2.1. Demographics

Of the 356 students surveyed, 130 respondents – 36.5% – reported having a medical impairment, making this the second largest disability group after mental illness. Women represented a significant portion of the demographic (77.7%), consistent with overall results (71.4% female).[1]

[1] One student indicated that they would 'prefer not to say' and another did not answer the question.

Just under a quarter of students responded that they had not undertaken any previous post-secondary study, whilst the majority had attempted or completed at least some college or university education.

Q3: What is the highest level of school you have completed or the highest degree you have received?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than high school degree	10.0%	10	10.8%
High school degree or equivalent	12.3%	16	18.3%
Some college or university but no degree	50.8%	66	52.0%
Associate degree	3.8%	5	3.1%
Bachelor degree	12.3%	16	12.1%
Graduate degree	2.3%	3	3.7%
Other (please specify)		11	69
answered question		130	
skipped question		0	

Druss et al. (2000, p. 1490) report that individuals with multiple disabilities are far more likely to experience difficulty in finding work and to experience discrimination. It therefore follows that the added difficulty of managing multiple disabilities simultaneously is likely to present additional challenges to those students with more than one disability. This point is particularly relevant to this study given the high prevalence of multiple impairments amongst the OUA student participants. As with other disabilities and impairments, the majority of respondents indicated that they had other disabilities besides their medical impairment, with mental illness (26.9%) and mobility impairment (25.4%) the most common. This reflects Druss et al.'s (2000, p. 1489) finding that "combined general medical and mental conditions are common, comprising one-half of those with any mental disability". This sample group reported somewhat differently, with around one quarter of students with a medical impairment also reporting to have a mental illness. Nonetheless, this is a substantial figure that highlights the challenges of designing and delivering online courses to individuals experiencing multiple impairments.

Q4: What type of disability or impairment, if any, do you have?		
Answer options	**Response percent**	**Response count**
Hearing impairment	8.5%	11
Vision impairment	10.0%	13
Mental illness	26.9%	35
Learning disability	2.3%	3
Medical impairment	100.0%	130
Intellectual disability	0.8%	1
Mobility impairment	25.4%	33
Acquired brain impairment	9.2%	12
Other (please specify)		14
answered question		130
skipped question		0

4.2.2. Studying through OUA with a disability

A significant portion of respondents in this category were in their first year of study through OUA, reflecting the overall response trend.

Q5: How long have you been a student through OUA?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than 1 year	30.8%	40	34.2%
1 year	13.1%	17	14.4%
2 years	16.9%	22	18.9%
3 years	19.2%	25	17.2%
4 years	8.5%	11	7.1%
5 years	2.3%	3	2.8%
6 years	2.3%	3	1.4%
7 years	2.3%	3	1.7%
8 years	1.5%	2	0.6%
9 years	1.5%	2	1.1%
10 years or more	0.8%	1	0.6%
answered question		129	
skipped question		1	

In further keeping with the overall results, the majority (56.9%) of respondents with a medical impairment were studying courses in the Arts and Humanities.

Q6: What is your chosen field of study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Arts & Humanities	56.9%	74	57.4%
Business	11.5%	15	13.3%
Education	7.7%	10	6.7%
Health	5.4%	7	5.5%
IT	6.2%	8	6.7%
Law & Justice	11.5%	15	11.0%
Science & Engineering	4.6%	6	5.5%
Not specified	1.5%	2	1.4%
Other (please specify)		10	
answered question		126	
skipped question		4	

4.2.3. Accommodations and disclosure

Jung (2003, p. 92) defines accommodation as "procedural changes and modifications in teaching and academic evaluation practices that are individualized according to each disabled student's unique needs". However, many students do not take advantage of accommodations offered by enrolling institutions. Amongst this group, students were very similar in their understanding of accommodation as the main survey response.

Q7: Are you aware of the type of accommodation that can be offered by the unit providers in relation to your disability/impairment to help with your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	30.0%	39	28.7%
No	42.3%	55	43.9%
Unsure	27.7%	36	27.3%
answered question		130	
skipped question		0	

Respondents with a medical impairment were more likely to have received accommodations in most units of study, and more likely to have received accommodations overall.

Q8: Have you received any accommodation in relation to your disabilities in relation to your study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
With all units of study	6.2%	8	6.6%
With most units of study	13.1%	17	7.5%
With some units of study	14.6%	19	16.1%
With no units of study	62.3%	81	69.7%
answered question		125	
skipped question		5	

Of those that had received accommodations, the majority felt that they were generally adequate and appropriate.

Q9: Did you find this accommodation was adequate and appropriate?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes, always	10.0%	13	9.7%
Mostly	13.1%	17	10.3%
Sometimes	10.8%	14	9.2%
Never	0.0%	0	0.9%
Have not received any accommodation	63.8%	83	69.9%
answered question		127	
skipped question		3	

Students in this category disclosed their disability at a noticeably higher rate than the overall survey. They also were more likely to feel that disclosure would help, and be aware of how to disclose their disability to the institution than students in the overall survey.

Q10: Have you informed the institution(s) where you are studying that you have a disability?						
Answer options	**Yes**	**No**	**Have not studied with this institution**	**Response count**	**Percent disclosed**	**Full survey response**
Curtin University of Technology	43	13	50	106	77%	65%
Griffith University	42	7	27	76	86%	71%
Macquarie University	33	8	58	99	80%	66%
Monash University	1	3	84	99	25%	29%
RMIT University	15	5	73	93	75%	57%
Swinburne University of Technology	22	8	64	94	73%	58%
University of South Australia	21	6	68	95	78%	58%
Australian Catholic University	1	2	85	88	33%	46%
Charles Darwin University	2	1	83	86	67%	27%
La Trobe University	0	1	86	87	0%	11%
Learning Network Queensland	2	0	84	86	100%	38%
Murdoch University	15	5	72	92	75%	62%
Polytechnic West	0	0	88	88	N/A	17%
The University of New England	2	1	83	88	67%	30%
The University of Western Australia	3	0	84	87	100%	44%
Other (please specify)				8		
Total response	**202**	**60**			**77%**	**60%**

Q11: When you have not disclosed that you have a disability to an institution, what are the factors that caused this?			
Answer options	**Response percent**	**Response count**	**Full survey response**
I did not think it would help	33.1%	43	51.8%
I did not know I could	11.5%	15	13.1%
I did not know how	6.9%	9	13.9%
I did not need any accommodation	16.9%	22	26.5%
I did not want any accommodation	3.1%	4	9.0%
I did not want to disclose my disability/impairment	6.9%	9	17.6%
Other (please specify)		25	
answered question		127	
skipped question		3	

4.2.4. Learning technologies

The distribution of technology that this group of students used to access their studies were similar to the overall sample. The majority of students (68.5%) use a laptop computer to access the internet for their studies, whilst almost half (43%) used more than one device, suggesting a need for responsive, cross-device, accessible learning tools.

Q12: How do you access the internet for your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Desktop computer	49.2%	64	46.2%
Laptop computer	68.5%	89	74.9%
iPad / tablet	26.9%	35	27.3%
Smartphone	25.4%	33	23.9%
Other (please specify)		0	
answered question		130	
skipped question		0	

While less than one quarter of respondents reported any problems accessing online learning platforms due to their medical impairment, this was higher than the responses to the overall survey.

Q13: Have you had any problems accessing online learning platforms due to your disability/impairment?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	21.5%	28	17.9%
No	77.7%	101	82.1%
answered question		129	
skipped question		1	

Blackboard and university websites proved to be the most problematic platform amongst students with a medical impairment.

Q14: If yes, which platforms have you experienced difficulty with?								
Answer options	**Not used**	**No prob-lems**	**Minor prob-lems**	**Major prob-lems**	**Unusable**	**Response count**	**Prob-lems**	**Full survey response**
Moodle	38	7	4	0	0	48	36%	35%
Blackboard	4	23	19	8	0	54	54%	48%
Facebook	18	21	6	3	1	49	32%	21%
Twitter	30	14	1	1	1	47	18%	12%
Slideshare	42	3	0	1	0	46	25%	12%
Prezi	41	5	0	0	0	46	0%	17%
Lectopia	33	0	1	2	0	45	25%	40%
Echo 360 / Echo Centre	24	13	8	1	1	47	43%	49%
PDFs	6	26	16	2	0	50	41%	30%
Blogger	36	7	3	0	0	46	30%	25%
Wordpress	37	8	1	0	0	46	11%	16%
WebCT	39	6	0	1	0	46	14%	20%
YouTube	12	26	4	4	1	47	26%	21%
University websites	2	24	19	11	0	56	56%	43%
answered question						57		
skipped question						73		

4.2.5. Recommendations / future involvement

This group closely reflected the general sentiment supporting OUA as a good place to study for people with a disability, with 73.1% saying they would recommend OUA to other students with disabilities.

Q16: Would you recommend OUA as a place to study for people with disabilities?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	73.1%	95	75.9%
No	3.1%	4	3.1%
Maybe	22.3%	29	21.0%
answered question		128	
skipped question		2	

4.3. Interview responses

Slightly more than half (54.6%) of all respondents with a medical impairment indicated that they would be interested in participating further in the study. This figure is slightly lower than the overall survey response rate of 63.5%. However, the number of interviews conducted for this group is significant, with 64 students being interviewed. The interviewees listed their specific impairments as:

1. Chronic cluster headaches; chronic gastritis. Also arthritis
2. Ulcerative colitis; chronic migraines; other medical
3. Neuropathic pain disorder
4. Epilepsy. (and mental illness and mobility impairment
5. Hormonal congenital disease affecting bones (frequent breakages caused by tumours) and causing chronic pain
6. Rheumatoid arthritis and diabetes. Also mobility and vision impairments and mental illness
7. Kidney disease; heart problems
8. Crohn's disease (and vision impairment).
9. Fibromyalgia
10. Chronic pain
11. Fibromyalgia and rheumatoid arthritis (and mental illness).
12. Crohn's disease and CFS
13. Narcolepsy
14. Motor neurone disease
15. Multiple sclerosis
16. Multiple sclerosis
17. Endometriosis (and mobility and mental illness).
18. Fibromyalgia (and multiple mental illnesses).
19. Epilepsy
20. Borderline multiple sclerosis and chronic pain. Also mobility
21. Endometriosis
22. Diabetes. Also mobility (multiple amputee)
23. CFS.
24. Inflammatory bowel disease, chronic migraines, polycystic ovarian syndrome
25. Multiple sclerosis
26. Fatigue
27. Orthostatic tachycardia and undiagnosed condition similar to fibromyalgia
28. Pulmonary fibrosis and venous insufficiency (and mobility).
29. CFS; fibromyalgia; chronic asthma
30. Multiple sclerosis
31. Diabetes; epilepsy
32. Circadian rhythm disorder; target lesions
33. Cardiac disorders; chronic pain
34. Diabetes; stroke-related weakness

35. Non-Hodgkin's lymphoma
36. Diabetic; kidney disease
37. Multiple sclerosis
38. Cancer
39. CFS (and mental illness).
40. Subcutaneous nerve stimulator causing chronic pain and lack of physical control.
41. Cancer
42. CFS.
43. Osteoarthritis; CFS.
44. Osteoarthritis; diabetes; fibromyalgia; glaucoma; dry eye syndrome
45. Multiple sclerosis
46. Crohn's disease (and vision impairment).
47. Fibromyalgia
48. Fibromyalgia (and mobility and mental illness).
49. Chronic pain (and mobility).
50. Migraines
51. Narcolepsy; sleep apnoea
52. Respiratory and digestive disorders; diabetes; severe anaemia
53. Crohn's disease
54. Trigeminal neuralgia
55. Muscle disorder motor neurone disease
56. Fibromyalgia, and chronic insomnia
57. Migraines
58. Narcolepsy
59. Spinal stenosis and fibromyalgia
60. Chronic nerve pain and arthritis in the lower lumbar spine
61. Fibromyalgia
62. Heart disease
63. Auto immune disease
64. Chronic back pain, Severe migraines and cancer treatment

4.4. Interview responses: accessibility

4.4.1. How does your disability impact on your daily life?

Due to the large range of conditions that fall under the umbrella of medical impairment, students reported a wide variety of ways in which their disability affects everyday life, including factors such as chronic pain and illness, cognitive function and mobility:

> *"I suffer from chronic cluster headaches, which in spite of the ordinary name is extraordinarily painful… the pain is completely debilitating and incapacitates me. It occurs daily, at the same time and lasts for anywhere between 1 and 4 hours. Pain killers do not work. Treatment is available but only works in the long term – it takes months to stop the pain. The headaches tend to come back when I am in a stressful circumstance in my life… Unfortunately, some of the treatments attempted to stop the headaches seem to have led to stomach problems. So, I was soon diagnosed with chronic gastritis, which is also sensitive to stress."*

> *"I have Ulcerative Colitis and chronic migraines. With the migraines, I find it difficult to function with the pain, the light sensitivity. With the UC, I have fatigue, joint pain, poor dental health and am constantly visiting hospital."*

> *"My life in general is significantly affected by my disability. My functionality, at its best, which is not a regular thing, lasts about 4 hours. On average, 5 out of 7 days will be spent in bed."*

"Suffered multiple fractures and am now unable to walk without crutches on my best day – wheelchair on my worst. In constant chronic severe pain as the disease involves bone tumours. Unable to sit for length of time, carry parcels, stand for more than a few minutes. Limited movement – so have aids to dress myself. Am fairly independent given my situation, I work full time – my husband drives me to work each day and assists me in carrying things to and from work and ensuring I get to work."

"I'm in constant pain, ranging from 2/10 to 7/10, with 0/10 being no pain and 10/10 = worst pain possible. Some days, when I have an R.A. flare-up, I have difficulty getting out of bed!"

"I have moderate to severe kidney disease which as I have one kidney has a fairly devastating impact when it kicks in at the higher end. On top of this I also have mild strokes or ischaemic attacks from time to time. Both of these impact on me in differing ways – i.e. the kidney normally causes general malaise and illness whereas the ischemic attacks cause me problems with fine motor skills, balance, comprehension, verbal and written communication."

"The Crohn's Disease is the main thing that I can tell affects my daily life. I have restricted myself to basically eating the same meals every single day in order to try and not get sick (there is very little variation and I have been doing this for years with relative success). The disease also affects my bowel habits and frequency of toilet use. To take a step back I can say it affects my social life as I cannot eat out and I always have to plan where a toilet will be (at least basically in my head). The lack of an ability to really eat out affects the time I can spend out."

"I have Fibromyalgia and this causes pain which affects the amount of time I can sit at the computer. I have trouble with housework and physical activities."

"I have Crohn's disease, which is where my immune system is always eating away at my intestines causing fistulas and ulcers inside my intestines. This causes severe abdominal pain, fatigue and malnutrition. I have been in hospital twice since I was diagnosed in May as it's very hard to get the disease under control and there is no known cure."

"I'm limited in how much effort I can put into each of my daily tasks meaning I cannot perform at the same capacity of a healthy person. Because I don't look sick, my struggles are often ignored or dismissed."

"I have multiple sclerosis which has a big impact on my quality of life. Intense fatigue, physical impairments – which vary depending on the degree of physical and or emotional stressors, memory loss, physical aches and pains and vision variability – dependent upon whether there are active lesions."

Significantly, many of the students reported the presence of a second or more impairment categories that are, in some cases, exacerbated by the presence of their medical impairment. These results are further discussed throughout this report.

4.4.2. How does your disability impact on your study?

For students with medical impairments, the everyday challenges of living with a disability impact upon their study life. Students reported a variety of ways in which their medical impairment, which was often coupled with other disability types, impacts on their study:

"Medication impacts on study – like having a hangover. Effects concentrations – responses are slower."

"Other disabilities affect how and when I can work, especially in exam situations."

> *"It affects me sporadically. Sometimes my pain is greater than others and this can affect me complying with deadlines."*
>
> *"Crohn's has had a big impact on my study through OUA as there are days when I can't get out of bed due to fatigue and some of the medication I am currently on makes it hard for me to concentrate on things for long amount of time."*
>
> *"Unable to concentrate or focus. Fatigue and the need to sleep will take over any study time."*
>
> *"Because I have to do everything through a computer (reading and writing), any study content has to be digital so I access and use it. I do get screen and general fatigue."*
>
> *"MS is the type of disease that you want to strangle. I did not start studying because I wanted to waste my or anyone else's time, but MS is the type of disease that, when you feel your best, reminds you that you have lead weight around your neck. I could be feeling great, working well, achieving great marks and then at exam or assessment time comes around, where more than one assessment is due or being conducted in a short time frame, and MS symptoms rear up and make me very sick for at least a month. This makes studying very slow – studying one subject a semester – and my health and quality of life variable."*
>
> *"It can be hard to do art exercises and do computer-based work if my hands are sore. Pain and fatigue make it hard to concentrate."*

For many respondents, OUA (or other online study) was the only option for getting a post-secondary education as the limitations imposed by a medical disability made attending class impossible:

> *"Online study is the only way I can study. I cannot keep 'regular' hours and, if I could, catching a bus to physical university would leave me in more pain than pain medications could cope with."*
>
> *"With online study I can study whenever I have the functionality, be it 3am or 3pm, and can study as long as that functionality remains, sometimes 10 minutes, but I have studied for 10 hours straight as well – I average between 2-4 hours when I have effective pain relief… Online platforms such as Blackboard put all my study material in one spot, but as I cannot sit at a computer/laptop and have limited ability using a tablet, I am reliant on hard copies of my reading material and study guide so that when I am restricted to bed rest by the pain I have the means to at least read the readings, study guide and set texts. If no hard copy is supplied, my study becomes even more limited – that is, instead of averaging 2 weeks behind the rest of the class, I drop back to 3-4 weeks, 4 weeks usually."*

Some students reported that studying through OUA had had positive impacts on everyday life:

> *"Well I would say that my studying online has impacted my impairments more so than the other way around. Studying in this way means I can keep my conditions under control, because I'm more in control of my life. Less peer pressure. Less stress. More flexibility."*

4.4.3. In terms of online learning and teaching technology – what works well and what doesn't?

For many students with medical disabilities, the need to attend class on campus is restrictive to the point of exclusion. Students in this group indicated that without OUA (or another online learning environment), post-secondary study would simply not be possible:

> *"I love the online learning as I can undertake this when I want and am not constricted to a set timetable. This allows me to maintain a full-time job and not have to worry about attending a*

campus; if I did have to attend classes on site, I would not attend due to both time restrictions and my Crohn's Disease."

"The ability to do the work when it suits me is the greatest benefit of online study."

Students were generally happy using Blackboard:

"I have used Blackboard in my studies. It works quite well and is quick and responsive. It wasn't totally great but it did the job well."

"Blackboard is really helpful and well structured, it allows for good communication with students and staff as well as a good layout for assignments and course information."

"Blackboard and Slideshare work well for me in that I can access it in my own time."

"I loved Blackboard. It was all there, I didn't have to search more than 1 system for all the information for my studies. As a student with MS and a very sensitive stress indicator, this worked very well for me."

However, some found the inconsistency between units using Blackboard to be problematic:

"Blackboard worked well enough, but was a little cluttered, and each unit having a different sidebar layout got confusing. It would be easier if this was standardized, so for example, every unit had the basic set of 'Unit Information', 'Study Area', 'Discussion Board', etc. and not much customization was allowed as far as the basic sidebar links goes."

At least one student preferred to use university-provided course tools rather than social media (such as a unit Facebook group):

"I prefer to use Blackboard because it the formalities help me to stay focused on my studies. Connecting to classmates on Facebook is a distraction that I don't want right now. I want to focus on reclaiming my life back by earning a qualification."

"Something like Facebook or Twitter is harder to use as it operates in real-time so it's easy to miss items and fall behind in the conversation even if I'm only away from it for a few hours."

"Facebook, Twitter...all the social media systems. Personal security and safety is very important to me and there is not enough attention in these platforms."

Other students, however, appreciated the fact that social platforms such as Facebook helped to ease the isolation of studying online with a disability:

"Facebook pages help ease isolation – it's a new thing."

Many students appreciated being able to access content on a variety of devices, but some found it frustrating that certain apps were poor choices due to being restrictive or not adequately responsive:

"I find being able to use the platform on my mobile device invaluable, including being able to download to watch. I used the app for blackboard which was good, but didn't keep a record of what I had done on a PC (so I was constantly re-reading posts etc). Using Moodle in the past, which is difficult to adjust to a smaller screen on mobile device. The layout is far superior to blackboard in general and doesn't take as long to download, or as much bandwidth as blackboard."

> *"Each study period, it takes about 2 weeks to sort out how to access the content – because there is a lot of inconsistency. Sometimes, I have to go through the app to get it to work on a tablet, or Boat Browser – each university and each subject is always different."*

> *"Adobe definitely causes issues – because it is restrictive in what you can do. Using a platform that will work whether you are accessing it on a laptop, computer tower, tablet or smart phone would be the preferred method."*

One student reported that having to read large amounts of content on-screen was problematic in the context of her medical impairment:

> *"Having to read a lot of material in both blackboard and Moodle is extremely difficult, as I either get sore eyes reading a screen for so long, or have to print a lot and carry it around; also killing a lot of trees in the process."*

This was echoed by another student who felt that a combination of print materials and an online learning space was most beneficial:

> *"I found the first 18 months easier as we received hard copies of the Unit Outline, Course Guide and readings. This was enhanced by the use of Discussion Board, online tutorials etc."*

An inconsistent approach to teaching meant that some students experienced problems with platforms that otherwise worked well:

> *"The discussion board has been of great help in the past subjects I have completed but the one I am doing now isn't as helpful because there isn't a lot of interaction particularly by the tutor. The questions from each week don't encourage discussion like they have with other subjects."*

4.4.4. In terms of teaching and instruction methods – what works well and what doesn't?

Respondents emphasised the importance of a supportive and compassionate teaching staff to their success:

> *"The tutor's attitude is integral to successfully completing a unit. Most of the tutors, upon being informed of my condition realise that my biggest challenge is deadlines."*

> *"When the tutor has direct contact with students through the discussion board, this works well for me as it means the tutor is easily contactable and I can get answers to questions I have through other students if they have asked them."*

Having access to lectures online and being able to revisit the course material was regarded of great benefit for many students:

> *"The scheduled lectures have always been a problem for me. I'm usually either at work, dealing with my family or sleeping when the session is running. Having access to it afterwards does make up for that though."*

> *"I prefer when the unit outline overlaps very well with the primary recommended text. I like to read about things in greater detail. It's easier to understand when it is published material."*

> *"Videos work well because they require less concentration than reading."*

Another perceived benefit was the greater flexibility engendered by online learning:

> *"Unit outlines and weekly lecture slides work well for me as I'm able to work at my own pace. The discussion board also works well because I can post my own topic and not lose responses in a broader discussion setting like Facebook."*

The ability to study without being restricted to a table or desk was also seen as beneficial:

> *"I prefer to get my basic material in hard form – if I am having a bad time, I can take the hard copy and sit in the sun."*

One student reflected on the fact that online learning makes it easier for students to take things at their own pace, but expressed frustration that this was not reflected in areas such as assessment due dates:

> *"Having a weekly topic area is good for keeping people on track, but with my disability I tend to leave it for a week or two, and then study for 3-4 days solid on several weeks' worth of reading and assessments. This is not supported by the learning – as there are set due dates and teachers are often inflexible if they see that you have not been regularly learning."*

> *"Short deadlines are a hassle, as my pain levels may not be cooperating with me that day and I may not be able to complete the work to my personal standard, causing me to get a lower grade than I would like."*

The problems some students encountered with teaching and learning methods were likely to also be problems experienced by all students, not just those with a disability:

> *"I very much like a teaching method… where the unit goes in combination with a plan, whereas most units have a "this is what you read" and a "submit your assignments here" and that's all. I didn't learn much with this method and often couldn't see a definite link between concepts."*

> *"When there is no discussion board for general questions and answers on blackboard, this is frustrating as it means there's no way of public contact with the tutor."*

Challenges were found in a variety of areas, but for students with disabilities deadlines prove an almost universal problem:

> *"Weekly online discussion is my most dreaded assessment/teaching method. It is meant to encourage interaction and replicate a class environment. Even without my disability, it doesn't, but if I didn't have my condition, I could just rant about that. The one week turn around given for weekly discussion is too tight, I need 2 weeks."*

This proved particularly problematic in units where tutors restricted access to materials after a certain date:

> *"Some close the discussion board each week, making it inaccessible for students, which means I need to organise an email arrangement with them, other tutors stipulate that as long as all the posts are not done in the last week, students can post more sporadically. My reality is also that though a tutor might release on Sunday night, I'm still struggling to get last week's post finished and up and often will not get to the new question until close to the end of the week. This snowball effect increases pressure on getting work submitted and impacts all my other assessments."*

As with all disability types, units with compulsory exams proved especially challenging:

> *"Exams are also a significant problem because of my poor memory and diminished cognitive processing ability when in pain and to which lack of sleep contributes. Open book exams do*

help by removing the difficulty of accessing memory. Extra time allows for more time processing. It can take up to half a minute for my brain to process the simply instruction to sit down or raise my hand. The more complex the processing requirement, the longer it takes and if pain messages interrupt, sometimes the instruction just stalls and isn't followed… I avoid classes with invigilated exams because I have broken down during exams and it is too distressing an event to enter into without there being an unavoidable requirement."

"The problem I found with OUA is that not many courses allow a completely online learning and testing environment. I am studying a Bachelor of Arts (Politics) through MQ which allows non-invigilated exams but other universities mandate invigilated exams."

4.5. Interview responses: disclosure of disability

Despite the fact that medical impairments account for a significant portion of disabilities, the "invisibility" of many medical conditions means that chronic illness and other medical conditions often "does not fit the more taken for granted understanding of disability" (Jung, 2003, p. 92). Schreuer and Sachs (2014, p. 29) have stated that a student may elect to disclose (or withhold) their disability for a number of reasons. For those with medical disabilities, "disclosure may hold unique implications". They report that "disclosure is strongly linked to disability acceptance and also to environmental barriers, including the social climate created by the institution, the faculty members, and able-bodied peers" (2014, p. 29).

This impairment group was asked to discuss the reasons for disclosing their disability. For many students, disclosure was necessary in order to meet the assessment requirements of a unit, such as exams:

"Because I was afraid of failing my exams. I have learnt the hard way about not disclosing information. Centerlink was merciless when I neglected to tell them about the chronic headaches. The world is far less compassionate and understanding than they would have us believe."

"So they can help me with my learning style, and so that if I need help, they already know my situation."

"Extra time and space for breaks."

"I require assistance in sitting the exam, and in conducting some activities such as group assignments."

"The primary reason for disclosing my disability is that I require assistance with exams."

"Yes. As per above I enquired about the invigilated exams."

"To get help with invigilated exams. I can't sit for long periods and I don't write very fast."

"I disclosed my disability because there were many assignments due during the time I was diagnosed and I was in hospital so I had to get an extension."

"I had to as it impacts upon my ability to sit exams."

Some students chose not to disclose their disability, but acknowledged that they may do so in future if they felt it was necessary:

> *"Because I work full time and can generally cope with my studies I've not needed to disclose my disability. If I was aiming for grades for further study then I probably would because I wouldn't be able to achieve them without having disability support."*

Those students that had chosen to disclose their disability reported numerous ways in which disclosing a disability had been of benefit to their education:

> *"It removed some of the stress and gave me some piece of mind. But to be honest it is mostly a safety net. My condition fluctuates and has been quite manageable in recent weeks. Even after taking a ten minute break, I still had almost half an hour to spare after finishing my exam."*

> *"Yes it does a lot… I am unable to sit without a special chair – I don't sit on my spine – without this, within 30 mins I am in severe pain so it is essential for successful completion."*

> *"Knowing that I have the option to vary the conditions gives me greater confidence that I can actually pass the tests."*

> *"It was invaluable!"*

> *"Yes I felt that my tutor really took my disability seriously and allowed me sufficient time to complete my assignments without bothering me or pushing me to get them done."*

> *"I've studied with different institutions on campus in the past and it worked well for that stage of my life. Because I'm at a different stage in my life I chose online study."*

Ongoing support from universities and OUA was praised by some students:

> *"A councillor OUA calls once a week – this is really helpful."*

However, other students reported mixed success when disclosing their disability:

> *"When I asked for consideration for one unit that I was behind in, the Tutor advised me to drop out which I did not want to do. In the other unit, I asked for an extension when I had an accident chopping kindling and the Tutor was great."*

Furthermore, as with other kinds of disabilities, students in the medical impairment group were discontented with the fact that they were repeatedly asked to provide proof of their disability despite having disclosed their disability to the enrolling institution(s):

> *"No. It was completely ignored. If I asked for an extension or anything, I was asked to produce medical evidence but usually with chronic illness there is no need to go to the doctor as there is no point, or I have difficulty getting myself there and back safely."*

Some students found that the accommodations offered by universities, particularly relating to invigilated exams, was insufficient for their needs and overly restrictive:

> *"Also note: even in an office chair at exam, from the moment I have to hold my body into what feels like a tortured position at a desk my pain level increases. This means it is inevitable my pain level will rise no matter what else I do. I have to finish the exam before my pain levels get too high regardless of how much extra time they grant. Most exam convenors who deal with me do not understand this. They think the extra time is more than enough compensation for my disability."*

> *"I personally am not comfortable with knowing I'll be able to perform my best at a set time due to my condition. When enquiring about alternatives nothing of use was put forward; the best option available was you can do it at a local library or something to be closer to home. This restricts my ability to enrol in courses and units that I otherwise might have wished to undertake. Effectively my disability has restricted my learning capacity through OUA."*

In addition, even when a disability was disclosed, the requirement to sit exams (with no option for an alternative method of assessment) was too restrictive for students:

> *"So far, no university will consider replacing an exam with a report for a student with my kind of disability although this would make my studying experience far less stressful (and less expensive and time consuming in terms of needing to line up carers to drive me and doctor appointments)."*

4.6. Interview responses: future directions

4.6.1. Have your learning experiences changed your future study choices?

The responses from students as to whether their learning experiences through OUA have changed their future study choices varied greatly.

For some students, the opportunity to study through OUA had been positive – it had enabled access to an education they otherwise would not have had:

> *"My previous learning experience was with on campus study. I was unable to complete the daily travel needs and ended up almost killing myself trying to manage it all. I was failing my grades and having daily panic attacks so I decided to quit and look for another option. Online study through OUA saved me in that regard but, in regard to the institution I went to through OUA; that was just because of the degree I wanted to do."*

> *"Yes, I previously studied with Murdoch University who introduced me to OUA. The units and course I am currently studying was impacted by what I studied at Murdoch University as I can combine them for the job I would love to do."*

Other students were less sure:

> *"It's hard to say. Choosing OUA was certainly affected by previous experiences, but choosing IT at Swinburne Uni was a different thought process. I mostly just knew that I had to study something that I have a passion for, rather than allowing others to pressure me into studying something that I hate."*

Other students praised the ability to study at a particular institution or number of institutions concurrently whilst undertaking an OUA-based degree:

> *"Yes. I had a number of credit transfers, but experience with certain teachers made me wary of going into another unit with them (avoid if I could)."*

> *"If a unit I want to do is at Griffith I choose it because it was the first site I used and I feel familiar with it. It takes me a while to get used to a new site."*

Other students shared experiences regarding studying via distance or correspondence in the past:

> *"I had to study by correspondence on and off for the last 40 years – often having to complete my schooling in a bed in traction as I was growing up so it is just standard for me to learn this way. I have attended TAFE like a normal student previously and have had to abandon the study because of it."*

4.6.2. What are your biggest challenges?

The biggest challenges some students faced resulted directly from their disability:

> *"Using a keyboard and mouse for long periods of time, makes my hands sore – though not so quickly as pen and paper. So note taking is not always easy."*
>
> *"Coping with the irrational nature of R.A. flare ups. My timetable is constantly changing due to having to catch up, or being in advance of study requirements. Usually having to catch up."*
>
> *"Keeping on track. If I have a sick day, it's okay and I can catch up. But if that sick day continues for two, three days? Maybe even a week or more? Then I'm so far behind it's almost impossible for me to catch up. I try to and then I get sick again. And this time even one day being sick will set me back two."*
>
> *"Studying can be very tiring and exhausting for normal students. As I have crohn's and suffer from chronic fatigue just doing daily activities it can be really difficult and exhausting after doing a few hours of study."*
>
> *"Finding the energy to read 50-100 pages of text each week + complete the homework tasks. If there was less reading it would be easier."*
>
> *"Online solitude, screen fatigue, verbal communication inability, writing time."*

Many students struggled to complete work in the time set out in the unit guide – such as weekly contributions to discussion boards and assignment due dates:

> *"Due dates. Given enough time, I can complete a unit, but I need 2-4 weeks, not the 2 weeks Griffith's disabilities services has determined I need. That said, so far Griffith have been flexible in that the tutors have contacted me and said I can take more time."*
>
> *"Working to a strict timetable. The biggest problem is not being able to delay study if I am having a bad time. So if I am in a lot of pain, the workload requires me to continue on the study irrespective of that. One study period I did drop out because the pain was too bad and the medication was making me too drowsy."*
>
> *"The time factor is the biggest challenge because of the times when I'm not able to do anything."*
>
> *"Dealing with the workload and deadlines when my capacity varies a lot."*

For many students, the biggest challenges they faced were universal rather than disability-specific:

> *"Handing in assessments on time. Getting through large amounts of reading in given time frames. Being able to balance work, study, sick and family / social life."*
>
> *"Poor internet – the quality is affected by the time of day, the number of tourists using the internet. It makes it more difficult when I am feeling ill."*

Students were asked to discuss whether their challenges were related to their disability:

> *"Yes. Study is generally easy for me. My greatest struggle unrelated to my conditions is trying to get high distinctions for my work. And this is in spite of me currently writing a novel, and developing a computer application on the side."*

> *"Yes. Prior to my disability studying was not my favourite pursuit, but one I could do without needing special assistance. I appreciate the opportunity to educate myself more so because I can remember the time when I spent a year studying and working – both full time at the same time – for a year. It was tiring, but eminently easier than trying to study with my current disability."*

> *"Having the tendency to fall asleep while reading definitely impacts the challenge of reading 50-100 pages a week."*

4.6.3. What would you change to make study easier?

Many students would benefit from the use of assistive technologies (AT); however, some expressed frustration that currently available technologies are inadequate:

> *"Until voice recognition software becomes more reliable, there is nothing feasible that could help me."*

Others felt that easily available devices had made studying easier:

> *"Tablets work well, you can have massive content on them without the weight to carry them, and the ability to work offline is a bonus – by downloading content instead of streaming."*

Other students, whilst not indicating anything course – or institution – related that could be changed to make study easier, recognised that they put excessive demands on themselves, and could benefit from changing their personal approach to study:

> *"In a perfect world, I would love to get rid of chronic diseases. Second choice, would be to move a computer to the toilet or to bed. Third choice, quit my job so I can focus on study without the added pressures. Don't study so much in such a short time frame, take it easier on myself."*

> *"As an online student with a choice to study when I want, there isn't to much unless I have a flare up it can cause me to not be able to study e.g. I will feel sick, have low energy due to not eating, and this will result in a loss of concentration. This, however, is very rare for me given I restrict my diet so much and never eat what I shouldn't."*

The eradication of invigilated exams was a fairly universal recommendation from students:

> *"Getting rid of the examinations would make my life a whole lot easier, because it is a physical requirement to get to the examination centre and to actually do the examination. A couple of exams have been compromised by my R.A.. There is no warning when a flareup starts. I have a strict regime for a few days before my exam to ensure as far as possible that a flareup will not occur. It is still a lottery, though."*

> *"Allow for non-invigilated exams for students with a disability or an alternative like another short essay. A more heavily weight essay / main assignment could be an option. If no exam would be undertaken a student may be issued more time to complete the essay but required to write for example a further 1000 words on the topic."*

Some students indicated a desire for a streamlined, centralised disability support mechanism so as to avoid having to repeatedly disclose (and provide proof of) a disability:

> *"A central disability support area for online university: Just as Open Universities provides a single portal to multiple universities, I think it would be easier if there was single portal to for those with disabilities. One point of access would ease the stress of an already stressful time and allow the student not to get distracted by administrative tasks that many other students do not have to deal with."*

> *"I do get some help in regard to assignment extension and leverage from the tutors, but this only goes so far, and, again, I have to jump through administrative hoops. Every time I get sick for a length of time that requires an extension or help, I have to pay $70 or more to see my doctor and get a medical certificate. I don't have that kind of money, especially not if it's a bad couple of months and this happens a few times. It sets me back and I have to power through flare ups of my illnesses, which in turn makes me sicker."*

Other students wished for greater consistency between units and institutions:

> *"I think all students would benefit from a unified approach to the delivery methods of content as well, not just disabled students."*

Others still wanted universities to provide print materials so as to facilitate study away from the screen:

> ***"**Hard copy of the Unit outlines, Study Guide and readings."*

Having greater access to tutoring and academic support was highlighted as an area in which improvements could be made:

> *"I know it's not practical but it would be helpful if tutoring was available on the spot without the need to make appointments."*

Some students felt that OUA's timetabling (four study periods of 13 weeks back-to-back) was too restrictive and intense:

> *"The time frame is really demanding. I am doing 4 lots of study periods of 13 weeks each study period each year – 1 subject per study period. So you either get 13 weeks off study or you get nil. The exams are in the first 2 weeks of the next study period. There is no breathing space to have a bit of a rest."*

The workload was also a challenge for many students, often taking students with disabilities much more than the recommended time:

> *"The volume of work is also much more than stipulated. I only do 1 subject a study period and recommended time is 10 hours per week, but you usually have to do at the very least 1.5 x or 2 x the suggested study period, and this is something I find a lot of my fellow students complaining about as well."*

> *"Have a lighter assessment load for the practical fine art units."*

Students felt that disability awareness was an issue and wished that teaching and administration staff were more knowledgeable and better equipped to support students with nuanced and often multifaceted needs:

> *"Greater awareness of disabilities like mine. People think I have a bad back every now and again. They don't realise I am like many other people with disabilities, I get no breaks from it, no holidays. On a scale of 0-10 where 0 is no pain and 10 is screaming, I hit a ten every week at least once… I'm not sitting around my house chuckling at the easy ride I get because I have the label: Disabled. I genuinely want to study. I am very grateful for the people who make that possible, but I don't want to have to beg for help and filling out forms and repeatedly emailing people are not conducive to studying. Just having to explain over and over again what I have and the impact of it is distressing in itself because it makes me focus on my condition and not on having a life and getting some quality of life despite it."*

Many students lamented the isolation of studying online with a disability, both in response to this question and throughout their interviews.

4.6.4. What other recommendations would you make?

Some students recommended better and more consistent support from administrative staff:

> *"The problem is not the services, but the people who provide the services. The Swinburne disabilities adviser I spoke to, should not be in that position. OUA on the other hand, has great staff."*

One student felt that there was not enough information about the available accommodations and support for students with a disability:

> *"Make it clearer as to what assistance/support people with unconventional disabilities can get."*

Other students encountered problems with teaching staff and wished for greater understanding, support, and flexibility:

> *"Some teachers were supportive, but some were downright inflexible and unsympathetic; which I can understand from their perspective but from mine it caused a lot of heartache and stress."*

Despite this, some students felt that the accommodations currently provided were adequate. Rather, it was the unpredictability of their impairment that caused problems – something less easily resolved:

> *"The only thing that impacts me severely is attending the examinations. Although adjustments are made, and staff go out of their way to accommodate me, a flareup will still make the experience very uncomfortable. As a results I am very anxious before the exam."*

A lack of feedback was indicated as a challenge faced by many students, although this is likely to be experienced by many OUA students, not just those with disabilities:

> *"Studying was difficult, there was little to no feedback to guide me through units and I generally felt unsupported."*

Other respondents lamented the lack of community amongst the students themselves and wished for a space wherein disabled people could come together and support one another:

> *"I would have really liked to be able to get more a community feel from students – there are so many and I didn't make any connections because I wasn't regularly in contact in the forums. I could have learnt and discussed so much more with other students if I was able to. Facebook helped a lot in this area."*

4.7. Conclusion and summary

This impairment group reported a wide variety of ways in which their study and everyday life are affected by numerous conditions and provided insight into the ways in which online education can be improved for students with medical impairments. Despite the lack of existing research into the experiences of students with medical disabilities, this group of students with a medical impairment were exceedingly willing to talk about their experiences with studying online through OUA. Such a disparity suggests that medically impaired students are an overlooked group and that their needs may not currently be met by the university system. This is a factor also reflected in the relatively low disclosure rates for this group, many of whom felt that they did not need accommodations from institutions, but could likely benefit from such accommodations.

5. Mobility impairment

5.1. Introduction

This section of the report deals in particular with mobility disabilities. Colorado State University's Access Program defines mobility disability as:

> *… the inability of a person to use one or more of his/her extremities, or a lack of strength to walk, grasp, or lift objects. The use of a wheelchair, crutches, or a walker may be utilized to aid in mobility. Mobility impairment may be caused by a number of factors, such as disease, an accident, or a congenital disorder and may be the result from neuro-muscular and orthopaedic impairments* – Colorado State University, n.d.

Physical Disabilities Australia (2012) list numerous diseases and disorders as falling under the category of physical disability, including cerebral palsy, spinal cord injury, arthritis, spinal muscular atrophy, muscular dystrophy, motor neuron disease, multiple sclerosis, spina bifida, musculoskeletal disorders, Huntington's disease, Parkinson's disease, amputation, myalgic encephalomyelitis (colloquially known as chronic fatigue syndrome or CFS), and short staturedness.

Many students with mobility disabilities are simply not able to attend class on campus due to mobility limitations that prevent them from easily moving around (often very large) campuses, or even accessing appropriate transport to campus. Other students experience difficulties in sitting or standing for long periods of time, while others have limited use of their hands and arms, making it difficult to complete work in-class and carry equipment such as laptops and books. It follows that students with mobility disabilities also face problems accessing student services on campus (Holloway, 2001, pp. 601-603), leading to a generally poor retention rate amongst this group.

For many would-be students, the barrier to access also exists at an institutional level. Without adequate provision of accessible environments and technologies, students find themselves disabled by the system and are prevented from equally participating in learning. Verbrugge and Jette (1994, p. 3) define disablement as:

> *… impacts that chronic and acute conditions have on the functioning of specific body systems and on people's abilities to act in necessary, usual, expected, and personally desired ways in their society.*

While eLearning is often seen as a solution that offers disabled students access to education, the broad consensus in existing studies is that, even in this area, disability is continuously problematised by institutional policies and services. In one case, researchers describe eLearning environments as "less-than substitutes for the 'real versions'" (Moeller & Jung, 2014, para. 2), suggesting that simply transferring offline curricula to an online environment does not meet the needs of disabled students who are unable to attend class on campus:

> *(eLearning is) an inadequate substitute for traditional place-based education through which bodies are both marginalized and expected to accommodate themselves in an educational system that views them as disruptive problems needing to be solved* – Moeller & Jung, 2014, para. 2.

Moeller and Jung's observation is reflected in numerous other studies that have pointed out that disability is often treated as an individual problem for the student to solve "rather than requiring the active engagement of all" (Gabel & Miskovic, 2014, p. 1155; see also Holloway, 2001, pp. 607-608).

As such, eLearning, such as that offered by OUA, is recognised as preferable not only among mobility disabled students but for many disabled students in general. eLearning, with its comparative flexibility – no need to attend class at set times, carry equipment, or sit for extended periods of time in uncomfortable chairs – allows students to work with the limitations of their disability as necessary instead of fighting against a system that still appears inadequately capable of supporting students with disabilities. By offering courses via "video-mediated delivery systems (that) can create a virtual classroom", mobility disabled students can participate in learning via "collaboration through synchronous and asynchronous discourse" (Kim-Rupnow & Dowrick, 2001, p. 29), such as that offered by Blackboard's discussion board function, without the burden of attending class on campus.

While many mobility impaired students use assistive technology (AT) to improve their access to eLearning courses (Burgstahler, 2003, para. 22; Keller, 2011, pp. 339-340; Paciello, 1996), none of the participants in the survey or interviews conducted for this study gave specific details of any such technology. As Burgstahler (2003, para. 3) notes, the availability of online learning does not simply eradicate barriers to entry for mobility impaired students; in fact, poorly designed websites and inadequate platforms and tools can increase the challenges faced by mobility impaired students.

5.2. Survey results

OUA students were invited to participate in a survey regarding the experiences of disabled students studying via this eLearning organisation. There were a total of 356 respondents, of whom 84 (23.6%) reported as having a mobility disability or impairment. If extrapolated, this would translate to 0.7% of the total OUA student body. This contrasts with a World Health Organisation review of 16 WHO surveys, wherein it was found that 35.1% of respondents reported mild, moderate, severe or extreme mobility impairment (World Health Organisation, 2011) and the 10% of individuals in the United States reported in the 1994 National Health Interview Survey (Lezzoni et al., 2000, p. 955) to have a minor, moderate or major mobility impairment.

5.2.1. Demographics

The group comprised of 64.3% female and 29.8% male students; two students preferred not to indicate their gender. Three respondents did not answer this question. The majority of participants had previously undertaken some form of post-secondary study – one quarter of these students (16.7% of total) already had an associate, bachelor, or graduate degree prior to commencing their current course through OUA.

Q3: What is the highest level of school you have completed or the highest degree you have received?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than high school degree	10.7%	9	10.8%
High school degree or equivalent	14.3%	12	18.3%
Some college or university but no degree	48.8%	41	52.0%
Associate degree	2.4%	2	3.1%
Bachelor degree	11.9%	10	12.1%
Graduate degree	2.4%	2	3.7%
Other (please specify)		8	69
answered question		84	
skipped question		0	

The survey results found that more than half (55.95%) of all respondents with a mobility disability indicated that they have at least one other non-mobility disability, with medical disabilities by far the most prevalent additional impairment type. WHO also found that "depression is a common secondary condition in people with disabilities" (2011, p. 58; see also Sareen et al., 2006). In this study, 38.3% of participants with a mobility disability also reported a mental illness.

The challenges faced by universities in developing accessible eLearning courses is reflected by the frequency of comorbidity amongst OUA students with a disability. The most common comorbidity found amongst the group of participants was medical disability.

Q4: What type of disability or impairment, if any, do you have?		
Answer options	**Response percent**	**Response count**
Hearing impairment	14.9%	7
Vision impairment	21.3%	10
Mental illness	38.3%	18
Learning disability	10.6%	5
Medical impairment	76.6%	36
Intellectual disability	4.2%	2
Mobility impairment	100%	84
Acquired brain impairment	19.1%	9
answered question		84
skipped question		0

Although not all students indicated the reason for their mobility disability, some reported fibromyalgia, arthritis, back injury, other injury sustained in an accident, ongoing musculoskeletal disorders, spinal cord injury, amputation, spinal stenosis, and multiple sclerosis as the cause. Indeed, the line between mobility and medical impairments was often difficult to establish. Follow-up interviews with participants revealed that mobility disabilities were often caused by the presence of a medical disability such as those with symptoms of chronic pain, such as fibromyalgia, or those that restricted movement, such as rheumatoid arthritis.[2] Accordingly, this report deals with mobility-specific challenges faced by students, whilst the medical consequences of their disability are discussed elsewhere.

[2] Ten students used the 'Other' space to provide specific details about the nature of their disability, but did not list their disability as 'Other' (i.e. the comments in this section pertained to disabilities already nominated as fitting within one or more of the eight categories listed).

5.2.2. Studying through OUA with a disability

Students with a mobility disability had been studying through OUA for approximately the same amount of time as average:

Q5: How long have you been a student through OUA?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than 1 year	33.3%	28	34.2%
1 year	10.7%	9	14.4%
2 years	19.0%	16	18.9%
3 years	22.6%	19	17.2%
4 years	4.7%	4	7.1%
5 years	0%	0	2.8%
6 years	3.5%	3	1.4%
7 years	4.7%	4	1.7%
8 years	0%	0	0.6%
9 years	1.2%	1	1.1%
10 years or more	0%	0	0.6%
answered question		84	
skipped question		0	

Q6: What is your chosen field of study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Arts & Humanities	61.9%	52	57.4%
Business	7.1%	6	13.3%
Education	2.4%	2	6.7%
Health	2.4%	2	5.5%
IT	1.2%	1	6.7%
Law & Justice	15.5%	13	11.0%
Science & Engineering	4.8%	4	5.5%
Not specified	3.6%	3	1.4%
Other (please specify)		4	
answered question		84	
skipped question		0	

5.2.3. Accommodations and disclosure

Students with a mobility impairment were roughly as aware as the general survey response of accommodations offered by unit providers:

Q7: Are you aware of the type of accommodation that can be offered by the unit providers in relation to your disability/impairment to help with your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	32.1%	27	28.7%
No	40.5%	34	43.9%
Unsure	25.0%	21	27.3%
answered question		84	
skipped question		2	

A significant majority of students (60.7%) had not taken advantage of accommodations offered to students with a disability to improve access to study, although this is still noticeably lower than the full survey result.

Q8: Have you received any accommodation in relation to your disabilities in relation to your study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
With all units of study	11.9%	10	6.6%
With some units of study	8.3%	7	7.5%
With most units of study	13.1%	11	16.1%
With no units of study	60.7%	51	69.7%
answered question		79	
skipped question		5	

Of the one third of students (28 in total) who had received accommodations for some, most or all of their units of study, 25% felt that accommodations were always adequate and appropriate, 50% indicated that accommodations were mostly adequate and appropriate, and 25% felt that accommodations were sometimes adequate and appropriate.

Q9: Did you find this accommodation was adequate and appropriate?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes, always	8.3%	7	9.7%
Mostly	16.6%	14	10.3%
Sometimes	8.3%	7	9.2%
Never	0%	0	0.9%
Have not received any accommodation	63.1%	53	69.9%
answered question		81	
skipped question		3	

While on campus, students usually complete all degree units at their main enrolling university, OUA students have the opportunity to take units offered by any of the participating universities, provided that these units meet the requirements of the students' degree. Students were asked to indicate whether they had received accommodations from an OUA affiliate university during their online studies. This section of the survey was not well answered, with the total response count for each institution – an average of 58 responses per institution from a total of 84 students – falling well below the total number of students with a mobility impairment.

For the majority of institutions the rate of disclosure was quite high (over 68%). For others there was a 0% disclosure rate, although this statistic would undoubtedly change with higher enrolment rates for those institutions and is unlikely to be representative of the broader student body, nor be representative of OUA student disclosure rates more generally. Overall students in this category were noticeably more likely to have disclosed their disability

Q10: Have you informed the institution(s) where you are studying that you have disability?						
Answer options	**Yes**	**No**	**Have not studied with this institution**	**Response count**	**Percent disclosed**	**Full survey response**
Curtin University of Technology	25	6	28	59	81%	65%
Griffith University	30	12	24	66	71%	71%
Macquarie University	19	9	36	64	68%	66%
Monash University	0	4	51	55	0%	29%
RMIT University	8	2	45	55	80%	57%
Swinburne University of Technology	12	5	45	62	71%	58%
University of South Australia	20	3	37	60	87%	58%
Australian Catholic University	2	0	54	56	100%	46%
Charles Darwin University	1	0	54	55	100%	27%
La Trobe University	0	1	53	54	0%	11%
Learning Network Queensland	0	0	55	55	N/A	38%
Murdoch University	15	5	43	63	75%	62%
Polytechnic West	0	0	55	55	N/A	17%
The University of New England	0	1	53	54	0%	30%
The University of Western Australia	3	0	52	55	100%	44%
Other (please specify)				0		0%
Total response		**135**	**48**		**74%**	**60%**

There were numerous reasons for students opting not to disclose their mobility disability to unit providers. While a quarter of students did not want to receive accommodations from institutions, 29.8% felt that accommodations would not have helped. Given that 65.5% of respondents indicated

in response to a previous question that they were not aware or were unsure of the types of accommodation available to students with disabilities and impairments, the high number of students who felt that accommodations could help with online study may suggest that there is a lack of information for students about accommodations and assistance (that is, many students may feel that accommodations and disability support services do not cater to or offer solutions for their specific type of disability).

Q11: When you have not disclosed that you have a disability to an institution what are the factors that caused this?			
Answer options	**Response percent**	**Response count**	**Full survey response**
I did not think it would help	29.8%	25	51.8%
I did not know I could	3.6%	3	13.1%
I did not know how	6.0%	5	13.9%
I did not need any accommodation	25.0%	21	26.5%
I did not want any accommodation	8.3%	7	9.0%
I did not want to disclose my disability/impairment	9.5%	8	17.6%
Other (please specify)		7	
answered question		76	
skipped question		8	

5.2.4. Learning technologies

The students were asked to indicate their usual methods for accessing the internet for online study. For students with mobility impairments, the option to study from a comfortable place such as a bed means that laptops and mobile devices are preferable to desktop computers, although 22.6% of students always used a desktop computer to access the internet. However, a significant number of students (46.4%) used more than one device to access online content. As one student noted in the 'Other' section, "This depends on my level of mobility and ability to sit for any period of time." Students in the follow-up interviews expressed frustration at online materials not being mobile responsive or accessible on smartphones and tablets (particularly in the case of content making use of Adobe products, such as Flash), suggesting a greater need to implement standards that guarantee consistent, accessible and responsive online content. This is possibly reflected in the relatively low number of students using smartphones to access the internet for their studies.

Q12: How do you access the internet for your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Desktop computer	48.8%	41	46.2%
Laptop computer	71.4%	60	74.9%
iPad/ tablet	27.4%	23	27.3%
Smartphone	15.5%	13	23.9%
Other (please specify)		0	
answered question		83	
skipped question		1	

The majority of students surveyed indicated that they had not had any problems accessing online learning platforms due to their disability or impairment. In the follow-up interviews, however, students suggested that although they are generally happy with the online learning platforms used by OUA universities, they often suffered from a lack of consistency between platforms and units and often experienced minor problems with those platforms they are generally happy with (such as Blackboard).

Q13: Have you had any problems accessing online learning platforms due to your disability/impairment?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	16.8%	16	17.9%
No	83.2%	66	82.1%
answered question		82	
skipped question		2	

Students were asked to rate 14 platforms and tools on their ease of use. Again, the response rates for this question were relatively low – an average of 28 responses per platform from a total of 84 students. As such, it is difficult to determine the degree to which students across the board experience difficulty with particular platforms. Based upon the responses received, Blogger, Prezi and YouTube were the most problematic platforms used by students, although the majority of problems were minor. In only four instances students reported that a platform was unusable.

Q14: If yes, which platforms have you experienced difficulty with?								
Answer options	**Not used**	**No prob-lems**	**Minor prob-lems**	**Major prob-lems**	**Unusable**	**Response count**	**Prob-lems**	**Full survey response**
Moodle	19	6	3	0	0	28	33%	35%
Blackboard	4	16	11	3	0	34	47%	48%
Facebook	10	12	3	2	1	28	33%	21%
Twitter	20	4	0	1	1	26	33%	12%
Slideshare	20	5	0	1	0	26	17%	12%
Prezi	22	3	1	0	1	27	40%	17%
Lectopia	19	5	2	1	0	27	37%	40%
Echo 360 / Echo Centre	13	10	7	1	0	31	44%	49%
PDFs	5	16	7	3	0	31	38%	30%
Blogger	22	2	2	0	0	26	50%	25%
Wordpress	22	3	1	0	0	26	25%	16%
WebCT	21	4	1	0	0	26	20%	20%
YouTube	10	9	4	10	1	28	50%	21%
University websites	2	17	6	7	0	32	43%	43%
answered question						36		
skipped question						48		

5.2.5. Recommendations / future involvement

Despite some students facing challenges with online learning platforms, the majority of students indicated that they would recommend OUA as a place to study for people with disabilities.

Q16: Would you recommend OUA as a place to study for people with disabilities?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	77.4%	65	75.9%
No	0%	0	3.1%
Maybe	22.6%	19	21.0%
answered question		84	
skipped question		0	

In the final question, question 17, of the survey OUA students were asked to indicate to leave their email address if they were interested in being contacted for a follow-up interview regarding further investigation into the challenges faced by OUA/eLearning students with disabilities – 63 students (75%) responded to this question.

5.3. Interview responses

Forty-three students reporting mobility disabilities participated in interviews about their experiences as an online student with a disability.

Consistent with the survey responses almost all students who participated in interviews reported having at least one disability in addition to their mobility impairment. Most often, these disabilities were mental illness (particularly anxiety and depression) and medical in nature. For the purposes of this section of the report, only responses relating to mobility have been included, although it is necessary to keep in mind that the symptoms of disabilities are often co-occurent and not attributable to any one disability or condition.

The interviewees described their specific type of mobility disability (and any other disabilities) as follows:

1. Limited mobility due to pain from rheumatoid arthritis and fibromyalgia (and medical, mental illness).
2. Polio and arthritis (and mental illness).
3. Limited mobility and chronic pain (and medical).
4. Back injury; pain and limited mobility due to rheumatoid arthritis (and medical, vision, mental illness).
5. Limited mobility in arm due to old injury (and medical, ABI, and mental illness).
6. Congenital disease affecting mobility. Student uses crutches or wheelchair
7. Lack of use of shoulder (and mental illness).
8. Neck scoliosis and neck muscle weakness (injury)
9. Pain and limited mobility due to fibromyalgia (and medical).
10. Mobility limitations resulting from car accident.
11. Chronic back pain (and intellectual disability and mental illness).
12. Partial paralysis of right side and limited ability to walk (and ABI, medical, learning).
13. Crushed vertebrae (and hearing impairment).
14. Endometriosis, carpal tunnel syndrome (and mental illness).
15. Accident.

16. T4 paraplegic complete.
17. Endometriosis.
18. Scoliosis, arthritis, type 2 diabetes, and obesity (and mental illness).
19. Bi-lateral carpel tunnel syndrome.
20. Diabetes with amputations.
21. Spinal issues (and ABI).
22. Motor Neuron Disease.
23. Serious osteoarthritis.
24. Pulmonary fibrosis, osteoporosis and arthritis and venous insufficiency.
25. Osteoarthritis (and mental illness).
26. Intracranial hypertension secondary to lupus
27. Limited ability to stand sit for prolonged time.
28. Chronic back and neck pain.
29. Severe sciatica.
30. Multiple sclerosis.
31. Diabetic, type 2 (and ABI).
32. Electric wheelchair due to mobility problems.
33. Work accident to left shoulder.
34. Multiple sclerosis.
35. Inflammatory arthritis.
36. Fine motor skills problems.
37. Osteoarthritis and occasional CFS.
38. Recurring/remitting sensory/muscular sympathetic reflex peripheral neuropathy.
39. Brachial plexus injury.
40. Chronic health conditions (and mental illness).
41. Spinal tumours and arthritis, failed carpal tunnel surgery.
42. Osteoarthritis, diabetes, fibromyalgia, glaucoma and dry eye syndrome.
43. Permanent nerve damage from a previous back injury.

5.4. Interview responses: accessibility

5.4.1. How does your disability impact on your daily life?

Interviewees were first asked to provide details about their disability and how it affects their daily life. For many mobility disabled students, problems manifested in an inability to sit, stand or walk comfortably:

> *"The base issue is a neck injury I suffered from chiropractic treatment. It left me with neck scoliosis and the inability to hold my head up for periods, intense pain and upper spine swelling for years. This has been stabilised to a degree but, it's for life, so I have to careful with the neck and obviously what affects the neck – affects the shoulders (+ + shoulder injury), the arms, hands and the spine (back pain), too, i.e. sitting and studying at a computer for long periods can be problematic."*

> *"Diabetes with amputations resulting in falls causing broken bones."*

> *"Severe sciatica. Unable to sit longer than 10 min or stand for 1 hour. Underwent two spinal surgeries and have sustained nerve damage. Hence, ongoing sciatica exacerbated by sitting. On medication which impacts movement and memory. Duties as a secondary teacher is impacted as I am limited to how long I can stand or sit to carry out duties."*

> *"I have permanent nerve damage from a previous back injury, primarily affecting my right leg. This nerve damage affects my ability to walk, stand and sit for moderate periods of time, having a direct effect on transportation, and standing and sitting time length. Additionally this disability creates a situation of chronic pain placing further unpredictable restrictions on daily activities."*

For others, immobility was the result of chronic pain (often caused by a medical condition such as fibromyalgia or arthritis):

> *"I am unable to stand for very long, and even sitting can be painful if done for too long. Clothing is incredibly difficult to sort out, as fabrics can be over-stimulating and irritating, and can even cause me further pain if they are too tight or ill fitting. I don't go out much during the day as being out for too long exhausts me."*

> *"Being in physical pain means I have limited mobility – daily tasks such as walking. doing the dishes, having a shower are all very difficult for me as it increases the pain I am in, having chronic fatigue means I often am too tired to do much."*

> *"I have rheumatoid arthritis (R.A.), back injury, impaired vision due to stroke, diabetes, PTSD and depression. I'm in constant pain, ranging from 2/10 to 7/10, with 0/10 being no pain and 10/10 = worst pain possible. Some days, when I have an R.A. flare-up, I have difficulty getting out of bed!"*

> *"Chronic back and neck pain triggered by extended periods sitting. This affects me at work and my ability to study after a full day or week working at a desk."*

While many mobility impairments affect an individual's ability to walk, sit, or stand, other impairments affect the ability to use the hands or arms, which adds another layer of difficulty to the experience of studying online. For students with upper body mobility impairments, however, studying online presented an attractive alternative to studying on campus, which would be inconvenient (if not impossible) due to the need to not only move around campus, but to do so carrying equipment such as books and laptop computers:

> *"I have a physical disability which has resulted in permanent significant reduction of usage of my right shoulder… From a physical perspective, I have since learnt to function mainly with my left arm; however, some activities are impossible to do, and I receive weekly assistance to complete these around the house."*

> *"I have a disease – congenital which primarily affects the bone, but its basis is a hormonal issue. Born with the condition, physically manifested at 11. Suffered multiple fractures and am now unable to walk without crutches on my best day – wheelchair on my worst. In constant chronic severe pain as the disease involves bone tumours. Unable to sit for length of time, carry parcels, stand for more than a few minutes. Limited movement – so have aids to dress myself. Am fairly independent given my situation, I work full time – my husband drives me to work each day and assists me in carrying things to and from work and ensuring I get to work."*

> *"I've had a stroke plus have some spinal issues. Fatigue, spinal pain, and some limb weakness are probably the biggest disabilities. They affect my ability to concentrate for long periods, right (my right hand is very weak), be in any position for long. Daily it just slows me down a little, I have to plan to avoid becoming overly fatigued."*

> *"I have bi-lateral carpel tunnel syndrome, meaning that I have issues with both hands. Sometimes I am perfectly fine & can function without any pain. Other periods are relentless, I can't write, type, open jars, hold paper, etc. and it is excruciating. It mostly affects my right hand (as there are additional complications through an existing injury on this wrist). I am right handed."*

“Work accident to left shoulder, I am unable to lift my left arm and it is unstable. There is talk of another operation to fuse my shoulder together in the future. Constant pain and having my shoulder fall in and out of place is a normal day for me. Can’t sit for long and have trouble typing with left hand.”

“I have serious osteo-arthritis in my different parts of my body. It affects especially my arms and wrist. I cannot hold heavy objects for any length of time or do repetitive movements for a long time. I need periods of rest.”

“Spinal tumours and arthritis, failed carpal tunnel surgery; both these affect my ability to study and write unaided. Pain management is key though not always successful in helping me achieve what I want on a daily basis. My hands do not function normally.”

“My "impairment" is so minor that I'm not sure it even counts. I have a problem with my fine motor skills. This means that I cannot write with a pen a lot. Short notes are fine, but for assignments and tests I always need a laptop. Giving me a laptop puts me on the same level as others who have "normal" hands. It doesn’t' really impact my everyday life. I guess I just spent more time on a laptop then others. All my summaries and notes are typed, not written.”

For other students, online study was the most convenient option given the severity of their mobility impairment:

“I am paralysed through the degenerative, terminal condition called Motor Neuron Disease (ALS). I can’t walk, talk or use my hands. I use computer software to write and communicate.”

“I'm a T4 paraplegic complete, which means I am paralyzed from my nipples down and have no messages getting through. I have a manual wheelchair and drive a car. I need a shower chair to wash but besides that everything else in my house is normal.”

“I have scoliosis, arthritis in my knees, social anxiety, type 2 diabetes, and obesity. All of this combined means that mobility and participation at a real university campus would be extremely difficult and costly, if not completely impossible for me. I get tired very easily - both physically and mentally, cannot walk very far, and suffer from anxiety when my size and/or obvious discomfort brings me to the attention of others, whether or not it is negative attention.”

“I had an accident in 2012 which put me in hospital for 3 months and 12 months in a wheelchair. I am now on a wheelie walker and sometimes a cane if it's about the house, it's nice to be vertical again! Being unable to drive now I am a lot more isolated and being online is kid of my world now. I can't walk very far or stand for long and while in my wheelchair I found so many places that were supposed to be "disabled friendly" that weren't. So my daily life now is basically staying at home and now I am a student I am really enjoying that aspect as it takes me to another place.”

“I have to use an electric wheelchair due to mobility problems, I have always been independent until I ended up in his thing, I fractured my back in three places in 1970s. I have had total knee replacement and I have titanium screws I my feet. I miss my I dependence. My body is useless but the brain is sharp as a tack. That's why I continue to do these courses.”

5.4.2. How does your disability impact on your study?

The study experience of students with mobility disabilities was most often impacted by an inability to sit or stand for long periods of time:

> *"I find it hard to sit through a long lecture. I often sit on an exercise ball, or break it up into smaller sessions. It would be hard for me to study on campus."*

> *"I have a limitation on how long I can sit and study... and I can't predict when the body has had enough – so there are times when it makes me late for assignments – although I start early it can delay the completion of them, writing can be a challenge time-wise. By the end of semester, I'm pretty physically wrecked… I don't have the physical capability of doing an exam – online or physical – so I don't choose subjects requiring that format."*

> *"I have chronic back pain that affects the length of the time I can be in any one position so this impacts on the time I can spend at my desk and also on a laptop."*

> *"Yes, when I had bad days of 'fibro fog' I was unable to listen to lectures or complete assignments and assessments as my cognitive ability was zilch. I would wait for days when the fog was not so bad to do my studies. Likewise days of intense pain or fatigue. The flexibility of online study allowed me to work around my disability and be able to request extensions when needed."*

> *"My inability to sit or stand for long particularly impacts me in two ways: when doing online assessments which are more than an hour and undertaking examinations."*

For many students with mobility impairments, the requirement that they sit invigilated exams was problematic in the context of a disability:

> *"My conditions impacts on any units with exams. I am unable to complete exams within the required time. Asking for permission to do exams at home with periods to complete work as per submission of non-examinable units, I was told I needed a doctor's letter. My specialist, one of the best in Australia, texted a letter to explain my predicament. It was not accepted in spite of his personal heading. He had to write in his handwriting- he is very busy and was angry they would not take his e-mail. Hence I cannot take any units no matter how vital to my degree which have an exam."*

For one student, studying online was not only a matter of convenience but a way of avoiding potentially dangerous situations:

> *"I have difficulty walking, so the ordinary university environment isn't the safest place to be. It also means that I can study in my own time, though I still have to negotiate deadlines sometimes. My condition was caused by a road traffic collision that happened when I was a baby… Having only the use of one hand precludes using things such as umbrellas in the rain, or a walking stick at the shops. I can only walk a short distance. If I have to walk further than I should, I tend to trip, and have had several falls where I've been badly hurt."*

Another student relies upon computers to communicate as their disability affects every part of their life, which can cause other problems:

> *"Because I have to do everything through a computer (reading and writing), any study content has to be digital so I access and use it. I do get screen and general fatigue."*

For some students, the impact of a disability upon study was minor, but they still experienced limitations as a result of a mobility impairment:

> *"My disability really doesn't impact on my study life because everything I need is only a key board away. When I do exams they make it so easy for me. OUA is very easy studying with."*

> *"I manage it really well by not doing the things that I know make it flare up. I can't take hand written notes though."*

Finally, one student felt that the timing of OUA study periods put unnecessary burden on disabled students, making it difficult to take time to recovery between study periods:

> *"My impairments make study online a necessity. However, the study periods offered to undergraduate students makes even online study difficult and exhausting. Let me explain: there are, as you know, 4 study periods per year, one running into the next. This means there are NO BREAKS between periods, which I find exhausting. Since I am required to do full-time study to be able to live via the Austudy allowance, I find that the non-stop study is a form of discrimination against online students, especially those who have conditions where a break between study periods (which all on-campus students get) would give them much-needed respite from long periods spent at a desk, week-in and week out. Please, please, please change this! I would prefer it if the study periods were 12 instead of 13 weeks long, which would allow a one-week rest period between."*

5.4.3. In terms of online learning and teaching technology – what works well and what doesn't?

Participants were asked to discuss their experience using various kinds of technology and tools to access online learning by answering questions regarding which platform/tool/technology work well? In general, students with mobility disabilities appeared to experience few problems using platforms such as Blackboard, and indeed praised the platform for allowing them to participate in learning without the burden of having to attend classes on campus. For these students – especially those who experience severe or chronic pain and would be unable to sit in a classroom on campus during lectures and tutorials – online learning was seen as a great benefit:

> *"I've found the online learning platforms – like at Macquarie and Unisa – brilliant – everything I've needed is on hand... course content, readings, assignment submissions, access to library, good communications with acads/students, etc. No probs."*

> *"Blackboard has been great. It's generally easy to understand and use. Further to this, as more than one uni uses blackboard it means that the general layout is the same. The online library has been great as well and have always found what I am looking for without issue. The OUA website has been very helpful. When the website was upgraded I struggled to understand how to navigate it; however, has pretty much figured it out again."*

> *"Recorded lectures are good, because I can split them up."*

> *"For the most part the lectures whether they were audio recordings or PowerPoint presentations with an audio recording worked well. Having the ability to listen to the lectures as I was able instead of being stuck in set lecture times was great."*

> *"The interactive discussion boards were a great way to interact with other students and keep track of weekly topics even when I was a bit behind on my work."*

> *"I use the uni's online for videos, study plans, and other content made available on the course website – I download my textbooks, so I can have access electronically without lugging around a textbook – although have one at home on my study desk. I use the online lectures – I try and attend most of these tutorials live and rewatch them as repeats later to reinforce learning. I use the group discussion board… I order books from SA Uni library, which are delivered to me at work, and then I ask people at work to help me return the books via Australia post."*

> *"The unit pages are easy to access, as is the reading material. I like to be online for several hours at a time and sometimes it 'times out' which is annoying, but of no great concern."*

> *"The blackboard is great as it makes me part of something. I also use Facebook which is great."*

> *"Blackboard is great. Being able to speak directly (without having to type, which tends to worsen my symptoms) is a huge plus for me."*

> *"I love blackboard because it's another place to chat. I am a regular participant of the relevant Facebook groups on each subject I am learning on. I don't use twitter for Uni but I have just started WEB101 Web communications so I think I will be using both twitter and slideshare in the near future. Also love the blackboard collaborative and I use Proquest as my main article search database but I visit JSTOR and a couple of the others as well."*

None of the interviewees indicated major issues with any particular platform, although many were dissatisfied by the inconsistency between units:

> *"Every study period there is a transition period as I adjust. Even within the same department – eg Uni of sa accounting department, from one subject to the next will use different media to deliver the content."*

> *"Each study period, it takes about 2 weeks to sort out how to access the content – because there is a lot of inconsistency. Sometimes, I have to go through the app to get it to work on a tablet, or Boat Browser – each university and each subject is always different."*

Other students found it difficult to navigate and use some online learning sites, a factor perhaps compounded by studying online. For example, students having to rely entirely upon online content for information found it problematic when the information could not be easily located and staff support was not easily attainable:

> *"CDU seems a little esoteric when you undertake Aboriginal subjects – you are in your own little world, not part of the main Uni. There is certain novelty in studying subjects there – I've put it down to the 'troppo' influence – you have to scrimmage a bit for info on their site at times."*

> *"I also found many of the units did not clearly title their lecture sessions… This made it very difficult to look up the correct lectures and I wasted a lot of time having to listen to lectures in the wrong order until I found the one that corresponded to what I was up to in my studies for each unit."*

One student – who uses walking aids to get around and is unable to carry heavy items (such as a laptop) – expressed frustration at the inaccessibility of content across devices:

> *"Last study period I had a lot of issues accessing the lectures – you needed Adobe Connect – and the newer technology won't work with Adobe – eg on a Samsung tablet… I could access the content, but only in using my laptop computer – it did make it difficult because I couldn't carry the laptop so it was a home use only. I often take my study with me – so I can do some as I have a moment. Adobe just doesn't work with tablets – so I don't think they should be used."*

This suggests a greater need for presenting unit content using accessible, multi-device appropriate tools, platforms and coding practices to ensure that content is available not only via the browser of a desktop or laptop computer, but also on tablets and smartphones.

5.4.4. In terms of teaching and instruction methods – what works well and what doesn't?

Many students liked that they were able to directly email teaching staff instead of having to publicly discuss their challenges and disclose their disability to other students via course discussion boards:

> *"Directly emailing teachers was great because it allowed quick response times and one-on-one discussion, rather than posting to the public board and having everyone know your troubles."*

Students also felt that they got more out of units where the teaching staff was supportive and engaged, and where it was easy to locate unit materials via the online teaching platform:

> *"Again, for me – Macquarie Cultural Studies has it right – clear course guide, weekly notes, stash of readings, input from acads/tutors/other students, personal deep thought – won't plagiarise, well timed written assignments."*

The challenges of a mobility disability meant that students found some teaching methods, particularly assessments, difficult to keep up with.

> *"Short deadlines are a hassle, as my pain levels may not be cooperating with me that day and I may not be able to complete the work to my personal standard, causing me to get a lower grade than I would like."*

> *"Personally, not that keen on a course that requires writing a weekly 'journal' ... traps me at the computer when I'd rather save myself up for a big assignment."*

Other students found a lack of contact with tutors and unit coordinators frustrating, particularly due to the fact that mobility disabled students (like other disabled students) often take longer to complete assignments and coursework:

> *"Some units, to be honest mainly unisa, there has been minimal interaction and answering from tutors and often was students teaching students."*

Similarly, students expressed frustration when they encountered a lack of thorough or hands-on instruction from tutors:

> *"I have had a subject where the convenor would just put the answer up as a slide – without taking you through how you approached solving the issue. This meant I had to work out how the answer was arrived at – maybe not necessarily learning all of the necessary information along the way. Using different programs was restricting to them (lecturers) to be able to show what they would in a class room environment."*

> *"It does make a difference how involved the tutors get in the DB. the more they are involved the easy it is to learn and ask questions."*

> *"Tutors that don't like doing collaborative sessions or that give little to no feedback on the stuff you have presented."*

One student with a mobility impairment affecting the use of her hands liked being able to participate in voice-only learning experiences, such as Collaborate sessions:

> *"The interaction in collaborate sessions - again because I can use my voice instead of my hands."*

5.5. Interview responses: disclosure of disability

Many students with disabilities feel that they experience discrimination and a lack of support from universities who often treat disability as though it is the student's "problem" to solve (Duquette, 2000, para. 17). Duquette acknowledges that in some cases teaching staff did not appreciate "the extent to which a disability might affect a person's ability to work on an assignment or write an exam" (2000, para. 26). The nature of students' needs varies widely from individual to individual, depending on the nature and severity of their mobility impairment and the presence of other impairments.

A number of students therefore choose to disclose their disability to the university in order to receive support from teachers and unit coordinators, especially with regards to exams and other assessments. Some students decided to notify OUA of their disability but had not pursued further accommodations via enrolling universities:

> *"I am flagged as having a disability by universities through OU – so will sometimes receive communication from a relevant uni Disability Officer, but I choose not to act on it official level."*

Even amongst those who did not formally register with a university's disability services, teaching staff were often kept informed of a student's disability status in the event that accommodations were required for a specific unit or assignment:

> *"I will tell an acad if I feel I have a timing problem on a submission. Generally, if it's a couple of days they are accepting of the situation. If I do have an additional problem I will always provide a doctors cert/letter to explain the situation – and that would be given to the relevant acad."*

While one student reported disclosing their disability to enrolling institutions "because it felt like they wanted to know", others had more specific motivations for disclosure:

> *"I disclosed to Deakin so as to be able to have extra time to finish my course, and with the view that I will want to complete honours over two years. They don't allow this without a good reason. I now get extra exam time and sit in a smaller room with only a handful of people. I have an advocate type person who I can call for help or advice whenever I want, and can go and make a study plan with them to. I will never do this though. I'm the kind of person who will just work things out myself."*
>
> *"Because sometimes I might miss a week's interaction and I like to notify them of this possibility beforehand."*
>
> *"I decided that I needed to provide this information so that it was understood from their perspective why I have some of the issues that I have with study."*
>
> *"I was advised to let my tutors know about my disability at the start of each study period in case I needed extra support/extensions later on. I found the tutors to be very helpful once I let them know about my condition."*
>
> *"I require assistance in sitting the exam, and in conducting some activities such as group assignments."*

> *"The primary reason for disclosing my disability is that I require assistance with exams… Knowing that I have the option to vary the conditions gives me greater confidence that I can actually pass the tests."*

> *"It occurred 3/4 through a unit and I needed to know what support was available."*

> *"Just in case the places I do the exams need to know. It is not fair just turning up and expecting everything to be set up for you.. So far the ladies that set up the exams for me so they have got to know me really well and are so helpful."*

That said, there were cases in which the student disclosed their disability to OUA and/or the enrolling institution, but found themselves having to disclose directly to teaching staff too:

> *"Usually, I inform the Disability Support/Equity staff at the institution because I know I am going to need extra time to do the work and complete assignments. Occasionally, I have also informed the tutor, but only when there seems to have been a lack of communication."*

For some students with a disability, the need to disclose details of that disability to numerous people was stressful and time consuming. One student expressed the desire for a system wherein disabled students could notify OUA of their disability, and OUA would handle informing specific universities about each students' situation, as discussed in the 'recommendations' section below.

For some students, the decision to disclose a disability was made "just in case" they needed accommodations from the university in future:

> *"It helped out my peace of mind, but I didn't go further than letting them know I was disabled."*

> *"I did this to ensure I had some sort of support during my studies as I knew being unwell would impact my studies."*

As with other impairment groups, many mobility impaired students decided to disclose their disability so as to receive accommodations for exams:

> *"When I started I had to get to exams in the city. With my arthritis I had problems getting there. Because I disclosed my disability I was allowed to take the exam in the library at the school where I was employed- supervised by the librarian."*

> *"Since writing presented difficulties I needed more time. On reflection another problem was where the invigilated exams were held in a rather warm unconditioned church hall. It was the only reasonable venue option since peak hour driving/parking/potential walking/accessibility were issues for me."*

For the most part, students elected to disclose their mobility disability so as that they could have a better chance of meeting their own study goals, but it also meant that they had to acknowledge their limitations, which was difficult for some students:

> *"Because I want to be the best academically, as I can be – I have intellect and that's my prime thought for studying – I try to forget my body and close my mind to it. Idiosyncratic, illogical though it may be – if I were to actually fully acknowledge the true state of my lack of physicality and pain it would force me to fully acknowledge I have no hope of ever being 'alright again' and I wouldn't be doing what I am doing studying for my degree, otherwise I'd end up feeling sorry for myself and useless."*

However, the disclosure of a disability does not necessarily mean that a student will receive the support from a university that they require:

> *"For everyone's talk about wanting to help us, we have to jump through some ridiculous hoops to get that help. And even when we do our worries and concerns can be overlooked not even just by the school itself but by other students and facilities. Other groups such as sport or music student groups, or charity work done on campus, can ignore our needs when we want to take part or volunteer."*

> *"This was very helpful though during my last study period I had to reinstate my needs in relation to exams as my disability plan had been misplaced – I was eventually told it had 'run out' though no one had ever explained to me that the plan had to be renewed. I had been told that my exam needs would automatically be set up after our initial contact. While the issue during my last study period was eventually resolved it was very stressful at the time."*

> *"I recently requested an extension to complete a tutorial paper, however, and was told that it would not be allowed as the paper was due on the Friday and I must select another week's tutorial. I have done so, but, as a result of this rule, I am going to struggle to successfully complete the unit."*

The sentiment amongst many students interviewed seemed to be one of 'putting up' with the situation they found themselves in. No interviewee expressed particular praise for university or OUA disability services upon having disclosed a disability; equally, no student indicated that they had faced a total lack of support from OUA or a university. Many found the inconsistent practices and the need to inform individual teachers as a hassle that could be better managed centrally:

> *"…by the time I realised this was something I could do I only had one subject left. The only benefit would have been getting a break in the exam. Getting paperwork from my doctor and meeting with someone would have been a lot of effort – I have a two year old son – when there was only one exam left."*

Although the majority of students were generally found to be coping with managing the challenges of studying with a disability, some expressed frustration at the lack of support from universities:

> *"I did have a bad experience with the head of Disability Services at Murdoch. … After she listened to my situation she advised who I had to speak to and that she would pass my number on. About a day later the right person rang me but they had only been given my name and no actual details of my situation – given how difficult it was for me to communicate when I spoke to the head of Disability Services I was surprised and angered that she had not even given an outline of what my query was regarding. As the head of Disability Services I would have expected more compassion and understanding that given my disability effected my communication perhaps letting the right person know what my call was regarding rather than me having to struggle once again to verbally communicate my issue would have been the right course of action."*

5.6. Interview responses: future directions

5.6.1. Have your learning experiences changed your future study choices?

For mobility disabled students going to class on campus can be particularly difficult. Some students are unable to walk unassisted (or at all), while other students find sitting in one position to attend a lecture or tutorial difficult due to mobility and pain-induced limitations. Others were unable to carry books and other supplies and many found moving around campus too challenging.

For some students, the decision to study online through OUA was motivated by negative experiences as an on-campus student:

> *"My previous learning experience was with on-campus study. I was unable to complete my daily travel needs and ended up almost killing myself trying to manage it all. I was failing my grades and having daily panic attacks so I decided to quit and look for another option. Online study through OUA saved me in that regard…"*

> *"Only in the fact that I prefer to study off campus."*

For other students, the primary motivation in choosing to study through OUA was to avoid exam-based assessment as this requires sitting in an exam room for a set period of time – something most mobility disabled students find challenging:

> *"Yes – choose subjects requiring no exams – and a good gap between assignments."*

> *"If I have a choice between electives I will always try and find a unit that doesn't have an exam but rather assignments as these can be done over a period of time."*

Others found eLearning conducive to effective study as it offers the flexibility to work with the challenges of a disability:

> *"I was able to study while I was very sick, the flexibility of online study plus the fact I was able to essentially do a small amount of units yet end up with two degrees at the end was a great motivator."*

Having praised the experience of studying through OUA, one student had decided to pursue on-campus study in the future, despite being a T4 paraplegic:

> *"I am changing over to campus studying in the new year only because I want to go further with my studies. I guess I will find out how well I go on campus then."*

5.6.2. What are your biggest challenges?

The unpredictable nature of disabilities means that students often find themselves falling behind in their coursework. Even with accommodations from the university, many find it difficult to get back on track:

> *"The time to complete the subjects to the best of my ability."*

> *"Given the ups and downs of my condition it was hard to be consistent in my studies which in turn meant I focused more on getting assignments done than I did on soaking up the information in my units and contemplating further on those areas."*

> *"Working to a strict timetable. The biggest problem is not being able to delay study if I am having a bad time. So if I am in a lot of pain, the workload requires me to continue on the study irrespective of that. One study period I did drop out because the pain was too bad and the medication was making me too drowsy. I try and incorporate alternative things on a bad day – like watching the lectures through my tele whilst I am in bed – when I have to be in bed. Or propping up the tablet to read content."*

Students expressed frustration at having to repeatedly provide proof of their disability when seeking extensions or other accommodations, which is costly (disabled students do not want to go to a doctor for a medical certificate every time they need proof of permanent/ongoing disabilities), time-

consuming and stressful. One student identified her biggest challenge as coming from the expectations of teaching staff:

> *"In general, I find some of the biggest challenges come from poor communication of expectations from tutors. But I put this down to inexperience of the individuals I have encountered this issue with."*

For other students, a combination of factors culminated in significant challenges, including isolation and disability-related limitations:

> *"Online solitude, screen fatigue, verbal communication inability, writing time."*

5.6.3. What would you change to make study easier?

When asked to comment on what could be changed to make study easier for students with disabilities, many suggested a streamlining of the process of disability disclosure so that those students who have disclosed a disability are supported when seeking accommodations relating to assessments and exams:

> *"More should be done prior to study to allow disabled students to easily have some leverage. Students should be able to complete a form or something that allows us to say yes, I will need extensions sometimes. Yes, I will have weeks where I am unable to function properly and no I cannot tell you when they will be because they don't happen regularly they are sporadic… I want to do the work and complete my study but some days I wake up and cannot do what I have planned to do that day. Yes I will still try and I will push myself but that's never going to be enough. I shouldn't have to hurt myself and risk my health to complete study."*

Others felt that the workload far outweighed the recommended study time for each unit – a problem compounded by the fact that mobility disabled students, like students with other disabilities, can often take much longer to complete work than non-disabled students. For almost all students, the ability to avoid exams was a great boon to study success. The challenges of examinations while taking the (often unpredictable) needs of their disability into consideration meant that mobility disabled students often felt they did not do as well in their studies as they could have:

> *"Getting rid of the examinations would make my life a whole lot easier, because it is a physical requirement to get to the examination centre and to actually do the examination. A couple of exams have been compromised by my R.A. There is no warning when a flare-up starts."*

One student felt that more contact time with teachers and peers would make for a better study experience for OUA students:

> *"I would have more blackboard collaborative sessions so we can see our tutors and the discussion boards need to be more active. I have often felt alone and a bit adrift with long distance learning and I guess being home alone so much adds to this. I would say though that I am so happy I have been given the chance to get my degree online....it's been a long time coming."*

5.6.4. What other recommendations would you make?

Finally, students were asked to provide a comment or recommendation on how OUA study can be improved for students with disabilities. A number of students supported the implementation of an online social space for disabled students to meet and chat about the challenges of living and studying with a disability:

> *"Perhaps have an online place where people with disabilities can go and discuss things, how they're doing, what they need help with. Something for all universities, all disciplines, no matter what. Have it accessible to hard of hearing people, to blind people, to people who have anxiety issues and can't deal with being seen by people but can type to communicate instead. Create a support system for disabled students so that they don't have to go through what I did for three years – trying to come to terms with my new diagnosis and a whole new world of learning and requirements."*

While one student wished for better communication and more consistent practices when it comes to arranging accommodations for disabled students:

> *"There needs to be communication between OUA and the university. Study Period 2 no arrangements were made and I had to do exam (2 hours) standing and sitting in 'normal' environment. I layed down several times but I received no extra time. It was very stressful as I had to wait for 20 min for examination centre to check with university only to be told there will be no special arrangements. The university failed to notify OUA or OUA failed to do its job - I never found out what happened. I ended up getting Distinction despite the setback but experience left me very anxious this study period."*

Another student felt that content need to be delivered in a more consistent manner across the board, making use of newer, more portable technologies:

> *"I think all students would benefit from a unified approach to the delivery methods of content as well, not just disabled students. Tablets work well, you can have massive content on them without the weight to carry them, and the ability to work offline is a bonus – by downloading content instead of streaming."*

5.7. Conclusion and summary

The findings in this study generally reflect those of other studies of students with mobility and other disabilities. Indeed, much of the existing research on disabilities and eLearning identifies similar problems with the current state of delivering education to students with disabilities. Course design has been highlighted as an area in which substantial re-working is required in order to equalise the opportunities for learning offered to both students with disabilities and non-disabled students. One study has suggested that disabled students need to be involved in the process of designing courses and course tools in order to ensure the needs of disabled students are met, arguing that course design should be:

> *… the result of a participatory design, involving domain experts, pedagogists, technologists, disability experts, support workers, and the final users… flexible, adaptable to the different typologies of disability, learner centered, based on individualized didactic* – Guglielman, 2010, pp. 33-34.

This report has demonstrated the complexity of implementing and delivering accessible courses. The main issues concern diversity within each disability type – that is, there is no single way in which mobility disabled students are encumbered by the education system. There are also concerns with regards to individual experiences – for example, a student that chooses to study online due to their need to use crutches to get around may also experience different challenges with online learning to a student with a mental illness or a cognitive disability, while another student may not experience any particular challenges as their mobility disability does not affect them in other ways.

6. Hearing impairment

6.1. Introduction

Hearing impairment and post-secondary education is one area in which substantial research has already been undertaken pertaining to the experiences, needs and implementation of best practices for educating hearing impaired students. For these students (who more heavily rely upon visual processing than hearing students), the experience of studying on campus can be overwhelming. As Long et al. (2011, p. 3) attest, deaf and hard of hearing students experience difficulties communicating with peers, teaching staff and administrative staff as they are "limited by communication-related challenges". Students who use sign language interpreters are limited by the time it takes to translate information from spoken word into sign language. All hearing impaired students are likely to be less involved in synchronous activities in the classroom due to the need for an interpreter or, for those who do not use an interpreter, because they are unable to easily hear what peers and teachers are saying.

However, hearing impaired students also face considerable challenges in the online classroom. As with other disability types, hearing impairment is complex and individualised. The needs of one hearing impaired student may differ greatly to another, owing to factors such as severity of hearing impairment, whether or not the condition causing hearing impairment is degenerative, and the presence of other disabilities, conditions or impairments. As Drigas et al. (2005, p. 1) write:

> *It is important to note that every student has his or her own individual needs. Although it is possible to 'measure' and describe a person's hearing ability in a variety of ways, understanding speech is a very complex process that can involve the eyes as well as ears and brain. It is therefore possible for a student with 'less' measured hearing to actually be able to understand what is being said better than another student who has 'more' measured hearing. Hearing disability can change over time, and can also involve tinnitus (hearing 'internally generated' sounds) or additional disabilities (e.g. visual).*

The problems that deaf and hearing impaired students face are often magnified in the context of eLearning. While students who, for whatever reason, cannot physically attend class on campus may find audio recordings of lectures and other classes of great benefit, students with hearing impairments are often overlooked. Many teachers do not prepare transcripts of lectures nor provide subtitles. Indeed, there no consistent way of disseminating course content, meaning that there is a great risk of hearing impaired students missing out on vital information and being left behind.

The World Wide Web Consortium (W3C) makes numerous recommendations for implementing standards in web design that make online content accessible to all people, regardless of the presence of a disability. On the topic of accessibility for hearing impaired users, they write:

> *Just as images aren't available to people who can't see, audio files aren't available to people who can't hear. Providing a text transcript makes the audio information accessible to people who are deaf or hard of hearing* – World Wide Web Consortium, n.d.

Interestingly, W3C also point out that transcripts don't just make audio tracks accessible to hearing impaired users, but also make audio files more accessible in general, as text is accessible "to search engines and other technologies that can't hear". Providing transcripts for audio tracks makes sense as it improves access to all materials for all users. However, transcripts are often not provided as the process of transcribing audio is seen as costly and time-consuming, despite the fact that tools do exist that can convert audio to text – albeit with varying levels of success.

The significant coverage given to hearing impaired students in literature means that best practices have been developed and discussed for many years, particularly as eLearning becomes more common. The challenge for course designers and platform developers lies in creating spaces that are equally and consistently accessible, both to non-disabled students and to those with myriad nuanced impairments:

> *The internet has proven to be a boon for people with disabilities. But just as it is important to design buildings with accessibility in mind, the same is true for the internet. Flexibility is the key to accessibility* – Drigas et al., 2005, p. 2.

Numerous recommendations have been made pertaining to the design of web spaces for hearing impaired individuals. These should include:

> *For any time-based multimedia presentation, synchronize equivalent alternatives with the presentation. A time-based presentation can include any form of multimedia, such as a movie, animation, or slide show. Equivalent alternatives to these types of presentation are captions (which provide access to audio tracks) and audio descriptions (which provide access to visual tracks)… However, it must be admitted that a text transcript alone is not the ideal method for providing an equitable experience for persons with disabilities. It is widely accepted that on-screen captioning allows for deaf and hard-of-hearing people to more fully appreciate the experience of a movie or multimedia presentation. A separate textual transcript that must be read after the fact does not provide an equivalent experience* – Drigas et al., 2004, pp. 2-3.

Other recommendations have been made for developing eLearning spaces that are accessible to hearing impaired students. Luo et al. (2012, p. 74) state that all students with disabilities have the potential to benefit from better, disability-aware teacher training, additional tutoring and/or assistance (in the case of a hearing impaired student, this may include access to an interpreter or transcriber), and accessible infrastructure, which should also include accessible web infrastructure. Lang (2002) further recommends that inclusive education for hearing impaired students needs to include cooperation between administrative and teaching staff to ensure access to disability support services, tutoring, interpreting, real-time captioning, note taking services, improved classroom participation opportunities, and effective teacher training.

6.2. Survey results

6.2.1. Demographics

This group was the fourth largest for responses to the survey with 34 students indicating in their responses that they have a hearing impairment. Students in this impairment group ranged between 21-82 years of age, with the average age being 48. The group was made up of 64.7% female and 35.3% male students.

Compared to all responses, students with a hearing impairment were more likely to have already completed a bachelor or graduate degree, and conversely are also more likely to have a less than high school degree level of education.

Q3: What is the highest level of school you have completed or the highest degree you have received?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than high school degree	17.6%	6	10.8%
High school degree or equivalent	11.8%	4	18.3%
Some college or university but no degree	41.2%	14	52.0%
Associate degree	0.0%	0	3.1%
Bachelor degree	14.7%	5	12.1%
Graduate degree	8.8%	3	3.7%
Other (please specify)		2	69
answered question		34	
skipped question		0	

A number of students (52.9%) with hearing impairment also identified as having one or more other disabilities. Of these, medical impairments were the most common, followed by mental illness.

Q4: What type of disability or impairment, if any, do you have?		
Answer options	**Response percent**	**Response count**
Hearing	100%	34
Vision	20.6%	7
Mental illness	23.5%	9
Learning	2.9%	1
Medical impairment	34.2%	12
Intellectual	2.9%	1
Mobility impairment	17.6%	6
Acquired brain impairment	5.9%	2
Other (please specify)		0
answered question		34
skipped question		0

6.2.2. Studying through OUA with a disability

The majority of students in this impairment group were in their first 3 years of study via OUA.

Q5: How long have you been a student through OUA?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than 1 year	17.5%	6	34.2%
1 year	23.5%	8	14.4%
2 years	23.5%	8	18.9%
3 years	17.6%	6	17.2%
4 years	5.9%	2	7.1%
5 years	5.9%	2	2.8%
6 years	2.9%	1	1.4%
7 years	0.0%	0	1.7%
8 years	0.0%	0	0.6%
9 years	2.9%	1	1.1%
10 years or more	0.0%	0	0.6%
answered question		34	
skipped question		0	

Most students were studying an Arts and Humanities course.

Q6: What is your chosen field of study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Arts & Humanities	64.7%	22	57.4%
Business	11.8%	4	13.3%
Education	2.9%	1	6.7%
Health	0.0%	0	5.5%
IT	5.9%	2	6.7%
Law & Justice	11.8%	4	11.0%
Science & Engineering	5.9%	2	5.5%
Not specified	5.9%	2	1.4%
Other (please specify)		0	
answered question		34	
skipped question		0	

6.2.3. Accommodations and disclosure

An equal number of students responded “yes” and “no” when asked if they were aware of the type of accommodations offered by unit providers giving them a much higher rate of awareness than the full survey response.

Q7: Are you aware of the type of accommodation that can be offered by the unit providers in relation to your disability/impairment to help with your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	38.2%	13	28.7%
No	38.2%	13	43.9%
Unsure	23.5%	8	27.3%
answered question		34	
skipped question		0	

Only 52.9% of the students reported that they had not received accommodations from unit providers. Again, this is a much lower rate than for the full survey response.

Q8: Have you received any accommodation in relation to your disabilities in relation to your study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
With all units of study	11.8%	4	6.6%
With most units of study	11.8%	4	7.5%
With some units of study	23.5%	8	16.1%
With no units of study	52.9%	18	69.7%
answered question		34	
skipped question		0	

Q9: Did you find this accommodation was adequate and appropriate?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes, always	5.9%	2	9.7%
Mostly	14.7%	5	10.3%
Sometimes	20.6%	7	9.2%
Never	5.9%	2	0.9%
Have not received any accommodation	52.9%	18	69.9%
answered question		34	
skipped question		0	

While in some cases students in this group were more likely to have disclosed their disability status to their enrolling institutions, in some cases none had done so. Overall they had a similar rate of disclosure to the full survey result.

Q10: Have you informed the institution(s) where you are studying that you have a disability?						
Answer options	**Yes**	**No**	**Have not studied with this institution**	**Response count**	**Percent disclosed**	**Full survey response**
Curtin University of Technology	12	6	12	30	67%	65%
Griffith University	11	4	12	28	73%	71%
Macquarie University	10	3	15	28	77%	66%
Monash University	0	1	23	24	0%	29%
RMIT University	3	3	21	27	50%	57%
Swinburne University of Technology	5	3	15	23	63%	58%
University of South Australia	5	4	16	25	56%	58%
Australian Catholic University	2	1	22	25	67%	46%
Charles Darwin University	0	2	21	23	0%	27%
La Trobe University	0	2	22	24	0%	11%
Learning Network Queensland	0	1	23	24	0%	38%
Murdoch University	8	2	15	25	80%	62%
Polytechnic West	0	1	23	24	0%	17%
The University of New England	1	1	22	24	50%	30%
The University of Western Australia	0	1	21	22	0%	44%
Other (please specify)				0		0%
Total response	**57**	**35**			**62%**	**60%**

None of these students reported not wanting to disclose their disability and they also had a higher awareness of any disclosure procedures.

Q11: When you have not disclosed that you have a disability to an institution, what are the factors that caused this?			
Answer options	**Response percent**	**Response count**	**Full survey response**
I did not think it would help	32.4%	11	51.8%
I did not know I could	8.8%	3	13.1%
I did not know how	5.9%	2	13.9%
I did not need any accommodation	20.6%	7	26.5%
I did not want any accommodation	5.9%	2	9.0%
I did not want to disclose my disability/impairment	0.0%	0	17.6%
Other (please specify)		10	
answered question		16	
skipped question		18	

6.2.4. Learning technologies

Students in this impairment group were more likely than average to use a desktop or tablet to access the internet for their studies. It is also worth noting that more than half of the students (52.9%) in this group used more than one device type when accessing online materials.

Q12: How do you access the internet for your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Desktop computer	58.8%	20	46.2%
Laptop computer	64.7%	22	74.9%
iPad / tablet	35.3%	12	27.3%
Smartphone	23.5%	8	23.9%
Other (please specify)		0	
answered question		34	
skipped question		0	

Unsurprisingly, given the increasing reliance upon audio recordings in online learning environments, students in this impairment group were more likely to have experienced problems with online learning platforms. This is particularly the case with the audio heavy platforms of the two lecture playback systems Lectopia and Echo 360 as well as YouTube.

Q13: Have you had any problems accessing online learning platforms due to your disability/impairment?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	29.4%	10	17.9%
No	67.6%	23	82.1%
answered question		33	
skipped question		1	

Q14: If yes, which platforms have you experienced difficulty with?								
Answer options	**Not used**	**No prob-lems**	**Minor prob-lems**	**Major prob-lems**	**Unusable**	**Response count**	**Prob-lems**	**Full survey response**
Moodle	13	4	1	0	0	18	20%	35%
Blackboard	3	10	3	2	0	18	33%	48%
Facebook	6	10	2	0	0	18	17%	21%
Twitter	12	5	0	0	0	17	0%	12%
Slideshare	16	1	0	0	0	17	0%	12%
Prezi	14	4	0	0	0	18	0%	17%
Lectopia	13	3	2	1	0	19	50%	40%
Echo 360 / Echo Centre	7	5	3	3	1	19	58%	49%
PDFs	2	13	2	0	0	17	13%	30%
Blogger	14	4	0	0	0	18	0%	25%
Wordpress	12	4	1	0	0	17	20%	16%
WebCT	16	2	0	0	0	18	0%	20%
YouTube	4	9	4	2	0	19	40%	21%
University websites	2	8	7	2	0	19	53%	43%
answered question						21		
skipped question						13		

6.2.5. Recommendations / future involvement

This group was also less positive about OUA as a place to study for students with a disability.

Q16: Would you recommend OUA as a place to study for people with disabilities?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	61.8%	21	75.9%
No	5.9%	2	3.1%
Maybe	32.4%	11	21.0%
answered question		34	
skipped question		0	

6.3. Interview responses

The number of students interested in participating further in this study was slightly fewer than many other impairment groups at just 58.8% (compared to 63.5% overall). Accordingly, the interview section of this study involved fewer participants than most other impairment groups. It may be that the normally auditory nature of interviews was a disincentive for this group of students to participate. Eight students participated in Skype or email interviews.

Interview participants were asked to provide specific details of their disability, listed below:

1. Degenerative hearing loss (and vision impairment)
2. Deafness.
3. Hearing loss (and cognitive, medical, mobility and vision impairments).
4. Partial hearing loss (and vision, mobility and medical impairments).
5. Genetic disorder causing degenerative hearing loss
6. Hearing impaired (and mobility).
7. Degenerative hearing loss
8. Bilateral hearing loss

6.4. Interview responses: *accessibility*

6.4.1. How does your disability impact on your daily life?

Hearing impaired students reported a variety of ways in which their disability affects everyday life. For some students, daily life was most affected by hearing impairment, while those students who reported multiple disabilities experienced a range of difficulties relating to each:

> *"I have a moderate, degenerative hearing loss believed to be a consequence of a cerebral hemorrhage I suffered at 24 hours old. This has also resulted in no vision on the right side of both my eyes, meaning I can't drive and am a bit clumsy! My hearing is very slowly degenerating and I wear two hearing aids and have no high-pitch sound and moderate speech sound difficulties."*

> *"… I am hearing impaired. This means that I am restricted in what I can do socially, and I find it difficult to hear or watch things without subtitles."*

> *"I am 65% deaf due to a genetic disorder. It can be corrected and I am waiting for my turn to get the operation completed. As this is a degenerative condition I have noticed that my hearing*

is getting exponentially worse in shorter periods of time i.e. my deafness is becoming worse quicker than previously. This doesn't really effect my day to day life except that I can see some people become aggravated when I ask them to repeat themselves which is sometimes uncomfortable and I find myself explaining to them my condition which is also quite tedious at times."

"I have pulmonary fibrosis, osteoporosis and arthritis and venous insufficiency making me high risk for DVT and pulmonary thrombosis – I have survived three double near total blockage double lung PE's, two of these in the last two years. My fingers are twisted with arthritis and that makes it difficult to hit the correct key an a keyboard, even if I could see it clearly. I am partially hearing (I cannot differentiate between similar sounds) and sight impaired. Despite these, I am able to work and study from my own home."

"Deficits in working memory, chronic pain, cardiac disorders, hearing loss, vision impairment."

"I have a hearing disability and must wear hearing aids in order to hear properly. The greatest difficulty is background noise."

"Hearing impaired in both ears, 70% bilateral loss. Difficulty with hearing and communicating with people, generally have trouble hearing sounds from most devices around home etc."

"I am deaf (not profoundly), wear two digital hearing aids, and struggle to follow conversations in noisy environments. I lip read, but obviously have to see the speaker for that. I have been losing hearing since I was a child but it is getting worse as I get older. I am now 58 y.o. My family and friends are used to me asking them to repeat themselves, but it gets embarrassing sometimes with people who don't know me."

6.4.2. How does your disability impact on your study?

Students were asked to reflect upon the ways in which their disability affects their study. For hearing impaired students, the necessity to listen to audio recordings of lectures, tutorials and other learning experiences (such as Collaborate sessions) was most problematic:

"I find online tutorials difficult sometimes, but tutors are generally very good if I let them know I am struggling. I rely quite a lot on written material and some lecturers provide their lectures in writing which helps also. The power point presentations help too to give some context to what they're talking about – it's much easier to hear and understand if I have some context beforehand."

"In the cases where there are recorded lectures, it is difficult for me to tell what is being said."

"Low cognitive recall, difficulty with focus, difficulty hearing lectures."

"Sometimes I find it hard to hear or understand some of the lectures and collaboration sessions."

"Not usually, but sometimes I have trouble hearing and/or understanding the lectures because of poor resolution (can't lip read) or poor sound quality (ie. lecturer walks around the lecture theatre but the microphone appears fixed)."

One student reflected upon the fact that, without written instructions or an interpreter in an invigilated exam, hearing instructions prior to the examination taking place was impossible:

"The only issue I have is when I am in a face 2 face situation. Today I did my exam and couldn't hear a word of what the invigilator was saying although I was sitting up the front. I know the

exam rules so not a big issue; however, if something important was said then I would have no idea what it was. Completing online is far better for me than attending lectures etc which I have tried at other universities without much success although they were aware of the issue – again the face 2 face conversation problem."

Another student worried that they were missing out on important information pertaining to assessments by not being able to listen to the lecture:

"I worry that I will incorrectly interpret assignments. I read carefully, multiple times and this unit I am asking questions about anything I am not certain of."

6.4.3. In terms of online learning and teaching technology – what works well and what doesn't?

Students in this impairment group praised the fact that platforms like Blackboard primarily present content in text-based form:

"Blackboard works brilliantly for me as everything is written! I can refer back to things and everything is generally easy to find and submit. Facebook is helpful with peer support and general engagement with other students."

"Most platforms work fine for me, the only issue being quality of sound recording."

"I have used Moodle a lot a find it fairly easy to navigate. I am finding blackboard equally easy but have only been using it for a short period of time."

Repeatedly, hearing impaired students indicated that having access to text transcriptions of audio content was vital to successful learning:

"Having a transcript of all verbal communication such as lectures helps immensely."

"The best platform for me is visual as I can read and see what is required."

Many students experienced general problems with the university-supplied platforms, particularly those that were difficult to navigate or provided low quality audio. This was especially true for students who were also vision impaired or experienced cognitive problems:

"Blackboard and Moodle... too difficult to find all the required materials on the site. Way too many windows and usually very poorly structured for ease of use."

"I have a problem with Blackboard Learn, in that it's really hard to navigate, but that's not disability related."

"Some lectures and collaboration sessions."

"The use of sound based learning material for me is not suitable as I cannot turn up the headphones loud enough for me to hear (complaints from family & neighbours when using speakers)."

"The sound quality of some of the recorded lectures isn't great, as mentioned above."

6.4.4. In terms of teaching and instruction methods – what works well and what doesn't?

Many students found that eLearning environments such as Blackboard, which are heavily text-based, worked well for their needs:

> *"Blackboard works really well as a reference tool and a communication hub. I can contact students and staff with written questions and responses and so my hearing is not a factor at all. The general fact that the course is online is a massive bonus for me, as I don't drive and have two small children I wouldn't be able to study in a conventional manner."*

> *"I prefer readings to recordings for obvious reasons, and chatrooms also work well."*

> *"Visual as I am able to read and see what is required."*

Simply providing transcriptions of lectures does not offer hearing impaired students an equal opportunity to experience the lecture, as visual content often makes up a significant component of the learning experience. One student preferred lectures that were audio–visual in nature (i.e. including a video of the lecturer), instead of just audio tracks with visual content:

> *"Video lectures where I can lip-read the lecturer. It is also more entertaining than having to read endless pages of lecture materials."*

For other students, transcriptions and/or lecture slides were an adequate substitute for an audio track:

> *"The transcripts for lectures has worked really well for me in the past but not all units provide this."*

> *"I like to be able to print the lecture notes or slides because if I can't hear the lecturer, I can still follow what they are saying. If I have to transcribe my own notes (which I can sometimes do) it is trickier if the sound quality isn't good."*

Indeed, many students appreciated the opportunity to read and re-read content in their own time:

> *"I prefer to read and digest information over a period of time so being able to re-read modules etc I found works well for me."*

> *"Being allowed to work in my own time, in the middle of the night mostly when there are no distractions for hours. Having everything accessed online on a website free of flashy or distracting colours. Dr Leanne McRae gave an ideal video introduction to the course; I understood every word she said. Two years ago, when I completed and passed a unit, I was part guided through the course by echo theatre videos that I could not understand audibly. I followed the text, and I passed that unit, so no problems."*

Some students experienced problems with teaching methods that required real-time audio-based participation, again highlighting issues such as a lack of subtitles:

> *"I haven't really found anything to be a problem. Only collaborate sessions sometimes due to the quality of the voice-over or possibly if the internet connection is playing up it makes lip-reading difficult on the video."*

> *"Lecture recordings and videos are problematic if they don't have subtitles."*

> *"Sound based teaching and instruction methods, struggle to hear the lesson."*

> *"Not being able to print the lecture notes or no notes provided. Guest lecturers (great to hear their stories) because I can't get used to (tune into) their voice patterns."*

6.5. Interview responses: disclosure of disability

Students in this impairment group had, for the most part, disclosed their disability to OUA and/or unit providers. However, students appeared somewhat more reluctant to do so, based upon their responses to the interview questions. Further, many indicated that disclosing a disability had not had any benefit to their ability to study.

Drigas et al. (2005, p. 2) note that, in the context of the workplace, hearing impaired individuals often experience less success due to "an inadequate estimate of the performance abilities of the deaf and, secondly, the communicative problems between deaf and hearing colleagues". This finding was reflected in the response of one student:

> *"Being a hearing disability, it is often easy for people to assume that you don't understand something when you ask for them to repeat something, not simply because you didn't hear it. I thought being upfront would minimise any issues I came across later in the course of my studies if the University (and OUA) were aware early on that I could have difficulties."*

Whilst most students acknowledged that they had not yet accepted accommodation from unit providers, they chose to disclose their disability just in case accommodation was required in the future:

> *"In case I needed to take an invigilated exam, and so I could request subtitles or transcripts if necessary."*

> *"The lady on the phone said I should just in case it becomes an issue."*

> *"To allow for academic accommodations to be made."*

> *"It was when I first enrolled with OUA and thought it may impact me at some point."*

> *"I worked in HR in a UK University for a long time, and know that help is only available if the University knows you need it."*

A couple of students chose not to disclose their hearing impairment, however. For one student, this was a matter of financial hardship – a factor that is potentially increased by the need to repeatedly disclose to all enrolling institutions, rather than simply disclosing one time to OUA:

> *"My doctor wanted $90 to sign the form, on top of his consultation fee, and that without a receipt for service."*

Another student found that, by working with her abilities, she was able to fully participate in learning without having to disclose her disability to OUA or universities:

> *"No need for me to let anyone know at this point in time as I have not yet experience sound only based lessons, it has always been text book & online literature. Sound based material is usually lectures, which I can work around using unit modules/topics."*

Those students who had disclosed their disability were, for the most part, of the opinion that disclosing had made little difference to their learning experience:

> *"I don't really feel that it has made a difference."*

"Not really."

"No mainly because I have to cope with it in the real world so I have not asked for any assistance to date."

Again, one student reported that they experienced discrimination from a university, despite having disclosed a disability:

"It has for MQ, for other campuses absolutely not. Especially UNE who was of the belief that I had forged my medical documents when I indeed sent them a scanned copy of the original by my doctors."

One student had mixed results when requesting accommodations:

"I have needed help twice, but it only worked once. I needed help getting lecture notes when I couldn't understand a guest lecturer, and they were transcribed and provided for me."

While another student found that the assistance provided was inadequate for her particular needs:

"I had a written exam through one Uni and because of my disability I was put with other students with special needs, in an enclosed area off to one side of the main lecture room. I couldn't see the person making announcements (so I couldn't lip read) and I couldn't hear him! I was too embarrassed to say anything – didn't know when was the right point – so followed what the other students did. When I came to leave, the convenor didn't want me to leave because I had been allocated extra time! I let the Disability Officer at Uni know what had happened and she apologised and investigated."

6.6. Interview responses: future directions

6.6.1. Have your learning experiences changed your future study choices?

While four students in this impairment group said that their learning experiences has either not changed their future study choices the other half of the group felt that their learning experiences through OUA had made them better positioned to make decisions about future study choices:

"Yes, I am unlikely to wish to study with Macquarie University if possible, as the course done with them had bad sound quality and no subtitles on lecture recordings."

"Yes. Although not so much the units more the method of study."

"I have more confidence in choosing a unit from Curtin University having already completed a unit with them. I found the Griffith university website difficult to navigate and a near absent tutor after the first week. I dropped out of that course as they even put up incorrect information about assignments. I did my assignment early and I had to redo it, because they changed the assignment. The rephrased assignment was so badly worded that none of the students could understand what was required. I rewrote the assignment instructions with clarity and asked the tutor if that was what was meant? It was. The standard of tuition just got worse – I quit."

"Absolutely! It is due to this that I prefer to keep my study with Macquarie."

6.6.2. What are your biggest challenges?

For some students, the biggest challenges they faced were directly related to their disability/ies:

"Hearing issues, time management, and unclear essay guidelines."

> *"Vision and hearing and time management will be huge issues but new I believe I will manage. I want to learn and I wish to complete this course. I'm not normally a quitter, but I have quit previous classes, as in the Griffith University core units I mentioned."*

> *"Institutions willing to accommodate my disabilities."*

> *"Some of the lectures have been of a poor quality compared to others and it can make it hard to hear clearly what has been said."*

Other students, however, experienced similar challenges to all students, not just those with disabilities:

> *"Finding time! My hearing doesn't really affect my study so far, but finding time around full time work and two small children certainly does!!"*

> *"Managing study/life/work commitments."*

> *"Fitting work and family around my study – the same as everyone I think!"*

6.6.3. What would you change to make study easier?

Amongst this group of participants, the most common change that could make study easier was the provision of written content to substitute inaccessible audio content:

> *"If all lectures were given in a written format, even a summary. I believe this would help for any gaps I sometimes get in missing points during the lecture. I don't always ask for something to be repeated if it will stop the flow of the lecture or the tutorial, so I do miss things."*

> *"I'd make subtitles mandatory for any videos, and transcripts mandatory for recordings, and have clearer instructions for essays."*

> *"Accommodations should be made universal amongst all campuses and institutions made aware of these on enrolment."*

> *"Ensuring there is a transcript of lectures for all units at the minimum."*

6.6.4. What other recommendations would you make?

Finally, students were asked to recommend any further changes and to comment on any other issue they felt was important relating to the study. Most students chose not to answer this question. However, one student suggested that disabled students should only need to disclose their disability once, to OUA, who would then be responsible for informing unit providers. Another student expanded upon earlier requests for better quality audio recordings and the provision of written materials:

> *"Provide assistance to the lecturers when they are recording the lectures to make sure the volume is good, and give them portable microphones so it doesn't matter if they walk around the stage. If someone in the audience asks a question, provide a transcript if possible."*

6.7. Conclusion and summary

While eLearning environments offer hearing impaired students "shared experiences that far exceed the limited experiences a university can offer locally" (Smith & Allman, 2010, para. 22), significant improvements must still be made to make OUA-affiliated courses truly accessible to hearing impaired users. At the most basic end of the scale, students should have access to transcriptions of lecture recordings and other audio content, such as Collaborate sessions and other real-time web-

based instruction methods. Ideally, subtitles should be used to allow hearing impaired students to better appreciate audio–visual content, while it is imperative that hearing impaired students who use sign language are provided with (at best) interpreters or (at least) written instructions during the instruction period of invigilated exams to ensure that no vital information is missed.

The hearing impaired group made up a relatively small portion of the overall participant group in this study and, as such, are not as well represented in this report as other impairment groups. However, pre-existing research into the needs of hearing impaired learners is extensive and must be taken into consideration when developing accessible eLearning environments and strategies.

7. Learning disability

7.1. Introduction

Learning disabilities have contested definitions, but can be widely interpreted to consist of difficulty with reading, writing and/or calculating (Büttner & Shamir, 2011). This category includes relatively common conditions such as dyslexia which is present in approximately 10% of the Australian population (Australian Dyslexia Association, n.d.), and attention deficit hyperactivity disorder (ADD/ADHD) which is present in 11.2% of children and adolescents in Australia (Australia Department of Health, 2000).

According to Büttner and Hasselhorn (2011) 4-7% of school age children are diagnosed with a specific learning disability. Learning disabilities are often framed in terms of developmental problems and, in many cases, the incidence of these impairments declines as people age (Australia Department of Health, 2000). However, in many cases the impacts of this impairment type can continue throughout people's lives.

Sparks and Lovett (2013) observed that, of the increasing numbers of students with disabilities enrolling in universities, the largest group of these were students with a learning disability. While neither the survey results nor the figures collected through enrolments identify this as the case at OUA, with only 0.5% of students enrolled identifying as having a learning disability, this may indicate that this is a larger impairment group in other settings. Given the specific challenges these students face – as is illustrated in the literature and in the results below – making eLearning accessible for this group should be seen as a priority.

Heiman and Shemesh (2012) found that students with learning difficulties, particularly ADD/ADHD, report numerous emotional and organisational challenges as part of higher education studies – much more so than their non-learning disability peers. Keeler and Horney (2007) also found a general lack of support and preparedness for students with learning disabilities. Denhart (2008) similarly identified a number of barriers students with learning disabilities face with regard to education, including "(a) organizational concepts for reading and writing, (b) oral and written comprehension, (c) verbal communication, and (d) having different ways of thinking than nonlabeled peers" (p. 490). Denhart (2008) also observed that while a greater number of students with learning disabilities are enrolling in post-secondary education, the dropout rate is still high compared to the general student population. Denhart identifies that students with learning disability are often misunderstood, are required to work harder than their non-learning disability counterparts, and are more reliant upon strategies for success. She also observed that they tend to be more critical of their abilities than other students, and that there was a stigma associated with the learning disability label that these students had to face. Like many other impairment types, learning disabilities are often seen through the lens of a medical rather than social model of disability (see Collinson & Barden, 2016).

However, Heiman and Shemesh (2012) found there were positive opportunities for this group of students in online learning. They noted that the asynchronicity of online courses/web-based materials increase opportunity for analytical reflection and contribution to courses and offer opportunity for increased socialisation amongst learning disability students who may otherwise struggle in class. They observed that students with learning disability were found to make better use of online content than those without learning disability and were found to have "an increased drive to attain their goals and were motivated to pursue those goals" (p. 315).

Unlike some of the other impairment types that were heavily represented in the survey, a number of authors have identified strategies that can be deployed to make learning easier for students with this impairment type (see Cowen, 1988; Cook & Gladhart, 2002; Denhart, 2008; Simoncelli & Hinson, 2008). Cowen (1988) found that previously identified strategies – such as using a reader, recording

lectures, and asking for extra time – were under-utilised by students and that instructors were often unable to offer adequate assistance or support. However, authors have suggested a number of teaching and learning strategies that can be used to better include this group of students. These include – from Cook and Gladhart (2002):

- No distracting content (blinking/flashing).
- Screen-readable forms and pages.
- Little use of external software/plug-ins that can cause confusion or distraction.
- Easily navigable content and links.
- Warnings if responses to exams/tests are timed.
- Labelled images/visual content.

And from Simoncelli and Hinson (2008):

- The information to be presented in more than one way to accommodate different types of learners and learner abilities.
- The opportunity for students to present information in a variety of ways (i.e. not just written word or not just visual, etc).
- A variety of means of engaging and challenging students.

Cook and Gladhart (2002) have observed that many of the technologies that are available for students with vision-related disabilities are can also be useful for students with learning disabilities such as screen readers and voice-to-text software. While there are challenges for this group, eLearning also represents a great opportunity if well implemented.

7.2. Survey results

7.2.1. Demographics

This group represented the fifth largest group by number of respondents to the survey, with 29 of the 352 respondents – or 8.7% – identifying as a person with a learning disability. This group is significantly under-represented in the overall student body at OUA, making up less than 0.5% of enrolled students. There was a noticeably higher representation of men in this impairment category, making up 37.9% of respondents (with one preferring not to answer) as opposed to 27.5% in the overall survey. This is consistent with the greater prevalence of impairments such as ADHD in men (Australia Department of Health, 2000). However, the learning disability sample had a similar response to the overall survey in relation to educational background.

Q3: What is the highest level of school you have completed or the highest degree you have received?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than high school degree	11.5%	3	10.8%
High school degree or equivalent	23.1%	6	18.3%
Some college or university but no degree	57.7%	15	52.0%
Associate degree	3.8%	1	3.1%
Bachelor degree	3.8%	1	12.1%
Graduate degree	0.0%	0	3.7%
Other (please specify)		7	69
answered question		26	
skipped question		3	

Again, there was significant overlap between impairment groups, with nearly a third of people with a learning disability also identifying as having a mental illness. This is consistent with Denhart's finding that many students with learning difficulties have "high rates of loneliness, despair, depression, anxiety, and low self-esteem" (2008, p. 485).

Q4: What type of disability or impairment, if any, do you have?		
Answer options	**Response percent**	**Response count**
Hearing impairment	3.4%	1
Vision impairment	10.3%	3
Mental illness	31.0%	9
Learning disability	100.0%	29
Medical impairment	10.3%	3
Intellectual disability	6.9%	2
Mobility impairment	13.8%	4
Acquired brain impairment	0.0%	0
Other (please specify)		6
answered question		29
skipped question		0

7.2.2. Studying through OUA with a disability

Students with a learning disability had a noticeably different profile when it came to time spent at OUA, with more than 60% clustered in the less than 1 year category, nearly more than twice the number at this early stage when compared to the total survey result. This may reflect the difficulty this group have been shown to have in completing studies in this environment as identified by Denhart (2008).

Q5: How long have you been a student through OUA?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than 1 year	62.1%	18	34.2%
1 year	10.3%	3	14.4%
2 years	6.9%	2	18.9%
3 years	6.9%	2	17.2%
4 years	3.4%	1	7.1%
5 years	3.4%	1	2.8%
6 years	6.9%	2	1.4%
7 years	0.0%	0	1.7%
8 years	0.0%	0	0.6%
9 years	0.0%	0	1.1%
10 years or more	0.0%	0	0.6%
answered question		29	
skipped question		0	

These students tended to favour studies in Business and Education and were less attracted to the Arts and Humanities than other survey respondents.

Q6: What is your chosen field of study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Arts & Humanities	51.7%	15	57.4%
Business	20.7%	6	13.3%
Education	10.3%	3	6.7%
Health	3.4%	1	5.5%
IT	6.9%	2	6.7%
Law & Justice	3.4%	1	11.0%
Science & Engineering	6.9%	2	5.5%
Not specified	3.4%	1	1.4%
Other (please specify)		0	
answered question		29	
skipped question		0	

7.2.3. Accommodations and disclosure

Students in this category were less aware of the accommodation that could be offered in relation to their impairment, and had been noticeably less likely to receive any accommodation.

Q7: Are you aware of the type of accommodation that can be offered by the unit providers in relation to your disability/impairment to help with your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	24.1%	7	28.7%
No	48.3%	14	43.9%
Unsure	27.6%	8	27.3%
answered question		29	
skipped question		0	

Q8: Have you received any accommodation in relation to your disabilities in relation to your study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
With all units of study	0.0%	0	6.6%
With most units of study	3.6%	1	7.5%
With some units of study	17.9%	5	16.1%
With no units of study	78.6%	22	69.7%
answered question		28	
skipped question		1	

When accommodation was provided, it seems to have been far less effective than that reported by the overall survey results.

Q9: Did you find this accommodation was adequate and appropriate?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes, always	0.0%	0	9.7%
Mostly	7.4%	2	10.3%
Sometimes	18.5%	5	9.2%
Never	0.0%	0	0.9%
Have not received any accommodation	74.1%	20	69.9%
answered question		27	
skipped question		2	

While there are problems with accommodation offered to this group, they are more likely to have disclosed that they have a disability to the various institutions through which they are studying. This contrasts with the findings of Newman and Madaus (2015) that students with this impairment type have a low rate of self-disclosure, and were less likely to disclose their disability than students with a physical disability.

Q10: Have you informed the institution(s) where you are studying that you have a disability?						
Answer options	**Yes**	**No**	**Have not studied with this institution**	**Response count**	**Percent disclosed**	**Full survey response**
Curtin University of Technology	7	5	8	20	58%	65%
Griffith University	10	2	9	21	83%	71%
Macquarie University	3	4	12	19	43%	66%
Monash University	1	0	17	18	100%	29%
RMIT University	3	0	16	19	100%	57%
Swinburne University of Technology	4	2	14	20	67%	58%
University of South Australia	3	4	12	19	43%	58%
Australian Catholic University	3	0	17	20	100%	46%
Charles Darwin University	1	1	15	17	50%	27%
La Trobe University	1	0	17	18	100%	11%
Learning Network Queensland	1	0	17	18	100%	38%
Murdoch University	2	2	15	19	50%	62%
Polytechnic West	1	0	17	18	100%	17%
The University of New England	1	0	17	18	100%	30%
The University of Western Australia	1	0	17	18	100%	44%
Other (please specify)				4		0%
Total response	**42**	**20**			**68%**	**60%**
answered question				27		
skipped question				2		

The reasons for not declaring their disability to the institution they are studying in seems to support the above findings that students were not aware of accommodation offered, and that they did not think it would be useful. Another feature of this response is that this group indicated that both not knowing how to request accommodation and not feeling they needed accommodation were significantly lower barriers compared to the full survey response.

Q11: When you have not disclosed that you have a disability to an institution, what are the factors that caused this?			
Answer options	**Response percent**	**Response count**	**Full survey response**
I did not think it would help	57.1%	12	51.8%
I did not know I could	19.0%	4	13.1%
I did not know how	4.8%	1	13.9%
I did not need any accommodation	9.5%	2	26.5%
I did not want any accommodation	9.5%	2	9.0%
I did not want to disclose my disability/impairment	19.0%	4	17.6%
Other (please specify)		9	
answered question		21	
skipped question		8	

7.2.4. Learning technologies

Students with a learning disability were less likely to use all devices except mobile phones. This would seem to indicate that they are less likely to use multiple devices in relation to their study than respondents to the full survey.

Q12: How do you access the internet for your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Desktop computer	37.9%	11	46.2%
Laptop computer	69.0%	20	74.9%
iPad / tablet	13.8%	4	27.3%
Smartphone	24.1%	7	23.9%
Other (please specify)		1	
answered question		29	
skipped question		0	

This group reported significantly higher levels of problems associated with using online learning platforms, with the Blackboard learning management system standing out as a platform that was difficult, albeit exclusively in terms of minor problems.

Q13: Have you had any problems accessing online learning platforms due to your disability/impairment?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	28.6%	8	17.9%
No	71.4%	20	82.1%
answered question		28	
skipped question		1	

Q14: If yes, which platforms have you experienced difficulty with?								
Answer options	**Not used**	**No prob-lems**	**Minor prob-lems**	**Major prob-lems**	**Unusable**	**Response count**	**Prob-lems**	**Full survey response**
Moodle	13	2	1	0	0	16	33%	35%
Blackboard	3	4	8	0	0	15	67%	48%
Facebook	4	9	1	0	0	14	10%	21%
Twitter	9	4	1	0	0	14	20%	12%
Slideshare	14	0	0	0	0	14		12%
Prezi	12	2	0	0	0	14	0%	17%
Lectopia	14	0	0	0	0	14		40%
Echo 360 / Echo Centre	9	3	2	0	0	14	40%	49%
PDFs	2	8	3	0	0	13	27%	30%
Blogger	12	1	1	0	0	14	50%	25%
Wordpress	13	1	0	0	0	14	0%	16%
WebCT	14	0	0	0	0	14		20%
YouTube	5	8	1	0	0	14	11%	21%
University websites	2	8	4	2	0	16	43%	43%
answered question						18		
skipped question						11		

7.2.5. Recommendations / future involvement

Despite the problems the survey illustrated with accommodation and accessibility of online learning platforms for this group, they were very supportive of OUA as a place to study. Students offered a higher rate of endorsement of the institution and none responded that they would definitely not recommend OUA as a place to study.

Q16: Would you recommend OUA as a place to study for people with disabilities?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	82.8%	24	75.9%
No	0.0%	0	3.1%
Maybe	17.2%	5	21.0%
answered question		29	
skipped question		0	

This group of students were also noticeably more interested in being involved in the interview stage of the research, even more so than students with mental illness, with 72.4% responding positively to Question 17 as opposed to the overall survey response rate of 63.5%.

7.3. Interviews responses

Eight people responded to the interview request. All chose to provide written responses to the interview questions. Five of the respondents identified as people with dyslexia, one with ADD, and two identified more broadly as having a learning disability. Two of the interviewees reported having multiple impairments. More specifically, the respondents identified their specific impairment type as listed below:

1. Dyslexia.
2. Dyslexia.
3. Dyslexia.
4. Dyslexia (and mental illness).
5. Dyslexia (and mobility).
6. ADD.
7. Not specified.
8. Not specified.

7.4. Interview responses: *accessibility*

7.4.1. How does your disability impact on your daily life?

The interviews showed a common theme of the problems of comprehension and word processing associated with dyslexia:

> *"I am dyslexic I can only read word I know so to Google impairment to know what it meant but after the computer read the work I had heard it before and know what it means. I just did not remember the word."*

> *"My disability is a type of dyslexia that prevents me from processing the words I see to memory. I have to work at the text, maybe read it five to ten times, enlarge the text, colour the text in a range of colours depending on the importance rating of the sentence, phrase or word. I need also to highlight in numerous highlight colours mingling with the varying text colours. Only then does it begin to penetrate my mind. I need also to get the text read out loud, with some form of TTS program."*

> *"I am Dyslexic I have a constant problem writing things down correctly."*

> *"I have learning problems one being dyslexia – these issues are long term and affect me when it came to everyday living."*

And problems associated with ADD:

> *"I have ADD. I don't like sitting around for long periods of time, get bored easy & get bored or frustrated on hard topics I don't understand. I went to a top 5 uni so this is more about how I am taught & learn information."*

As well as learning disabilities more generally:

> *"I have a learning disability which means I take longer to read and understand things at slower pace."*

7.4.2. How does your disability impact on your study?

These more general problems also transferred to people's studies, particularly in terms of time to complete tasks, the use of AT, and the impact of different techniques used in learning and teaching:

> *"… it takes me longer to grasp what I have to do."*

> *"There was no problem when I started OUA at Griffith 2012. Weekly texts were in PDF (user friendly) or Word. When I moved my OUA to Curtin I fell into serious problems due to the PDF text being locked to an Adobe Digital Editions or similar Reader, which did not permit the latitude for coping with my disability needs."*

> *"… trouble joining in discussion."*

7.4.3. In terms of online learning and teaching technology – what works well and what doesn't?

The interviewees highlighted a number of online teaching and learning technologies they found useful:

> *"The course audio lectures over Echo 360 have been delightful."*

> *"Online courses via black board. Online exams via blackboard. I also like the Internet for research."*

> *"Google, Youtube, Facebook, Oasis and discussion boards on Blackboard in regards to making a new post."*

> *"… echo through Murdoch."*

> *"… email is good as responses not required as swiftly. Blackboard Ok as can use SMS shorthand. Haven't used Moodle or SlideShare. Not a big Twitter follower. Using Facebook groups probably no more effective than the discussion boards already in use via Collaborate (Blackboard)."*

> *"I only use the OUA or University platform Blackboard. That has had its problems apart from my own, but this last term in MQ, blackboard has not been a problem because MQ Health and Wellbeing department has approved Library Conversion Department to convert all the text I need converting into Word. I don't need anything better (for the moment)."*

They also highlighted technologies that caused them problems. As with other impairment types, some of the same technologies, notably Blackboard, were seen as being both beneficial and a problem, often by the same person:

> *"I have big problems with black board. Not all students write in sentences and when the computer reads words it does not correct spelling or bad grammar."*

> *"All working so far although chat function in Blackboard can sometimes require speed which I have trouble keeping up with."*

> *"Oasis and Blackboard Discussion boards."*

> *"… accessing the library at Murdoch."*

"I have problems when the books we are asked to read are photocopies and I cannot get the computer to read them, also when the books have security codes on them that prevents adobe from reading them. I do not like the way e reader read only one word and line at a time. If you have ever had to listen to one it will drive you insane."

"Anything live like hangout or the OUA tutoring service."

Other students independently sought out available solutions:

"Grammarly.com has been a reputation saver. It is far from perfect and does not replace having studied grammar so you know if the errors it picks up are correct or not. I use an inexpensive app, Read4Me the listen to what I have written. It picks up the dyslectic typos of M instead of W, and E instead of O (I use a Dvorak keyboard as it is the kindest to joints and tendons) but unfortunately places the M and W side-by- side."

7.4.4. In terms of teaching and instruction methods – what works well and what doesn't?

The students highlighted a number of learning and teaching experiences that they found beneficial:

"I really did like WEB101 where the lecturer posted a weekly talk. It gave me a base to understand what was being asked to do that week. It also allowed me to hear how to pronounce name of thing and to see what he was asking.

I also liked APC 100 where it was a step by step task and each question and task was set out not hidden in a sentence."

"Love having assessment requirements available early so I can focus the learning exercises. Having lecture slides available in advance helps lesson planning. Lecture 'videos' a good idea as are playbacks of Blackboard Tutorial Sessions."

"Visual person & go at own pace due to my heavy work load."

"…emailing my tutor or coordinator."

They also highlighted some problems that they had experienced. According to Cowen (1988, p. 164), many students felt that their coping strategies worked during personal study time but were inadequate during exams. However, notably, the people interviewed in this impairment category did not mention assessment design in relation to this question:

"I disliked when we are asked to go find things on the internet. If we were given a site or book it is in, not just a word."

"I can't study in a group because of my mental issues yet studying on my own is just as difficult coz of my learning disability."

"Having to be online weekly. Compulsory comments. Live hangouts. Having to fly regularly to another state to learn."

"Reading the online material notes."

7.5. Interview responses: disclosure of disability

Reflecting the survey results, six of the seven students interviewed indicated that they had disclosed their disability to the institution at which they were studying. It seems that, for many, this was for practical reasons aimed at receiving some form of accommodation in relation to their disability:

> *"No point hiding it and I may need access to support from time to time."*
>
> *"… if I did not tell OUA about my disability I would fall behind in the class."*
>
> *"One does not know what to expect from a course till one is face to text with it. And if the text is in a format I cannot manage, which was evident from the first day, I had to get help."*
>
> *"I did this to gain information for study that I don't understand how to obtain. It was useful as I was able to see the problem in a new and different light."*

According to Denhart (2008), some students also reported that when informing instructors of their learning disability, they were not believed/supported by instructors who felt the student was using this as an excuse. This was also reflected in responses to this question:

> *"Sometimes people just do not understand. They think because I cannot read I am illiterate. But I can read and I can remember a lot of things."*
>
> *"No. It is often hard to explain why I know so much and so many word that I can write words that I cannot read. The computer will correct a word or I look it up then the next day I have to do it again as I just do not know how to spell it.*

7.5.1. Have your learning experiences changed your future study choices?

There were not many responses to this question in the interviews, and where there were they were quite contradictory:

> *"Yes because I work full time, run my own business – online studying can be overwhelming dependent on how I'm taught."*
>
> *"No I have just sort help to get things done. I have hired tutors to help me."*

7.5.2. What are your biggest challenges?

Most of those interviewed linked this question directly back to their learning impairment:

> *"I don't know. I don't know myself without my specific disability. Even earlier in life I would not have done better. I would not have even done it, as there was no computer, IT, Wi-Fi, On line lectures, discussion groups. and digital programs to assist."*
>
> *"Understanding scholarly words."*
>
> *"Referencing in the correct format is probably the biggest challenge."*
>
> *"Not keeping up with every one and failing my courses."*
>
> *"I have a bad habit of skim reading my notes and then emailing the tutor for answers. When I read the material again I find I need to redo my work."*

7.5.3. What would you change to make study easier?

Only a few of the interviewees offered responses to this question:

> *"I believe if I lived near a uni and could attend classes I could do better. I just do not know why I am dyslexic. The universe thought I needed a challenge?"*

7.5.4. What other recommendations would you make?

Again there were only a few recommendations or reflections from this group of interviewees:

> *"Clearer notes written with a bit more plain English to describe the exercise at hand."*

7.6. Conclusion and summary

From the survey results it seems that finding effective accommodation is a problem for this group. They are less likely to be aware of any accommodation and are less likely to receive accommodation than the rest of the survey respondents. Compounding this, when accommodation is received it is less likely to be adequate and appropriate. Conversely, this group did not feel that accommodation was without value, with only 9.5% feeling it was a barrier to disclose their disability to the institutions where they are studying – this is compared to 26.5% for the total respondents to the survey. Developing more effective accommodation process for this type of impairment should therefore be a priority.

Newman and Madaus (2015) identified numerous factors which influence learning disability students' receipt of accommodations, including:

- Self-determination.
- Preparation and planning for the high school to university transition.
- Type of disability.

They found that students with learning disability often avoid engaging disability support services because of "Fears of stigma, discrimination, and professors' attitudes" (p. 210), something which has been reflected across the board regarding students with disabilities. However, students who disclosed details of disabilities generally performed better than those who did not. This bodes well for this group of students at OUA, as despite the limited value of accommodation available to the students, the survey indicates a relatively high level of disclosure – albeit counter to the findings of both Newman and Madaus (2015) and Simoncelli and Hinson (2008).

Another area of concern raised by the survey result was the very high concentration of respondents in first year. Simoncelli and Hinson (2008) observed the high likelihood that students with a learning disability drop out of courses, even when doing relatively well, because they feel that concepts and expectations are not adequately explained and that their needs relating to a learning disability are not met by instructors or university administration. This points to the need for a focus on student retention for this category of students.

8. Vision impairment

8.1. Introduction

In a world increasingly reliant upon computers and digital media, vision impairment proves particularly challenging. While much work has been done, particularly though the World Wide Web Consortium's *Web Content Accessibility Guidelines* and other standards on what is required for accessible digital environments for people with vision impairments, there has been an ongoing struggle for these guidelines to be widely adopted. The usefulness of text-to-speech technologies are limited by factors such as poor web design and PDF scans that fail to take accessibility into account; unfortunately, these factors are common across the platforms, technologies and teaching methods employed by Australian universities, as reflected in the responses provided by this impairment group. Being unable to access digital content easily positions vision impaired students at a disadvantage. As Permvattana et al. (2013, p. 15) report, vision impaired individuals experience significantly higher levels of unemployment than the general population. However, as Seale (2006, p. 282) writes, "the majority of proponents (of accessible development)… argue that designing for the majority of people is a more realistic approach than designing for everyone", meaning that many vision impaired people simply do not have the opportunity for education and employment as their sighted peers. Thus, it is imperative that accessible solutions are implemented at the level of training and education to ensure that vision impairment does not prevent individuals from fully participating in and contributing to society.

As with other impairment types, the needs of vision impaired students vary greatly from person to person depending on the severity, side effects and comorbidities of each individual. A study by Fitchen, Asuncion, Barile, Ferraro and Wolforth (2009) into the accessibility of eLearning platforms found that what works for some students will not necessarily work for others – for example, the needs of low vision and blind students can be worlds apart. In discussing the results of their study, they write:

> *The results indicate that both (low vision and blind) groups found e-mail, course web pages, web-based discussion forums, and course-related files in Word to be generally quite acceptable. On the other hand, both groups indicated that videoconferencing technology, online tests and quizzes, CD-ROM tutorials, and online content using Flash… were poorly accessible. Many forms of e-learning that the participants with low vision found moderately accessible were not accessible to the participants who were blind.* (p. 550)

These findings were closely echoed in experiences of the vision impairment group in the study. Such results highlight the need to take student recommendations into consideration in the development of truly accessible eLearning solutions for students with numerous types of disabilities and their effects.

As Permvattana et al. (2013, pp. 16-17) note, eLearning courses are not designed with vision impaired students in mind – "Learning outcomes commonly assume that all students are sighted", they write, "and vision impaired students are expected to attain the same learning outcomes to succeed in the course". They continue:

> *There are major differences between the needs of vision impaired students and sighted students. Sighted students are able to access images, diagrams and tables and easily interpret these, whereas vision impaired students are not able to access these at all. E-learning materials are not frequently designed to integrate with the range of assistive technologies used, resulting in vision impaired students receiving incomplete or inaccurate translations, or, at worst, no accessibility at all* – Permvattana et al., 2013, p. 18.

This is a particularly acute problem in the context of mathematics, science and information technology courses that frequently use non-standard symbols that cannot easily be interpreted by assistive technologies (AT), and in other courses with a significant visual element. The challenge for course designers resides in finding a way to develop courses and technologies that do work with the AT available to ensure that vision impaired students have equal access to learning as their sighted peers. Without this, vision impaired students will continue to experience barriers to entry and will be denied the chance to fully participate in the learning process.

8.2. Survey results

8.2.1. Demographics

The vision impairment group was quite small compared to others such as mental illness, mobility impairment and medical impairment. Twenty-four respondents reported having a vision impairment of some kind. Women represented 58.3% of the demographic and men 41.6%.

Students were asked to indicate the highest level of study completed.

Q3: What is the highest level of school you have completed or the highest degree you have received?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than high school degree	20.8%	5	10.8%
High school degree or equivalent	4.2%	1	18.3%
Some college or university but no degree	41.7%	10	52.0%
Associate degree	0.0%	0	3.1%
Bachelor degree	16.7%	4	12.1%
Graduate degree	4.2%	1	3.7%
Other (please specify)		2	69
answered question		24	
skipped question		0	

As with other impairment categories, it was common for visually impaired students to have other impairments, with all but four students with vision impairment reporting additional impairments. More than half of vision impaired students also had a medical impairment, although hearing impairment, mobility impairments and ABI were also common amongst this group.

Q4: What type of disability or impairment, if any, do you have?		
Answer options	**Response percent**	**Response count**
Hearing	29.2%	7
Vision	100.0%	24
Mental illness	20.8%	5
Learning	12.5%	3
Medical impairment	54.2%	13
Intellectual	0.0%	0
Mobility impairment	37.5%	9
Acquired brain impairment	25.0%	6
Other (please specify)		6
answered question		24
skipped question		0

8.2.2. Studying through OUA with a disability

The majority of students in this impairment group were in their first 3 years of studying through OUA.

Q5: How long have you been a student through OUA?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than 1 year	20.8%	5	34.2%
1 year	16.7%	4	14.4%
2 years	12.5%	3	18.9%
3 years	25.0%	6	17.2%
4 years	8.3%	2	7.1%
5 years	4.2%	1	2.8%
6 years	4.2%	1	1.4%
7 years	8.3%	2	1.7%
8 years	0.0%	0	0.6%
9 years	0.0%	0	1.1%
10 years or more	0.0%	0	0.6%
answered question		24	
skipped question		0	

Students were more likely to be studying in the field of Arts and Humanities than students from the wider survey.

Q6: What is your chosen field of study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Arts & Humanities	70.8%	17	57.4%
Business	8.3%	2	13.3%
Education	0.0%	0	6.7%
Health	0.0%	0	5.5%
IT	8.3%	2	6.7%
Law & Justice	4.2%	1	11.0%
Science & Engineering	4.2%	1	5.5%
Not specified	4.2%	1	1.4%
Other (please specify)		1	
answered question		24	
skipped question		0	

8.2.3. Accommodations and disclosure

This impairment group was both more likely than average to be aware of the type of accommodation available and more likely to have received accommodation in relation to their studies.

Q7: Are you aware of the type of accommodation that can be offered by the unit providers in relation to your disability/impairment to help with your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	41.7%	10	28.7%
No	37.5%	9	43.9%
Unsure	20.8%	5	27.3%
answered question		24	
skipped question		0	

Q8: Have you received any accommodation in relation to your disabilities in relation to your study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
With all units of study	8.3%	2	6.6%
With most units of study	20.8%	5	7.5%
With some units of study	8.3%	2	16.1%
With no units of study	62.5%	15	69.7%
answered question		24	
skipped question		0	

However the appropriateness of the accommodation received, was less likely to have been adequate or appropriate than for students in the broader survey.

Q9: Did you find this accommodation was adequate and appropriate?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes, always	8.3%	2	9.7%
Mostly	4.2%	1	10.3%
Sometimes	25.0%	6	9.2%
Never	0%	0	0.9%
Have not received any accommodation	62.5%	15	69.9%
answered question		24	
skipped question		0	

The small size of this impairment group made it difficult to analyse trends compared to the overall survey group. The overall disclosure rate of 59% closely reflected the 60% disclosure rate across all responses.

Q10: Have you informed the institution(s) where you are studying that you have a disability?						
Answer options	**Yes**	**No**	**Have not studied with this institution**	**Response count**	**Percent disclosed**	**Full survey response**
Curtin University of Technology	4	6	9	19	40%	65%
Griffith University	10	4	5	19	71%	71%
Macquarie University	8	2	7	17	80%	66%
Monash University	0	1	12	13	0%	29%
RMIT University	2	2	11	15	50%	57%
Swinburne University of Technology	4	2	8	14	67%	58%
University of South Australia	9	3	5	17	75%	58%
Australian Catholic University	2	1	12	15	67%	46%
Charles Darwin University	0	1	12	13	0%	27%
La Trobe University	0	1	12	13	0%	11%
Learning Network Queensland	0	1	12	13	0%	38%
Murdoch University	2	3	9	14	40%	62%
Polytechnic West	0	1	12	13	0%	17%
The University of New England	1	1	11	13	50%	30%

The University of Western Australia	2	1	11	14	67%	44%
Other (please specify)				0		0%
Total response	**44**	**30**			**59%**	**60%**
answered question				24		
skipped question				0		

Students in this impairment category were less likely to think that any accommodation would not help, although more likely to not want any accommodation than the full survey sample

Q11: When you have not disclosed that you have a disability to an institution, what are the factors that caused this?			
Answer options	**Response percent**	**Response count**	**Full survey response**
I did not think it would help	40.0%	6	51.8%
I did not know I could	0.0%	0	13.1%
I did not know how	6.7%	1	13.9%
I did not need any accommodation	26.7%	4	26.5%
I did not want any accommodation	20.0%	3	9.0%
I did not want to disclose my disability/impairment	20.0%	3	17.6%
Other (please specify)		1	
answered question		18	
skipped question		6	

8.2.4. Learning technologies

Similar to the overall survey group, the vision impairment group was most likely to use a laptop computer to access the internet for studies, although they were more likely to use a desktop computer, tablet or smartphone as well.

Q12: How do you access the internet for your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Desktop computer	54.2%	13	46.2%
Laptop computer	66.7%	16	74.9%
iPad / tablet	45.8%	11	27.3%
Smartphone	29.2%	7	23.9%
Other (please specify)		0	
answered question		24	
skipped question		0	

Students in this impairment group were noticeably more likely than average to have experienced problems accessing online learning platforms due to their disability.

Q13: Have you had any problems accessing online learning platforms due to your disability/impairment?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	37.5%	9	17.9%
No	62.5%	15	82.1%
answered question		24	
skipped question		0	

Q14: If yes, which platforms have you experienced difficulty with?								
Answer options	**Not used**	**No prob-lems**	**Minor prob-lems**	**Major prob-lems**	**Unusable**	**Response count**	**Prob-lems**	**Full survey response**
Moodle	7	5	1	1	0	14	26%	35%
Blackboard	2	6	6	2	0	16	57%	48%
Facebook	4	9	1	0	0	14	10%	21%
Twitter	9	6	0	0	0	15	0%	12%
Slideshare	11	4	0	0	0	15	0%	12%
Prezi	11	4	0	0	0	15	0%	17%
Lectopia	8	6	1	0	0	15	14%	40%
Echo 360 / Echo Centre	6	6	3	0	1	16	40%	49%
PDFs	2	10	2	1	0	15	23%	30%
Blogger	8	7	0	0	0	15	0%	25%
Wordpress	8	6	1	0	0	15	14%	16%
WebCT	9	5	0	1	0	15	17%	20%
YouTube	2	11	0	2	0	15	15%	21%
University websites	1	7	7	2	0	17	56%	43%
answered question						17		
skipped question						7		

8.2.5. Recommendations / future involvement

This group would, in general, recommend OUA to other disabled students. However, the percentage that would not recommend OUA is significantly higher than average.

Q16: Would you recommend OUA as a place to study for people with disabilities?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	66.7%	16	75.9%
No	12.5%	3	3.1%
Maybe	20.8%	5	21.0%
answered question		24	
skipped question		0	

8.3. Interview responses

All students were asked to indicate whether they would be happy participating in follow-up interviews. All but five students (79%) responded positively to this question. Follow-up interviews were conducted via Skype or email with 15 students. These interviewees identified their specific impairment type as listed below:

1. Keratoconus.
2. Hole in vision (and medical impairment, mental illness, and mobility impairment).
3. Lesions causing vision impairment (side effect of multiple sclerosis).
4. Vision impairment (caused by multiple sclerosis).
5. Intracranial hypertension caused by lupus, resulting in poor visual acuity and depth of field.
6. Irlen syndrome.
7. General vision impairment.
8. Blindness in right eye.
9. Vision impairment caused by diabetes.
10. General vision impairment.
11. Vascular occlusion.
12. Peripheral blindness with reduced central visual acuity.
13. Vision impairment in right side of both eyes due to ABI (and ABI).
14. Sight processing disorder due to childhood mercury poisoning.
15. Retinal vascular occlusion (and medical).

8.4. Interview responses: accessibility

8.4.1. How does your disability impact on your daily life?

Students in the vision impairment group were initially asked to provide details about how their disability affects their everyday life. As can be seen from the responses, the effects of vision impairment are varied in nature:

> *"I had Keratoconus in both eyes until I had a cornea transplant in 2010 in my right eye. I will be having another cornea transplant in 2 weeks in my left eye. This is to remove the Keratoconus diseased corneas. I was essentially legally blind without hard contact lenses, but with them my vision was quite good at first, around 18/20. Over the years they deteriorated quite badly so I need to have the transplant. Post-transplant, I can see around 10/20 vision and with glasses just on 20/20. I am hoping for the same result from my next operation. Before*

the transplant and the invention of mini scleral contact lenses, my disability impacted my life quite a lot. Mainly because my other rigid gas permeable lenses didn't fit my extreme astigmatism (Keratoconus) and they would fall out quite a lot. They were quite expensive as well, priced at 300 dollars per lense, 600 for a complete set."

"Due to mercury poisoning from "Pink Teething Powders" the effect was chiefly on the processing part of sight. I can hear a good book in one week, the problem of process is LESS with hearing than with seeing."

"I have Crohn's Disease and a secondary vision impairment in my right eye (retinal vascular occlusion led to a partial loss of sight and some chronic blurring)."

"I have MS which affects my vision and my left hand at times I find it hard to type."

"I have Intracranial hypertension secondary to lupus, as a result my vision has deteriorated, both my visual acuity and depth of field… I am unable to drive, so am dependent on my husband for transport, as I am rural so our public transport is limited. I am very lucky that my case is relatively mild compared to others, I can still move about, but still have days when I am confined to bed, or the house. I can still see, but detail is difficult, and I am unable to judge distance and depth, so in unfamiliar surroundings and I will need assistance."

"I have Irlen Syndrome. It's a visual processing/perceptual problem. I wear mid-purple coloured lenses to help, and also have a mid-dark blue colour in another pair of glasses to use around exam times when my vision/perception seems to degrade when reading masses of revision material. If I don't wear coloured lenses, I get headaches, get brain-tired very quickly, and find it much more difficult to perceive/retain information. I can study for 8 hours with coloured lenses on, 2 hours with them off. Fluorescent lighting is the worst (with or without lenses) – my brain seems to be able to register the flickers in low-frequency fluorescent lighting (60hz), leading to the onset of a headache within 20 minutes. I get 'antsy', meaning my body gets fidgety and wants to move to get out of the environment, and I get irritable as well."

"Deficits in working memory, chronic pain, cardiac disorders, hearing loss, vision impairment."

"My right eye is blind but has no any negative effect at all."

"I am a diabetic, type 2, although this is not thought to be responsible as it occurred "too soon" after my diagnoses. This disease also appears to have affected my eye sight."

"I have vision impairment. Not being able to read print, walk about with a secure feeling. Generally this has made a huge impact on my life during the last twelve years."

"I also have suffered a vascular occlusion in my right retina that has left me with some loss of sight and blurriness in one eye. This affects me as I have difficulty reading print that most other people can see without getting really close to it."

"I have a visual impairment – I am peripherally blind with reduced central visual acuity. This means when processing large amounts of text, I am prone to headaches/ migraines and can lead to passing out if the pain is too great, fatigue and general lethargy after more than 40 minutes continual intensive work with my eyes (reading/ using computer/ writing on paper)."

"My online experience is affected by my visual disability. I cannot read small print, and my ability to read is impaired due to a "hole" in the right side of my vision. Other disabilities affect how and when I can work, especially in exam situations."

8.4.2. How does your disability impact on your study?

They were then prompted to discuss the ways in which their disability affects their study. For some students, the affect was minimal:

> *"Sometimes yes. Not so much these days, but a few years ago definitely."*

> *"The visual side is generally fine except for exams. Online learning is pretty ideal for my difficulties :) I can control my online least visually challenging colour for me to read from. I also get auditory overload (sensory) from noisy environments but I learning through my computer by adjusting the screen brightness to the lowest possible setting, and sometimes even add a haven't disclosed this to the university as it isn't a problem online… grey overlay on top of that to reduce the glare even more. I have a special screen that doesn't flicker like many do. I print out lecture notes etc on Reflex blue paper, as it provides far less contrast than white paper which reduces fatigue from glare. It is also the easiest colour for me to read from and results in the least fatigue, ie feels normal."*

With most students, however, vision impairment had a significant impact upon their studies, primarily due to the large visual/text-based component in online courses:

> *"It does in fact affect my studies in the highest degree, MOST ESPECIALLY when the set reading texts are in that form of Adobe Reader which prevents :- when one places the marker on the starting point for a selection, the whole book of text moves while nothing is selected."*

> *"My online experience is affected by my visual disability. I cannot read small print, and my ability to read is impaired due to a "hole" in the right side of my vision. Other disabilities affect how and when I can work, especially in exam situations."*

> *"Mainly the size of print, it just makes me a little bit slower to read. Obviously any on site activity involves me asking for a disability pass in order to park my vehicle. For past, unlinked attendances, visits to Hobart Uni. they have accommodated me with a parking pass."*

> *"At times I cannot read the text that is set for students and also I find it hard to read comments in the discussion board."*

> *"It means that I take longer to study than I used to when I started. I use the accessibility functions on my laptop and iPad, to help me read my digital text books and digitised readings, but not all reading are compatible with Te features so I just have to blow them up. Which is difficult cause they are not the best quality copies, so they are still difficult to read. This takes me a long time to figure out what I'm reading."*

> *"I cannot read the print material, but have receive assistance from Vision Australia in the form of speaking software."*

> *"Eye – Sometimes I have difficulty reading some things. This can cause me to take longer when studying compared to someone without the disability."*

> *"It is difficult for me to process and use large amounts of text or complete my studies in blocks of time of no more than 30-45 minutes at any one time; this means that I need to have at least a half hour break between study sessions, which reduces my efficiency in using my time when studying. I end up only being able to do about 3-4 hours of study per day on a full day of study."*

8.4.3. In terms of online learning and teaching technology – what works well and what doesn't?

Students noted that online learning courses are not always set up to be user-friendly for those with vision impairments, and that it can be difficult to access content:

> *"My kindly Course Leaders and DSO's have not been able to understand what my problem is, for they have no problem with the text. (So how can one expect they can fix it if they cannot be confronted with the problem). The Library's "read out loud" is 2 out of ten. The reason for this poor quality is that the voice drops and stops as if it were the end of a sentence, then starts a new sentence for the remaining word of words in the next line. The audio is so fragmented it is disgusting… audio, colouring of text, and multi highlight colours. But I don't want to trouble anybody. I just want texts in good readable, processable condition. One fellow student took it upon herself to convert text which had been scanned and saved as PFD scan picture, to read text out loud for me and e-mail as file. But I don't want to be dependent upon their good kindness."*

> *"I have only ever had access to Blackboard and Sakai, so I cannot say that I have had any major problems. What I do find frustrating is when lecturers only scan in chinks of text from books as e-Reserve readings and expect me to be able to read poor quality copies instead of asking for them to be re-transcribed/ typed up again neatly. This makes it impossible for me to use the text reading software I have on my computer – it is VERY FRUSTRATING."*

> *"Occasionally some readings have been small and blurry for people of normal vision. This does not happen often but usually I can get there by increasing size, but time wise this takes longer."*

> *"Text based, it just clashes with my learning style and prior to my operation I found it difficult to read since my vision was getting worse and it was considerably blurry."*

Some students reported using tools to make platforms like Blackboard and course materials more accessible:

> *"I use the screen magnifier option and I altered the resolution of the screen so that I can see a much larger print. Whenever possible, I'd buy e-books so that I can alter the resolution accordingly."*

> *"The majority of the platforms work fine, as they can be read by the accessibility software. I have not encountered a problem as yet."*

> *"Blackboard is fine because I am able to enlarge the font and work with it this way, but any text that is in serif fonts (such as Times New Roman) are impossible for me to read – it is too taxing on the eye. Also, Twitter works well for me because I am able to get small bites of information and this does not put extra strain on the muscles and nerves in the eye, thus forcing them not to overwork."*

However, the tools available for making content accessible for vision impaired individuals often fail to live up to the needs of students (or, in some cases, did not exist at all):

> *"Any program that converts text to voice fails miserably. The reason is that I am studying computer science and maths, and the programs cannot convert the specific symbols, in the right configuration, to make sense."*

> *"I use Blackboard and Facebook because Blackboard is what uni provides, and Facebook is the 'online pub' equivalent where students chat and support each other. I've gotten very familiar with blackboard and it's fine for me. I wish Facebook had a black background option though to*

> *reduce glare. Actually, it'd be great if blackboard had a low-contrast or black background option for the main reading screens!"*

> *"At times, the speaking programme I used before did not seem to be able to read Moodle."*

Many students prefer to access material via a tablet or smartphone, but experience problems when websites and tools have not been designed to be mobile responsive and accessible:

> *"… blackboard was not as easy to use on the tablet, which is my preferred device, because the accessibility options are easier and it is more portable."*

One respondent was in the process of undergoing surgery to help correct their vision impairment. For this student, the course materials were accessible as presented. This highlights the varied needs of students with impairments, because not everyone is affected in the same way or to the same degree:

> *"I use the normal platforms provided, i.e. online through web browsers, video and audio tutorials, and written text. They all work fine for me, I guess my learning style is more visual and practical so being able to watch people do something or them explain it before trying myself, I have the most success with that approach to learning."*

8.4.4. In terms of teaching and instruction methods – what works well and what doesn't?

In general, the restrictions experienced by vision impaired students most often related to reading materials:

> *"… anything with text in it (videos, PowerPoint presentations, et cetera) pose a problem because it takes me so long to actually read the text."*

> *"I find that lectures are much better when you hear what is being said rather than reading it on your own… Having a lot of reading and not having the text explained when I am struggling and when you have asked for help they always refer back to the text and it is not always clear to what is meant. This occurs a lot and when asked to explain what they mean the answer is always read this and go here but it doesn't help with what you are asking about."*

> *"I have had, in the past, reading material enlarged to A3 size. Although it is hard for me to read, I find it helpful if I want to check anything. If the reading material is in A4 size, I would not be able to cope with the reading of such."*

> *"I don't like it when there is no visual input from the lecturers – the people who just tell you to "read the readings" is not helpful to me at all. I find that this is not a good way to engage students who have visual impairments."*

This was even more noticeable when content was not available online, such as textbooks:

> *"… to sit and read a text book and your readings then do your assignment was a problem when there was no digital text book. It made getting the essential information for the unit difficult. It put me behind the other students in time and knowledge."*

Instead, students preferred to listen to lectures:

> *"The thing that works best for me is having recorded lectures that I can listen to over and over again. It means that I am able to absorb the content quite quickly and it means that I am not overexerting my eyes – the focus then shifts to the ears and I have quite good*

hearing because I use my hearing to compensate for the poor eyesight."

For students with vision impairments, units that require students to contribute text-based submissions (to discussion boards etc) often proved overwhelming and problematic:

> *"I have not had a problem with the courses in general, but my previous course was a massive shock when students collectively listed their reading links and internet links, I felt completely swamped and lost in the huge literature mass which I had no hope of reading even to 0.1% of. They enjoyed it but this was frightening, the most frightening experience of Curtin and Griffith. All the rest has worked fairly well. No complaints."*

The reading requirement of certain units also transferred to audio–visual materials, such as videos with subtitles:

> *"All the methods work reasonably well, except for those that require subtitles. I do not have time to read them before they disappear!"*

> *"Can't print/skim read/store/retrieve videos like I can with print material. I find videos (the auditory part) really difficult to retain in my brain; however, have found some videos excellent in terms of when a lecturer explains what is in the written materials, or when the visual programming is excellent and directly associated with learning content and not just pictures filling the space while someone talks. Where a course is nearly all video-based (my current unit through Macquarie is in this way – it's got me very worried), learning is extremely difficult. I also find that the video auditory information doesn't go anywhere quick enough for my brain either. It's kind of strange. It's like I need masses of information quickly to be able to retain it. I usually speed up the videos 2x where that facility exists."*

Some students, however, praised the way that particular universities present content to students:

> *"I found that the Griffith creative writing courses method of offering course content in a PDFs with the readings to supplement a fantastic way to learn. It was easy to run through the accessibility programs, and their readings consisted of a good number of websites and journals, which all read well. No poor quality copies that had to be blown up. This is great for people like myself who have low vision. I also found that a unit from Curtin had weekly audio lectures, this was great again for people with vision issues, I did not even need to run any accessibility programs, although I did need to blow up the PowerPoint slides that accompanied the lecture, but there was no new information on them, it was all in the lecture."*

> *"Despite having Irlen Syndrome, I love the facility of being able to read information. I can print it, skim read it, store it, retrieve it. I also love diagrams. I'm actually quite a visual learner and diagrams stick in my head so easily. They're like photographs in my mind."*

8.5. Interview responses: disclosure of disability

Many students said they had disclosed their disability to OUA and/or universities:

> *"Yes I have continually."*

> *"Only to Macquarie University when I dropped out of a unit due to my cornea transplant in 2010."*

Sometimes the decision to disclose was based upon the realisation that although accommodations are currently not required, they may be in the future:

> *"I like to be honest. Should anything "crop up" I cannot be told I have been dishonest. Mine is not the sort of disability anyone could object to. I appreciate I am very lucky in that aspect."*

One student disclosed their disability to a university because they were unable to keep studying. This student felt that disclosing their disability helped on a personal level:

> *"For me personally, yes, it gave me time to prepare to receive a tissue transplant, a huge ordeal."*

It was common for students to disclose their disability if they needed more time or special consideration for assignments and exams:

> *"The primary reason for disclosing my disability is that I require assistance with exams. Rarely, I will require more time for online tests because my reading speed is very slow."*
>
> *"I had to as it impacts upon my ability to sit exams."*
>
> *"I disclosed the Irlen Syndrome difficulty as I was quite worried about having to do exams in fluorescent lighting – it completely changes my capacity to work optimally to working under great duress. I haven't disclosed the auditory processing issue as a) it's generally not a problem online, and b) I haven't had a need to actually get it professionally checked out because of it's not an issue for my university learning to date."*
>
> *"I was told that I had to in order to access reasonable adjustments such as extensions for assignments and breaks/ extra time to complete invigilated exams."*

Disclosing their disability made some students feel like they had a better chance of success at university:

> *"Knowing that I have the option to vary the conditions gives me greater confidence that I can actually pass the tests."*
>
> *"Definitely yes. I am so grateful. My exam papers get printed on blue paper (thanks!) (well, except for the exam essay book which is the standard university-issued white paper lined notebook – would be nice if that changed too) and I get to undertake exams in more optimal lighting conditions with little auditory distraction. I finish my exams feeling as I imagine a normal person might feel – bit tired and relieved – but I don't need to immediately go to sleep and wipe out the rest of my day to recover :). That keeps me a happy person who can still function as a wife and mum at the end of the day."*
>
> *"I did this because I am eager to study and know that the Disability Department would assist me… it has made me more confident about study."*

Sometimes, however, students withheld information about their disability because they did not feel that they needed to report it, or they felt that they would be able to cope without accommodations:

> *"I did not feel the need to, it was a new diagnosis, I was only beginning to lose my sight, I thought I had things under control."*
>
> *"I don't see any reason to do so when it has no any impact on the study."*

Among those students who did disclose, the sentiment was mixed. As with other impairment types, vision impaired students found it frustrating that they were repeatedly required to provide evidence of their disability in order to receive accommodations:

> *"It did to some extent – some lecturers are very accommodating and are very eager to help me and go out of their way to adjust their teaching to suit my needs; others, on the other hand, are quite disrespectful and do not provide the necessary accommodations, going so far as to say that I have to provide a medical certificate EVERY time I want an extension, even though I have registered with Disability Services with each of the respective shareholder universities that OUA uses."*

8.6. Interview responses: future directions

8.6.1. Have your learning experiences changed your future study choices?

A few students indicated direct correlations between studying via OUA and future study choices:

> *"Yes, very much. It gave me a preference for one institution over another."*

> *"I didn't have any earlier learning experience with any other tertiary institution. This is my first university degree (I'm mid 40's). I don't believe I could have performed anywhere near as well if I had had to attend on campus, given the challenges I'd face there visually and auditorially."*

> *"My choice of study was made with OUA assistance – I was pleased as my previous learning experience was not as good as I expected."*

> *"Yes, it did. I found that after a few very poor experiences (specifically with some business and psychology subjects) that this has impacted how I study these subjects. I also found that some provider universities are willing to contact the students to set up the reasonable adjustments while others do not contact students. This can make it difficult when you want to organise a new study plan to access reasonable adjustments."*

8.6.2. What are your biggest challenges?

The biggest challenges faced by vision impaired students were related to reading materials, for the most part:

> *"Staying ahead and at times reading the text."*

> *"Actually reading the information, and finding the time, since I have a family too, and things take much longer now. Plus I am a visual learner, now I have to try to be an aural learner, it is a lot, to, try to change study habits and learning styles. I was a graphic designer, so that will tell you how grounded in the visual I was."*

> *"Reading small print in books, I overcome this with my magnifying glass."*

> *"Keeping up with the weekly reading and assignment writing."*

> *"Time and accessibility of resources. Time because it takes me so long to get everything done just to complete a set of weekly readings and accessibility of resources because some provider universities make it very difficult to access their learning materials in a way that works well with my disability."*

One student reflected on the relationship between their challenges and their learning experience:

> *"Yes, I think they do. I have found that some lecturers think that because they cannot see a disability that it does not exist. This is not the case. Just because it may not be physically visible to you, does not mean to say that a disability does not exist within the person and adversely affect their ability to complete their study."*

8.6.3. What would you change to make study easier?

As with other impairment types, vision impaired students felt that study would be easier without the need to attend invigilated exams for otherwise fully online units:

> *"Allow for non-invigilated exams for students with a disability or an alternative like another short essay. A more heavily weight essay / main assignment could be an option. If no exam would be undertaken a student may be issued more time to complete the essay but required to write for example a further 1000 words on the topic."*

> *"Reading is difficult, even with larger text. After about 30 minutes, I start getting tired, and reading becomes even more difficult. Although I have rest time, an exam that lasts three hours is an exhausting experience."*

At least one student felt that study would be easier if students were freer to use the tools at their disposal in whatever way suited them (or to be able to use an alternative):

> *"Stop all Adobe Digital Editions restrictions on students (especially with disability) from copying and processing the text for their studies."*

> *"The same information in multiple formats. Like readings, they should be in audio as well as visual, that way I can stop the accessibility programs, and I would be able pause and rewind etc, and be able to access audio for the readings that are not able to be run through the accessibility programs, the poor quality copies. I understand this is a big ask, and copyright issues would arise, but I'm sure lots of people would benefit, not just the visually impaired. The mums who have limited time and listen while they cook tea, or the commuter in the train. I sure lots of people would benefit."*

> *"Due to the fact that I am locked into a specific degree, it is difficult to say that I would be able to change anything specifically – I try to make it easier for myself by using different technologies that are available to me when it is possible to use them, but this is not always the case."*

One student, however, felt that OUA had offered her an opportunity to succeed with study that simply would not have been possible on campus:

> *"With the accommodations offered, I don't have any challenges to worry about :). It's made it an optimal learning experience for me."*

8.6.4. What other recommendations would you make?

One student highlighted the unique challenge that disabled students face when their impairment does not neatly fit into one particular disability category:

> *My special disability falls between the cracks in the floor. It is not actually a specific reading problem. Nor am I psychologically or neurologically impaired as one might expect. My brain can function quite well with creative things, and even creative writing. THIS DOES NOT FIT ANY NORMAL CATEGORY FOR A DSO. I cannot expect DSO's should all be made aware of my particular problem, I MIGHT be the only one. But it would help if:*
> - *Examining institutions like LaTrobe could categorise outside the normal terms of "Disability" to include "Processing"*
> - *They did observe the problem of processing, but said it did not constitute a "disability" according to the rules.*
> - *They did suggest I desist from studying a course which was so demanding. Find something easier! (do you want this in writing?)*
> - *Seems to me DSO's are also governed by a set of unseen rules. If one falls outside, one should not expect."*

Another student felt that teaching staff could be better trained to provide adequate support to students with disabilities, including fewer demands (for example, regarding proof of disability when asking for extensions) and greater awareness and acceptance of students' needs:

> *"I would just like to say that, generally speaking, lecturers/ tutors need to be mindful of the fact that people who have disabilities are not going to go away and they are the ones best placed to know what learning methods work best for them. It is not appropriate for the lecturer/ tutor to think that they know better when they are not the ones who live with the respective disability day in and day out. I apologise for the rant, but I think a little more tolerance and understanding on the part of the academics who teach their respective subjects would be most appreciated by all students with disabilities."*

This reflects much of the literature regarding vision impairment and post-secondary education, suggesting that this is an area that must be improved in order to make eLearning truly accessible to students with disabilities.

8.7. Conclusion and summary

One of the most significant problems faced by vision impaired students in the context of eLearning is inaccessible websites. According to one study, even though web developers and designers are aware of and support the implementation of accessibility standards, there continue to exist "roadblocks to accessibility such as lack of time, lack of training, lack of managerial support, lack of client support, inadequate software tools, and confusion accessibility guidelines" (Lazar, Dudley-Sponaugle, & Greenidge, 2004, p. 284). Even if universities are to implement truly accessible web design standards, students are often required to source materials from the web, where there is no guarantee that content is accessible. Within universities, students face challenges such as poor conversion of text (such as PDFs) to voice and poorly designed websites that make it difficult to navigate without being able to see the screen. For these students, online learning presents just as many challenges as learning on campus.

Tellingly, one student noted that vision impaired (and indeed all disabled people) aren't marked solely by the presence of a disability, and that they just want the same lives as anybody else. The student wrote:

> *"I think even though I identify with a disability and I have for the past 20 years, I don't like to be treated differently and I do my best to 'blend in' with 'normal' people and just go with the flow. That way I have not let my disability control me and my life, and I have lead a quite joyful life and it is starting to be fulfilling also."*

When unit providers fail to provide accessible solutions for vision impaired students, the digital divide between sighted and vision impaired students grows markedly. Online learning is seen as favourable by some vision impaired students, as evidenced by many of the responses given during interviews with students. In recent years it has become easier to access materials such as journal articles and books in digital format – this is regarded as a boon for low-vision students who are able to magnify texts to suit their needs – whilst AT such as screen filters and text-to-voice are increasingly available at a low cost. However, more work needs to be done to ensure that digital content is prepared and presented with accessibility in mind, and to ensure that teaching and administrative staff are well equipped to handle the challenges of educating students with a variety of needs and abilities.

9. Acquired brain impairment (ABI)

9.1. Introduction

Acquired brain impairment (ABI) – also called acquired brain injury – is an impairment that people may develop throughout their life due to a number of factors. The Australian Institute for Health and Welfare (2006) defines ABI as:

> *… multiple disabilities arising from damage to the brain acquired after birth. It results in deterioration in cognitive, physical, emotional or independent functioning. It can be as a result of accidents, stroke, brain tumours, infection, poisoning, lack of oxygen, degenerative neurological disease etc.*

This impairment is present in approximately 2.2% of the Australian population (Australian Institute for Health and Welfare, 2007). This group is significantly under-represented in university enrolments (Goodwin, 2005) and makes up only 0.15% of the students enrolled through OUA. It is, however, an impairment that most often develops in the traditional university age demographic, with 66% of people acquiring this type of impairment before they turn 25 years of age (Brain Injury Australia, n.d.).

The majority of previous studies into this impairment type have explored issues around rehabilitation, childhood education and assistive technology (AT). Further, the majority of studies have taken place in hospitals and rehabilitation settings (Rispoli, Machalicek, & Lang, 2014), with little written that is focused on post-secondary education and how to make this type of study accessible for people with ABI.

As Rispoli, Machalicek and Lang (2014) observe, “ABI impacts cognitive, physical, and emotional functioning, and as a result may dramatically affect one’s ability to gain and maintain employment” (p. 42). They also note that AT can greatly improve the ability of people with an ABI to maintain employment – in the general workforce, 73% of individuals with ABI who use AT are employed, but only 49% without access to AT have jobs. These potential limitations and the value of AT accommodations would logically also extend into access to higher education.

In a study that did look at ABI and post-secondary education, Goodwind (2005) found that:

> *Overall, findings revealed significant gaps in services for students with ABI including a lack of specifically trained counsellors in school disability services departments; lack of tutors, note-takers, and cognitive rehabilitation; lack of faculty handbooks; lack of standardized procedures to assess student ability for services, lack of course exemptions, and a lack of specific student handbook for students with acquired brain injury.*

On the face of these findings it would seem that issues that students with an ABI face in a university setting are similar to those generally encountered more broadly by students with a disability. However, the consequences may be more acute given that ABI is relatively uncommon in a university setting and thus university students, educators and administrators are less likely to be equipped to support and work with a student with an ABI. This is a situation exacerbated by the OUA classification of this impairment type along with mental illness and intellectual disability as “other”.

9.2. Survey results

9.2.1. Demographics

This group was the second smallest in the survey, the 15 respondents making up 4.5% of the total number of respondents. A total of 86.7% of survey responses came from women, a considerably higher percentage than the 72.5% for the whole survey. This stands out against the background in Australia where the prevalence of ABI is higher amongst men, who make up 75% of people with this impairment category (Brain Injury Australia, n.d.).

When it came to background education, students with ABI tended to be tightly clustered in the some college or university, but no degree category.

Q3: What is the highest level of school you have completed or the highest degree you have received?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than high school degree	7.1%	1	10.8%
High school degree or equivalent	7.1%	1	18.3%
Some college or university but no degree	71.4%	10	52.0%
Associate degree	0.0%	0	3.1%
Bachelor degree	14.3%	2	12.1%
Graduate degree	0.0%	0	3.7%
Other (please specify)		7	69
answered question		14	
skipped question		1	

ABI is often associated with multiple impairment categories, and this is borne out in these survey results, with a heavy overlap with medical, mobility and vision impairments. This reflects the findings of the Australian Institute of Health and Welfare (2007) that this is a complex disability that will often involve people with multiple impairment types.

Q4: What type of disability or impairment, if any, do you have?		
Answer options	**Response percent**	**Response count**
Hearing impairment	13.3%	2
Vision impairment	40.0%	6
Mental illness	6.7%	1
Learning disability	0.0%	0
Medical impairment	80.0%	12
Intellectual disability	0.0%	0
Mobility impairment	60.0%	9
Acquired brain impairment	100.0%	15
Other (please specify)		3
answered question		15
skipped question		0

9.2.2. Studying through OUA with a disability

Students with ABI were more likely to have been studying for a longer period of time than people who responded to the broader survey. One third of students with an ABI had been studying at OUA for 4 years or more, nearly double the rate of 15.3% for other students. This points to a slower rate of progression through their degrees for students with this type of impairment.

Q5: How long have you been a student through OUA?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than 1 year	26.7%	4	34.2%
1 year	26.7%	4	14.4%
2 years	6.7%	1	18.9%
3 years	6.7%	1	17.2%
4 years	20.0%	3	7.1%
5 years	0.0%	0	2.8%
6 years	0.0%	0	1.4%
7 years	13.3%	2	1.7%
8 years	0.0%	0	0.6%
9 years	0.0%	0	1.1%
10 years or more	0.0%	0	0.6%
answered question		15	
skipped question		0	

ABI students were also clustered in the Arts and Humanities compared to the full survey result.

Q6: What is your chosen field of study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Arts & Humanities	80.0%	12	57.4%
Business	13.3%	2	13.3%
Education	6.7%	1	6.7%
Health	6.7%	1	5.5%
IT	0.0%	0	6.7%
Law & Justice	13.3%	2	11.0%
Science & Engineering	6.7%	1	5.5%
Not specified	0.0%	0	1.4%
Other (please specify)		0	
answered question		15	
skipped question		0	

9.2.3. Accommodations and disclosure

Students in this category were noticeably less likely to be aware of any types of accommodation that could be made in relation to their disability. When accommodation was made available, it was noticeably less likely to be effective than for other students with disabilities.

Q7: Are you aware of the type of accommodation that can be offered by the unit providers in relation to your disability/impairment to help with your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	33.3%	5	28.7%
No	60.0%	9	43.9%
Unsure	6.7%	1	27.3%
answered question		15	
skipped question		0	

Q8: Have you received any accommodation in relation to your disabilities in relation to your study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
With all units of study	13.3%	2	6.6%
With most units of study	0.0%	0	7.5%
With some units of study	13.3%	2	16.1%
With no units of study	73.3%	11	69.7%
answered question		15	
skipped question		0	

Q9: Did you find this accommodation was adequate and appropriate?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes, always	0.0%	0	9.7%
Mostly	6.7%	1	10.3%
Sometimes	20.0%	3	9.2%
Never	0.0%	0	0.9%
Have not received any accommodation	73.3%	11	69.9%
answered question		15	
skipped question		0	

Despite this relatively low level of awareness and effectiveness of accommodation, this group disclosed their disability to the institutions where they were studying at a similar rate to other students with disabilities. However, for those who did not disclose, this was never because they did not feel that they needed accommodation, and more than twice as likely to be that they did not want to

disclose that they had a disability. This may reflect with the findings of Krause and Richards (2014) that students with this impairment type often did not consider themselves deserving of accommodation relating to their impairment.

Q10: Have you informed the institution(s) where you are studying that you have a disability?						
Answer options	**Yes**	**No**	**Have not studied with this institution**	**Response count**	**Percent disclosed**	**Full survey response**
Curtin University of Technology	5	2	6	13	71%	65%
Griffith University	4	2	4	10	67%	71%
Macquarie University	2	1	8	11	67%	66%
Monash University	0	0	9	9		29%
RMIT University	1	2	6	9	33%	57%
Swinburne University of Technology	2	1	7	10	67%	58%
University of South Australia	2	2	6	10	50%	58%
Australian Catholic University	0	0	9	9		46%
Charles Darwin University	0	0	9	9		27%
La Trobe University	0	0	9	9		11%
Learning Network Queensland	0	0	8	8		38%
Murdoch University	2	2	7	11	50%	62%
Polytechnic West	0	0	9	9		17%
The University of New England	0	0	9	9		30%
The University of Western Australia	2	0	8	10	100%	44%
Other (please specify)						0%
Total response	**20**	**12**			**63%**	**60%**
answered question				15		
skipped question				0		

Q11: When you have not disclosed that you have a disability to an institution, what are the factors that caused this?			
Answer options	**Response percent**	**Response count**	**Full survey response**
I did not think it would help	37.5%	3	51.8%
I did not know I could	12.5%	1	13.1%
I did not know how	12.5%	1	13.9%
I did not need any accommodation	0.0%	0	26.5%
I did not want any accommodation	12.5%	1	9.0%
I did not want to disclose my disability/impairment	37.5%	3	17.6%
Other (please specify)		3	
answered question		15	
skipped question		0	

9.2.4. Learning technologies

Students were noticeably more likely to access their studies through a desktop computer or tablet than the rest of the survey sample.

Q12: How do you access the internet for your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Desktop computer	60.0%	9	46.2%
Laptop computer	66.7%	10	74.9%
iPad / tablet	46.7%	7	27.3%
Smartphone	33.3%	5	23.9%
Other (please specify)		0	
answered question		15	
skipped question		0	

This group reported higher levels of problems associated with using online learning platforms. Unfortunately, the relatively low response in relation to the use of specific platforms makes it hard to make too many generalisations.

Q13: Have you had any problems accessing online learning platforms due to your disability/impairment?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	26.7%	4	17.9%
No	73.3%	11	82.1%
answered question		15	
skipped question		0	

Q14: If yes, which platforms have you experienced difficulty with?								
Answer options	**Not used**	**No prob-lems**	**Minor prob-lems**	**Major prob-lems**	**Unusable**	**Response count**	**Prob-lems**	**Full survey response**
Moodle	8	0	1	0	0	9	100%	35%
Blackboard	2	6	2	1	0	11	33%	48%
Facebook	3	6	2	0	0	11	25%	21%
Twitter	7	3	0	0	0	10	0%	12%
Slideshare	9	1	0	0	0	10	0%	12%
Prezi	10	0	0	0	0	10		17%
Lectopia	7	2	1	0	0	10	33%	40%
Echo 360 / Echo Centre	6	3	1	0	0	10	25%	49%
PDFs	2	7	2	0	0	11	22%	30%
Blogger	10	0	0	0	0	10		25%
Wordpress	8	2	0	0	0	10	0%	16%
WebCT	7	2	0	1	0	10	33%	20%
YouTube	2	6	0	2	0	10	25%	21%
University websites	0	5	3	3	0	11	55%	43%
answered question						11		
skipped question						4		

9.2.5. Recommendations / future involvement

This group of students recommended OUA as a place for study broadly at the same rate as the overall survey sample.

Q16: Would you recommend OUA as a place to study for people with disabilities?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	73.3%	11	75.9%
No	0.0%	0	3.1%
Maybe	26.7%	4	21.0%
answered question		15	
skipped question		0	

This group were also more interested in being involved in the interview stage of the research, with 75% responding positively to Question 17 as opposed to the overall survey response rate of 63.5%.

9.3. Interviews responses

Five people responded to the interview request. All chose to provide written responses to the interview questions. Three were stroke survivors, one a person who had been in a car accident, and one person did not specify beyond having an ABI. More specifically, the respondents identified their specific impairment type as listed below:

1. Stroke (and mobility).
2. Small stroke (and medical, vision).
3. Mild strokes or ischaemic attacks (and medical).
4. Road traffic collision (and mobility, vision).
5. ABI.

9.4. Interview responses: accessibility

9.4.1. How does your disability impact on your daily life?

These descriptions of people's lived experience with an ABI highlight the multiple categories of impairments that this type of disability can encompass:

> *"I've had a stroke plus have some spinal issues. Fatigue, spinal pain, and some limb weakness are probably the biggest disabilities. They affect my ability to concentrate for long periods, right (my right hand is very weak), be in any position for long. Daily it just slows me down a little, I have to plan to avoid becoming overly fatigued."*

> *"My condition was caused by a road traffic collision that happened when I was a baby. I sustained a brain injury which left me with a right hemiplegia (partial paralysis on the right side) and later on, I developed "acquired hydrocephalus" (excess cerebral fluid), which is controlled by a ventricular shunt. This means I'm prone to headaches and nausea sometimes when the shunt is not quite doing its job properly. I tire quite easily, so need to have a rest period in the day. I have no real use of my right hand so I type only with the left and this means that writing assignments etc takes me considerably longer, than it would an average student. Reading takes longer too, as there is an issue with my eyes. I often find myself reading the same line more than twice. Daily life is a constant challenge."*

> *"I have moderate to severe kidney disease which as I have one kidney has a fairly devastating impact when it kicks in at the higher end. On top of this I also have mild strokes or ischaemic attacks from time to time. Both of these impact on me in differing ways – i.e. the kidney normally causes general malaise and illness whereas the ischaemic attacks cause me problems with fine motor skills, balance, comprehension, verbal and written communication."*

> *"Acquired brain injury. Problem with memory, retention of information, ability to process complex questions/problems, easily distracted, and attention span."*

> *"I have lost a lot of strength from my legs, this has been put down to an apparent small stroke. I am a diabetic, type 2, although this is not thought to be responsible as it occurred "too soon" after my diagnoses. This disease also appears to have affected my eye sight."*

9.4.2. How does your disability impact on your study?

Some of the main impacts of ABI in regards to online study, as described by the students below, relates to the time it takes to complete tasks, particularly reading and comprehension:

> *"At times I find it difficult to maintain the level of concentration needed. I have to read things 3 or 4 times to comprehend them."*

"Mainly the size of print, it just makes me a little bit slower to read. Obviously any on site activity involves me asking for a disability pass in order to park my vehicle."

"I now need to study in half hour blocks. Some days my brain doesn't want to take in new info. I'm not able to travel for exams, or do the amount of writing they entail so I use a computer and a local invigilator."

"Makes completing essays and completing final exams difficult."

9.4.3. In terms of online learning and teaching technology – what works well and what doesn't?

The students in this group indicated a number of online learning and teaching platforms that they found worked well, looking positively at both Blackboard and unit websites as well as online learning more broadly:

"I have only used black board for my studies, and find it structure and layout is good."

"I love blackboard!"

"The unit pages are easy to access, as is the reading material. My notebook has everything I need bookmarked and I can access what I need within seconds."

"On line is obviously easier insofar as I do not have to keep changing class or visiting a canteen for nourishment or walk too far for toileting facilities."

As with other impairment categories, some different aspects of those same platforms were also highlighted as causing problems:

"I like to be online for several hours at a time and sometimes it "times out" which is annoying, but of no great concern. I often print out readings to avoid staring at the screen for too long."

"There are communication issues when tutors take too long to respond on Blackboard."

"Moodle – a little painful to navigate and not always clearly laid out."

9.4.4. In terms of teaching and instruction methods – what works well and what doesn't?

In terms of instruction methods, the students interviewed highlighted the positive role of unit preparation, delivery and presentation in aiding accessibility for this group:

"Having a set study plan/guide, that has weekly questions and weekly tutorials as these help to internalise the information."

"I prefer to get my basic material in hard form – if I am having a bad time, I can take the hard copy and sit in the sun."

"I learn from reading so love lecture notes more than online lectures which I find awkward if you just want to know something and have to skip through to get to the right part of lecture."

In noting what was less useful, both students who commented in response to this highlighted issues of timing and fatigue:

> *"Long tutorials and lectures are extremely frustrating as it's hard to complete due to poor attention."*

> *"I am having problems this semester with both units for differing reasons. They have both involved considerable TV viewing and research on the computer which exacerbates the ischaemic problems I have."*

9.5. Interview responses: disclosure of disability

Four of the five students interviewed indicated that they had disclosed their disability to the institution through which they were studying. These responses in many ways reflect the findings of the survey. In many cases this was directly tied to a need for special consideration. Two other students noted what they perceived as the relatively minor nature of their impairment, in one case again reflecting the study from Krause and Richards (2014) seeing no need to disclose or ask for additional help. The final student interviewed, however, indicated, disturbingly, that when they had asked for assistance they had been advised to withdraw from the unit:

> *"Yes, I inform all institutions of my condition. Usually, I inform the Disability Support/Equity staff at the institution because I know I am going to need extra time to do the work and complete assignments. Occasionally, I have also informed the tutor, but only when there seems to have been a lack of communication."*

> *"It occurred 3/4 through a unit and I needed to know what support was available. Don't think it made any difference."*

> *"Mine is a very minor disability, compared to some, I personally find people accept me and my condition and are respectful of that?"*

> ***"****I like to be honest. Should anything "crop up" I cannot be told I have been dishonest. Mine is not the sort of disability anyone could object to. I appreciate I am very lucky in that aspect. I haven't asked for any special help as a parking pass will be all I shall require for exam purposes."*

> *"When I asked for consideration for one unit that I was behind in, the Tutor advised me to drop out which I did not want to do."*

9.5.1. Have your learning experiences changed your future study choices?

There were some mixed responses to this question for students with an ABI and, as can be seen below, these experiences were largely not directly related to the interviewees' disability:

> *"I had previously attempted a B.Ed. at a local university, but had some family issues and health concerns. When I wanted to return to it, I chose OUA because it would be more flexible. It was not made clear to me, until it was too late, that I was supposed to approach potential placements myself. It also took them 18 months to tell me that what credits I had managed to acquire were now too old to be taken into account. To add insult to injury, I heard the women laughing at my expense over the phone. This put me off studying with OUA altogether for a while. When I returned, I chose a B.A. from a different university, in a subject in which I was interested, but that required no practical placement. This suits me better and still allows me to work towards my goal of earning a degree."*

> *"It will affect selection of the rest of the units I need to study."*

"Yes, but that has nothing to do with my disability."

9.5.2. What are your biggest challenges?

Two of the four responses to this question clearly relate directly to the students' disability. For the other two, however, challenges common to all OUA students were more prominent:

"Reading for very long periods is difficult. I often print out set readings, in a larger font, where possible, to avoid having to look at the screen for so long. I type with one hand, which takes longer, so I have to allow myself longer study periods in order to get them done."

"Having a long list of weekly readings and "over the top" lectures that include too many power points."

"Poor internet – the quality is affected by the time of day, the number of tourists using the internet. It makes it more difficult when I am feeling ill."

"Being time poor with a large family and many other commitments."

9.5.3. What would you change to make study easier?

Two of the students highlight the value they place in offline access to their online learning content to make learning easier. Others look at the institutional arrangements related to their degree, as well as learning and teaching methods:

"Would it be possible for students to be given a choice to receive the material in hard copy as well as on the computer?"

"Not all units provide a disc, which is a shame. When I have done units that do, I have listened to the lectures, not only on my computer, but also in the car and as I have gone about my household duties. For each unit, I think every student should receive a disc. It also means that if there are technical difficulties such as power cuts, the students can still continue on with their study."

"I find it tough that the units I need are only offered twice a year. Forces me to take on 3 units, followed by one the next study period where 2 units each study period would be much more manageable. Exams in the first week of a new study period is tough! End up behind in new units by week 1!"

"Including more face time, such as the blackboard collab sessions."

9.5.4. What other recommendations would you make?

Two points raised in other impairment categories in this report were again highlighted here. Firstly, the need to provide recertification for an ongoing disability and the time and costs involved and, secondly, the need for universities to understand their requirements to provide accommodation for students with disabilities:

"Another point I would like to raise is the need for medical certification to be renewed every year. This infuriates my doctor, as well as myself, as my condition (and that of most other disabled students) is constant... That is to say, it will never improve or deteriorate. Annual certification is, in my opinion, a waste of time and money. I pay $55 to see my GP to inform the university staff of something they already know. Renewal of certification should only be necessary should the medical status change."

"The issue mentioned earlier, in which a tutor refused me an extension is unusual, but should not have happened. If rules and guidelines are in place to assist a student to be successful, the tutor has a responsibility to follow them. It is also very frustrating that each of the institutions within OUA has its own rules and guidelines. They should be the same throughout the organisation."

9.6. Conclusion and summary

Some notable features of this impairment type that come through in the survey and the interviews include the relatively slow progress of these students through their degree program, perhaps reflecting Rees and Skidmore's (2008) observation that "slowing down" learning was important in aiding students with an ABI to learn effectively. This group, unlike other impairment categories, did not make specific comment on assessment beyond noting the potential problems for accessing exam venues.

Verburg, Borthwick, Bennett and Rumney (2003) noted that telecommunication technologies can be of considerable benefit in educating both teachers of students with an ABI and students themselves, with "instant online support in the classroom". This is an area that is under-researched but potentially very beneficial to both students and educators. They suggest that having a small number of effective online resources available to those working with students with ABI would be of great benefit for this group. These would seem to be particularly useful in an online learning environment. Similarly, a number of the features offered through online study seem to suit the needs expressed by this group.

However, the survey demonstrated the reluctance of many in this group to disclose their disability, and the relative ineffectiveness of accommodation when it was requested. The development of effective online tools to help this group is also hampered by their relative low numbers in the institution. This is further problematised through their classification in the "other" category in the official OUA statistics on disability.

10. Intellectual disability

10.1. Introduction

Intellectual disability is defined in the United States' *Higher Education Opportunity Act 2008* as a student:

> *With a cognitive impairment, characterised by significant limitations in intellectual and cognitive functioning; and adaptive behaviour as expressed in conceptual, social, and practical adaptive skills* – as cited in Gringal, Hart, and Weir (2013).

This includes a range of different impairments; for this study it also included students who are on the autism spectrum.

While it would be preferable to refer to this group as people with an intellectual impairment, intellectual disabilities is the widely used descriptor for this group and, as Schalock et al. (2007) observe, this label in some ways already reflects the influence of a social approach to disability over the preceding label of 'mental retardation'.

The Australia Institute for Health and Welfare (2008) estimate that the prevalence of intellectual disability in the Australian population is approximately 3%. If the data from the survey is extrapolated it indicates that people with an intellectual disability make up a mere 0.06% of the students enrolled at OUA. This would seem consistent with Ross, Marcell, Williams and Carlson's (2013) observation that:

> *Young persons with intellectual disabilities and particularly those with LD* [learning difficulties] *and developmental disabilities (DD) lag behind in college admission rates and do not benefit from higher education to the same extent as their peers without disabilities.*

Similarly, the Australia Institute for Health and Welfare (2008) noted that people with an intellectual disability in Australia were less likely to attend post-secondary education. In 2003 only 9% of people with an intellectual disability aged between 20-24 years participated in post-secondary education, falling away to 5% for those over 25.

However, more students with intellectual disabilities are now seeking access to higher education (Carroll, Petroff, & Blumberg, 2009; Gringal, Hart, & Weir 2013; Kleinert, Jones, Sheppard-Jones, Harp, & Harrison 2012) and, as Mock and Love (2012) note, there are correspondingly greater opportunities in higher education for these potential students.

While there are studies that explore intellectual disability in a higher education context – such as Ross, Marcell, Williams and Carlson (2013), Lally, Leanne, King, O'Bryrne, Jennings and Foran (2010) and Gringal, Hart and Weir (2013) – and some on the use of eLearning in this group – such as Davidson (2012) – there seems to be limited research exploring all three tenets of intellectual disability, eLearning and higher education. From the brief results outlined in this study, it would appear that the benefits of eLearning would seem to offer significant opportunity to students with this impairment type.

10.2. Survey results

10.2.1. Demographics

This group was the smallest in the survey, the six respondents making up 1.8% of the total number of respondents. This relatively low number of responses means that some of the findings of this part of the survey need to be treated with more caution than other impairment types with a larger response rate.

The survey responses came 83.3% from women, higher than the 72.5% for the whole survey. With only five responses to the question of previous educational experience, it is hard to draw much from the responses to this question.

Q3: What is the highest level of school you have completed or the highest degree you have received?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than high school degree	0.0%	0	10.8%
High school degree or equivalent	40.0%	2	18.3%
Some college or university but no degree	60.0%	3	52.0%
Associate degree	0.0%	0	3.1%
Bachelor degree	0.0%	0	12.1%
Graduate degree	0.0%	0	3.7%
Other (please specify)		2	69
answered question		5	
skipped question		1	

The survey found a number of instances where a person with intellectual disability would also have other impairments, particularly mental illness. This was consistent with the Australian Institute for Health and Welfare (2008) report that found that people with an intellectual disability also experienced mental illness at a rate of 57%.

Q4: What type of disability or impairment, if any, do you have?		
Answer options	**Response percent**	**Response count**
Hearing impairment	16.7%	1
Vision impairment	0.0%	0
Mental illness	50.0%	3
Learning disability	33.3%	2
Medical impairment	16.7%	1
Intellectual disability	100.0%	6
Mobility impairment	16.7%	1
Acquired brain impairment	0.0%	0
Other (please specify)		1
answered question		6
skipped question		0

10.2.2. Studying through OUA with a disability

The low number of responses make it hard to generalise too much in this area in terms of years of study, but there is a noticeable move away from the Arts and Humanities in this group compared to the broader survey.

Q5: How long have you been a student through OUA?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Less than 1 year	16.7%	1	34.2%
1 year	33.3%	2	14.4%
2 years	16.7%	1	18.9%
3 years	0.0%	0	17.2%
4 years	0.0%	0	7.1%
5 years	16.7%	1	2.8%
6 years	16.7%	1	1.4%
7 years	0.0%	0	1.7%
8 years	0.0%	0	0.6%
9 years	0.0%	0	1.1%
10 years or more	0.0%	0	0.6%
answered question		6	
skipped question		0	

Q6: What is your chosen field of study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Arts & Humanities	33.3%	2	57.4%
Business	0.0%	0	13.3%
Education	16.7%	1	6.7%
Health	0.0%	0	5.5%
IT	16.7%	1	6.7%
Law & Justice	33.3%	2	11.0%
Science & Engineering	0.0%	0	5.5%
Not specified	0.0%	0	1.4%
Other (please specify)		0	
answered question		6	
skipped question		0	

10.2.3. Accommodations and disclosure

The respondents indicated a low level of awareness of any accommodation offered, and only one student indicated that they had received any accommodation in relation to their studies. This one instance of accommodation was not with a majority of units of study, nor was it adequate most of the time when it was offered.

Q7: Are you aware of the type of accommodation that can be offered by the unit providers in relation to your disability/impairment to help with your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	16.7%	1	28.7%
No	66.7%	4	43.9%
Unsure	16.7%	1	27.3%
answered question		6	
skipped question		0	

Q8: Have you received any accommodation in relation to your disabilities in relation to your study?			
Answer options	**Response percent**	**Response count**	**Full survey response**
With all units of study	0.0%	0	6.6%
With most units of study	0.0%	0	7.5%
With some units of study	20.0%	1	16.1%
With no units of study	80.0%	4	69.7%
answered question		5	
skipped question		1	

Q9: Did you find this accommodation was adequate and appropriate?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes, always	0.0%	0	9.7%
Mostly	0.0%	0	10.3%
Sometimes	20.0%	1	9.2%
Never	0.0%	0	0.9%
Have not received any accommodation	80.0%	4	69.9%
answered question		5	
skipped question		1	

Despite this low rate of success with accommodation, the students in this category had a very high rate of disclosure, with only one incidence at one institution where a student had not disclosed their disability. Despite this, a number of the respondents also provided reasons why they might not want

to disclose their disability. Unsurprisingly, given the previous answers around accommodation, a number indicated that they did not think it would help.

Q10: Have you informed the institution(s) where you are studying that you have a disability?						
Answer options	**Yes**	**No**	**Have not studied with this institution**	**Response count**	**Percent disclosed**	**Full survey response**
Curtin University of Technology	3	0	2	5	100%	65%
Griffith University	4	0	1	5	100%	71%
Macquarie University	1	0	3	4	100%	66%
Monash University	1	0	3	4	100%	29%
RMIT University	1	0	3	4	100%	57%
Swinburne University of Technology	2	0	2	4	100%	58%
University of South Australia	2	0	2	4	100%	58%
Australian Catholic University	1	0	3	4	100%	46%
Charles Darwin University	1	0	3	4	100%	27%
La Trobe University	1	1	2	4	50%	11%
Learning Network Queensland	1	0	3	4	100%	38%
Murdoch University	1	0	3	4	100%	62%
Polytechnic West	1	0	3	4	100%	17%
The University of New England	1	0	3	4	100%	30%
The University of Western Australia	1	0	2	3	100%	44%
Other (please specify)						0%
Total response	**22**	**1**			**96%**	**60%**
answered question				6		
skipped question				0		

Q11: When you have not disclosed that you have a disability to an institution, what are the factors that caused this?			
Answer options	**Response percent**	**Response count**	**Full survey response**
I did not think it would help	50.0%	2	51.8%
I did not know I could	25.0%	1	13.1%
I did not know how	0.0%	0	13.9%
I did not need any accommodation	0.0%	0	26.5%
I did not want any accommodation	0.0%	0	9.0%
I did not want to disclose my disability/impairment	25.0%	1	17.6%
Other (please specify)		1	
answered question		4	
skipped question		2	

10.2.4. Learning technologies

This group were very heavy users of laptop computers relative to the rest of the survey responses.

Q12: How do you access the internet for your studies?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Desktop computer	16.7%	1	46.2%
Laptop computer	100.0%	6	74.9%
iPad / tablet	33.3%	2	27.3%
Smartphone	16.7%	1	23.9%
Other (please specify)		0	
answered question		6	
skipped question		0	

The survey found that, for students with an intellectual disability, a high number of students had found trouble accessing online platforms for learning and teaching. Unfortunately again, the relatively low number of responses makes it hard to draw any conclusions about the accessibility of particular platforms.

Q13: Have you had any problems accessing online learning platforms due to your disability/impairment?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	33.3%	2	17.9%
No	66.7%	4	82.1%
answered question		6	
skipped question		0	

Q14: If yes, which platforms have you experienced difficulty with?								
Answer options	**Not used**	**No prob-lems**	**Minor prob-lems**	**Major prob-lems**	**Unusable**	**Response count**	**Prob-lems**	**Full survey response**
Moodle	4	0	0	0	0	4		35%
Blackboard	0	3	2	0	0	5	40.0%	48%
Facebook	2	1	1	0	0	4	50.0%	21%
Twitter	2	0	1	0	0	3	100.0%	12%
Slideshare	3	1	0	0	0	4	0.0%	12%
Prezi	3	1	0	0	0	4	0.0%	17%
Lectopia	4	0	0	0	0	4		40%
Echo 360 / Echo Centre	1	0	2	1	0	4	100.0%	49%
PDFs	0	4	0	0	0	4	0.0%	30%
Blogger	2	1	1	0	0	4	50.0%	25%
Wordpress	3	1	0	0	0	4	0.0%	16%
WebCT	4	0	0	0	0	4		20%
YouTube	0	4	0	0	0	4	0.0%	21%
University websites	0	3	1	0	0	4	25.0%	43%
answered question						5		
skipped question						1		

10.2.5. Recommendations / future involvement

This group of students recommended OUA as a place for study broadly at the same rate as the overall survey sample.

Q16: Would you recommend OUA as a place to study for people with disabilities?			
Answer options	**Response percent**	**Response count**	**Full survey response**
Yes	66.7%	4	75.9%
No	0.0%	0	3.1%
Maybe	33.3%	2	21.0%
answered question		6	
skipped question		0	

10.3. Interviews responses

This group of students were very interested in being involved in the interview stage of the research, with 100% responding positively to Question 17 as opposed to the overall survey response rate of 63.5%.

Three people responded to the interview request. All chose to provide written responses to the interview questions. More specifically, the respondents identified their specific impairment type as listed below:

1. Autism spectrum (and mobility).
2. Autism spectrum disorder (and mobility, mental illness).
3. Asperger's syndrome.

10.4. Interview responses: accessibility

10.4.1. How does your disability impact on your daily life?

Students highlighted the impact of this impairment type on their ability to interact with others, as well as the impact of multiple impairments:

> *"I have Asperger's syndrome now known as High functioning autism. Oftentimes I don't know how to properly react to social situations. I often find unfortunate events very funny. As well as often seeing the serious side of funny events. Sometimes I push people too hard when I should be more polite. I am often clumsy at imitating conversation, and once I am in conversation will usually steer it towards very serious or very open ended topics. This is not on purpose it's because I see connections in very banal everyday topics with higher level philosophical and scientific ideas."*

> *"I am on the autism spectrum and it impacts on my ability to interact and also to undertake certain tasks. I also have a physical disability which affects my mobility and also the extent of time I can sit, stand, walk, be in a car, and lie down."*

10.4.2. How does your disability impact on your study?

Students' responses following from the observations about problems with interaction focused on the problems presented by group activities, and also the extra time taken as part of their studies:

> *"This causes difficulties at times with student interaction – online, it is impossible to pick up body language and vocal inflections that assist me in communication (an area I can struggle with). I find group work virtually impossible in an online environment."*

> *"My difficulty in communication makes hard for me to effectively in groups, furthermore I can sometimes find it hard to understand the brief of an Essay."*

> *"My disabilities affect the length of time I can be at the computer and my sensitivity to light can make reading from a screen very difficult. Both my mental and physical issues require medical attention at various times and also frequently changing prescriptions which can affect scheduling for assessments etc and other tasks."*

10.4.3. In terms of online learning and teaching technology – what works well and what doesn't?

In response to this question, students highlighted their positive experiences with Blackboard:

> *"For the most part blackboard is a very good platform for learning, it is great having everything in the one place and being able to work on it at any time."*

> *"Blackboard is fine."*

This group expressed problems with the compatibility of online systems, and the direct impact of their impairment on the online learning process. As with other impairment groups, they also found problems with Blackboard:

> *"Teachers sometimes link to very outdated online software that is no longer supported by currant [sic] browsers and operating systems. All software provided should work on a modern browsers and operating systems."*
>
> *"Too much on-screen reading is problematic for me."*
>
> *"Sometimes there are glitches on blackboard, in some tests the question doesn't match the answer."*

10.4.4. In terms of teaching and instruction methods – what works well and what doesn't?

Students expressed satisfaction with the online learning process around online lectures and readings. They also expressed what they found easiest in terms of assessment design:

> *"Lectures with powerpoints because I can listen and read and go back over anything that was unclear."*
>
> *"The combination of lectures, slides and readings (although sometimes the amount of reading leads to boredom which affects learning) works well for me along with the knowledge that I can contact my tutor if a problem arises."*
>
> *"Having clear instructions on what is required for an assignment, being given an example Essay is also very helpful."*

Again, areas that are expressed as good, such as online lectures, were also sometimes highlighted as presenting problems. The interviewees also discussed problems associated with the pace of work required:

> *"Lectures are often poorly recorded and the lecturer is barely audible. It is also incredibly frustrating when an on campus student asks a question during the recording and the teacher does not repeat it for the benefit of the listeners. Similarly when there is discussion among on campus students and the teacher on any point, listeners are excluded."*
>
> *"Because of my disabilities I find it difficult to sometimes keep up with online exercises that require some contribution each week. I would be able to work with less stress if there was more opportunity to work at my own pace a little more."*

10.5. Interview responses: disclosure of disability

Consistent with the high rate of disclosure found in the survey responses, all three interviewees indicated that they had disclosed their disability to the institutions where they were studying – all reported that this had helped to varying degrees. Students' comments on their reasons for disclosure were mainly focused on informing teaching staff:

> *"Yes, to the Curtin Disability Support unit and each new tutor I have. Because sometimes I might miss a week's interaction and I like to notify them of this possibility beforehand. Also if I have any problem arise from my anxiety etc the tutor will have been forewarned."*
>
> *"So teachers might understand any issues I had."*

"Because I feel that it will allow for understanding and so that the institution can best accommodate my needs so I can reach my potential."

10.5.1. Have your learning experiences changed your future study choices?

The students' comments were pretty short and to the point on this question. One answered "yes", another "no", the third observed:

"I chose to seek online study because it suited me more than being at a campus but I don't think previous learning experience had much influence just personal preference."

10.5.2. What are your biggest challenges?

For this question, students chose to highlight issues associated with communication to tutors, especially around assessment, as well as class interaction:

"Time management and getting the information out of my head and into writing v essays and to answer questions on exams. I am not always sure as to what the tutor wants or expects with some questions so it takes me extra time to figure it out but I get there in the end."

"Not being able to discuss feedback from a teacher. Just having to accept whatever they say and move on. Any assessment that is a group activity causes huge problems due to my ASD."

"Organising a schedule and some elements of class interaction."

10.5.3. What would you change to make study easier?

Again, issues around communication with tutors and assessment were highlighted in the responses to this question, as well as issues around timing:

"I would like to know exactly what the tutor expects of me and what I have to do so it's less stressful for me."

"Individual assessment. Assessments marked over the study period rather than most of them due at the end. Interaction or discussion with tutor in regards to feedback. Less onscreen reading. More information in course outlines in regards to assessment requirements so planning unit choices is easier."

"Clearer questions. Say what you mean and mean what you say and sometimes be a little more obvious not all people know how to read between the lines."

"Make the units a bit more at-your-own pace (for want of a better term)."

10.5.4. What other recommendations would you make?

The responses here were more related to the way the university operates and approaches to learning a teaching rather than relating to the students' particular impairments:

"Only that I'd like to see more units available in study period 4. I know this is out of OUA's hands but for someone like me who depends on study to keep her brain active, that break over SP4 can be dreadful."

"I wonder sometimes if some of the tutors actually have a clue. I understand this sounds petty but I have been amazed at the unhelpfulness of feedback from more tutors than I care to think about."

10.6. Conclusion and summary

Bunning, Heath and Minnion (2009) noted the great potential for eLearning and the web to enhance the lives of people with intellectual disabilities and provide new opportunities for communication and empowerment. While there were comparatively low numbers from this group in the responses to the survey and interviews, there were a number of areas that were highlighted as pertaining to the students with intellectual disabilities. The survey highlighted the problems around accommodation, both in terms of awareness and effectiveness, for this group of students. This contrasted with the high rate of disclosure these students made that came through in both survey and interview responses. The interviews also highlighted some issues with the pace of study that impacted on some of this group.

Most notably highlighted in the interviews were issues around communication and interaction. Students expressed a need for requirements and expectations relating to their learning to be clearly expressed. They similarly required feedback to be clear and simple in its expression. They also found problems in relating to other students – this was particularly highlighted in relation to any group work requirements set as part of the learning and assessment process.

This group represents another impairment type that while present in higher education in growing numbers have had only limited academic attention addressed to what would be the most effective learning and teaching strategies to best accommodate these students. This lack of research is further exacerbated in an eLearning environment.

11. Conclusions and recommendations

11.1. Major findings

While this study has broken the responses into eight different impairment categories it also has some significant value as a complete volume with nearly 500 responses from students, including nearly 150 interviews throughout 2015. It is also timely as eLearning continues to be a growing area in higher education, with the challenges to its existing format from Massive Online Open Courses (MOOCs) seemingly receding (Straumsheim 2016). From this study it seems that eLearning presents an attractive and accessible place for learning for many people with disabilities. However, it has also identified that there remain a number of problems.

This study has focused on the perspectives and experiences of the students currently studying in the system through OUA, and then placed them in the context of the existing literature. Many of the statements made by students in these interviews are relevant to all students regardless of mode or fitness such as problems with scheduling of assignments, cluttered web sites, 'hard to navigate' sites, lack of time, and outside commitments to work and family impeding study. However, there are a number of findings from both these interviews and the survey that point to how eLearning in general and study through Open Universities Australia in particular could be made more accessible and welcoming for students with disabilities. In this last section of the report these will be explored in more detail, along with the major finding of this research and proposed future directions for research in this area.

11.1.1. Impairment types

The social model of disability is in part founded on the idea of solidarity amongst people with different impairment types. By putting the focus on the disabling role of society, rather than an individual body that needs to be ‘made well’ the model allows for people with many separate impairments to come together to demand social change. However, as Liz Crow (1996) observed impairments will impact on the individual as well. Inclusive eLearning design and implementation needs to embrace both these elements, to enable the greatest participation through universal design, but at the same time being able to embrace and accommodate individual difference.

The most notable of the findings of this research is the prevalence of the different impairment types in the OUA student body. When optimising the accessibility of eLearning design consideration of technical design is most often focused on making sure it is accessible for people with a perceptual impairment, most notably relating to vision and hearing impairments, as well as those with dexterity problems often found in students with a mobility impairment. Inclusive pedagogical design will also often focus on impairments related to students with learning disabilities. However, this study has shown that the two largest impairment categories are students with a mental illness and those with a medical disability. Of the 471 different impairment categories nominated in survey these represents 31.6% and 27.6% respectively. In a follow up research project currently being conducted with students studying both online and on campus at Curtin University mental illness and medical disability are again the two most prominent impairment categories. This prevalence appears to be more widely applied than just students studying online at OUA and shows that higher education, at least in an Australian context, needs to reconsider how we think of students with disabilities and the focus of our efforts at communication and accommodation for this group of students.

11.1.2. Mental illness and medical impairments

Both these categories include a wide variety of different specific conditions and heavily overlap with both each other and the other six impairment categories in the study. These two categories, to date, also have little or no literature around inclusive design in learning and teaching in higher education, particularly in an eLearning context. Both also represent a complex set of disabilities with often fluctuating and variable specific impairments where a person's condition can change from day to day. Developing inclusive design for learning and teaching for these impairment types is a challenge, and the relatively hidden nature of the largest category of mental illness, both associated with perceptions of stigma around disclosing the impairment, and an institutional reluctance to provide the figures for this impairment type by Open Universities Australia, makes the study of how this might be best done, and the perceived need for it, even more problematic. Research into this area must be seen as a matter of significant priority.

11.1.3. Learning Technologies

Different impairment types had different needs in the eLearning environment. The survey showed that students with mental illness and mobility impairments overall had less problems with access to learning technologies, while vision and hearing impairments, despite often being the focus of inclusive web design were, along with intellectual disability, the impairment types that experienced the most difficulty. It is disturbing to find that the three least accessible online platforms for students with disabilities were those most directly controlled by the universities themselves in terms of the Blackboard learning management system, the Echo 360 lecture recording system, and the universities' own web sites.

11.2. Recommendations

While the survey and interview responses illustrated many of the problems students with disabilities face studying online they also point to a number of recommendations for improvements that can be made to make these environments more accessible and welcoming for this cohort of students and potential students. These have been broken down into the four areas of policy and compliance; staff training; unit design; and assessment design and implementation. While these recommendations are addressed at Open Universities Australia they are relevant across the higher education sector.

11.3. Policy and compliance

11.3.1. Information distribution

Open Universities Australia needs to release the full breakdown of impairment types identified in enrolment as a matter of standard policy. The use of the 'other' category to hide the number of students with mental illness as well as acquired brain impairment and intellectual disability prevents the consideration of accessible eLearning design for students with these impairment types. It also hides the fact that students with these impairments can, and do, enrol to study and complete that study successfully.

11.3.2. Disclosure

An issue raised by students of all impairment types was that of disclosing that they had a disability to the institution. Currently students are given the opportunity to identify as a person with a disability when they enrol through Open Universities Australia. However they then need to repeat this process with each institution that they study through as part of their degree. Once they are registered with the institutions disability or accessibility office they will then need to disclose their disability again to any teaching staff that they work with. This is designed to protect the student's privacy and give them as much control over their choice to disclose or not. Part of this disclosure process also will require

students to provide documented evidence of their disability. This process will in many cases have to be repeated annually. This is designed to ensure that the universities are only offering special accommodation to those who genuinely need it.

The interviews found that students had a lot of problems related to this process. While some students clearly valued being able to control who they disclosed their disability to and under what circumstances, for others there was clearly a high degree of confusion, with many assuming that because they had declared their disability to OUA that their lecturers and tutors would be automatically informed. Others found the need to re-disclose to multiple people difficult and where documentation was required often costly. As one student put it:

> *"I think this would relate to a lot if not all disabilities. We get sick. It's what sick people do. That's just a fact. We shouldn't have to pay more to give proof of that. We shouldn't be demonized and made victims when we're not those things."*

This is particularly the case for students who have a permanent impairment, who then need to have it re-documented at different institutions and often repeatedly over time. There were different approaches to students disclosing that they had a disability. Students with mental illness, learning disabilities and acquired brain injury were reluctant to disclose often due to the stigma associated with the conditions while both vision and hearing impaired students had a high rate of disclosure. Students with a mobility impairment often indicated that there was no point in disclosure as they felt it would not be of any help to them.

This process could be greatly improved. When students register as a person with a disability the registration and any documentation should be held centrally by OUA. The students should be given the option of how much disclosure they then allow to be automatically propagated through different institutions and teaching staff. Some may then elect to continue to decide on a case by case basis when disclosure is needed, others may decide that they are happy for the information to be disseminated each time they enrol in a unit, and not have to worry about the process again. Any documentation should be examined, and only requested for renewal where this is appropriate. As one student requested:

> *"My main challenge is that I have to provide proof of my disability to each university as I move between units. It would be much easier if proof of disability was centralised through OUA and accepted by each university instead of having to get proof each time. It is not only time consuming but annoying for my hearing provider to provide letters each time I start with a new university, and so I haven't registered with the disability services of each university, only my main provider. I found the process too difficult and not worth the effort. If OUA had a standard disability criteria which was accepted by all the universities, it would be much easier."*

Students should be given the option to change the 'settings' on this disclosure process at any time, ideally through a simple online interface. This process would allow those students who wish to maintain a tighter control over this process that same freedom. The current process does allow for easy compliance with the laws governing the privacy of students' information. However, with the consent of students these should not represent an unavoidable barrier to reform.

11.3.3. Study period organisation and implementation

The somewhat relentless nature of the ongoing 13 week study period with no break in between was, for some students, a welcome feature that allowed them to be constantly involved in their study. For others however it was exhausting, and unavoidable, particularly for those who were reliant on being constantly enrolled to maintain the government support payments.

> *"I would attend on-campus if I could, because the breaks between study periods are fantastic for recuperating. However, since I can't attend on-campus, I would hope that Open Universities*

reconsiders its policy of no breaks between study period for undergraduates. Make it more like a real university! Please.“

This is an area that should be potentially reconsidered, particularly what constitutes a full time yearly course load in this context.

A second area for consideration is how students interact with each 13 week study period. Currently students are able to withdraw during a study period, and if it is due to the impact of any disability they are able to do so without penalty. However, there is not currently the ability suspends study and start again in a subsequent study period. This means that any work the student has completed towards completing the unit must be re-done. Resubmitting work from a previous incomplete study period is considered academic misconduct. This will have a significant impact on people with fluctuating conditions, who might struggle to participate for a full 13 weeks. Currently assessment can only be deferred if the unit is nearly complete. A possibility to suspend study and re-join it in a later study period would require some administrative adjustment, but would provide a potentially much more inclusive learning environment.

11.3.4. Promoting a disability friendly environment

Students in a number of impairment categories suggested that universities actively promote themselves as disability friendly, and more specifically welcoming and accommodating of specific disability communities and impairment types. Open Universities Australia and their partner organisations go to considerable lengths to provide an accessible and welcoming environment for students with disabilities. However, if potential students are unaware of this then they will be less likely to be in a position to take advantage of them. This is exacerbated for impairment types that come with a history of stigma, such as mental illness. While ideally online learning environments would be accessible to all students, this is not always the case and students do sometimes require special accommodations for access a particular learning environment. The survey revealed a significant lack of awareness of what can be provided in terms of special accommodation for students with disability. Again this was different for different impairment categories and is another area that would benefit from a greater level of promotion to the student and potential student body. This report recommends that some resources be devoted to promoting this disability friendly and welcoming attitude at both OUA and its partner institutions, and also how students with disabilities can be assisted if they require it.

11.3.5. Developing an online forum for students with disabilities

One of the interesting proposals put forward by the students in the interviews was to develop an online forum to allow students with disabilities to share experiences and ideas. This is not without president for OUA students with the ‘Uni Coffee Shop’ Facebook forum already providing a student lead space for social interaction and support (see Leaver 2014). If such a forum needs to be a student lead development, or if OUA or its partner organisations can facilitate such a forum is an interesting question, but certainly there is obvious value in seeing the development of such an online space for students to exchange ideas and experiences.

11.4. Staff training

One area where this disability welcoming and accommodating environment can break down is when staff are inadequately trained or lack awareness of university policy in relation to students with disability. This came up a number times in the interviews where students with disabilities picked up on inadequately trained and aware staff not adhering to established policy. Staff at all levels of the university, both professional and academic, need to have training on disability awareness and policies as part of their induction. Too often currently this training is made available as an option for

staff, often provided through the disability or accessibility office. This training needs to be distributed throughout the institution to all staff, including those on sessional teaching contracts.

As well as making sure staff are trained in university policy teaching staff should also receive training in the appropriate use of online technology, appropriate unit design approaches and effective learning and teaching strategies that can best engage and make accessible eLearning environments for students with disabilities. This is particularly important in the context of the findings of this report that the main impairment categories in the institution are not necessarily what they would appear from looking at the officially released statistics.

11.5. Unit design

11.5.1. Learning technology

Ideally all technology used in eLearning should be utilised following the principles of universal design and ensure that no student would need any special accommodation. This is unfortunately not always the case and staff when planning the use of technology need to be aware of the potential to exclude different students with different impairment types and ensure as much as possible that there are alternative paths for these students to access and engage with learning content. The use of different online platforms for learning and teaching needs to be both flexible and accommodating.

11.5.2. Multiple paths to access

ELearning presents the possibility for content to be presented in multiple formats. The Echo 360 lecture recording system for example comes with a rarely used captioning system that makes lecture material available, not only to students who have problem hearing the spoken lecture, but also more broadly to a range of students ranging from those who have English as a further language to those who have a learning style more suited to the written word, to those that access the lectures when an audio track might not be available or appropriate. Students accessing the internet through a Braille tablet also rely on information in a text based format. Providing audio and a textual version of the same content helps all students, not just those with disabilities and this should be encouraged and enabled wherever possible.

11.5.3. Learning and teaching

There were a number of learning and teaching strategies that came in for criticism as inaccessible for students from different impairment types. Some found asynchronous communication most effective, others (although less) found synchronous real time communication most effective. Again providing flexible alternatives is important. Many students also mentioned how inaccessible they found group work. This is an area that needs to be seriously considered. There are times when this is an effective and appropriate tool to deploy in learning and teaching, but this needs to be balanced against its potential to exclude students with disabilities and alternative paths offered.

11.5.4. Trigger warnings

A few students, particularly those with mental illness, observed that sometimes the unit content itself can be challenging. In one case one of the students interviewed had thoughts of self-harm that were tied to a particular unit's content. Others also found particular topics of discussion could be confronting, particularly in synchronous discussions.

While university learning should ideally challenge students on different levels, this report recommends reviewing content that may cause some students distress and making students aware of this beforehand. Tutors and lecturers should also be aware of the potential for distress, particularly

for students who may be a person with a mental illness and make sure that these students have the ability to withdraw from any situations that they might find particularly distressing or harmful.

11.5.5. Pace and control of learning

A number of students in the interviews highlighted the value of being able to control the pace of their own learning:

> *"… because of my disabilities I find it difficult to sometimes keep up with online exercises that require some contribution each week. I would be able to work with less stress if there was more opportunity to work at my own pace a little more."*

This demonstrates the value of unit design that allows students to work through the unit's learning materials at their own pace, and as they are able, rather than through a prescribed weekly release of information and withdrawal of discussion points. This obviously presents problems when trying to keep all students engaged in a particular weeks discussion points, but the potential for greater inclusion for students with disabilities and others who would benefit should override these concerns when thinking about inclusive unit design.

11.6. Assessment design and implementation

11.6.1. Exams

For many students many of the advantages of online study are negated by the use of invigilated exams. They must be able to travel to an appropriate location and confront inaccessible exam rooms, and conditions. While many students commented on how this process has been greatly assisted though accommodations offered through the university others pointed to not being able to take exams in buildings with no wheelchair access, the inability to hear or understand the instructions from invigilators, not being informed that they had been awarded extra time to complete their work, and facing unpredictable and fluctuating levels of disability due to their impairments. The first recommendation in relation to this form of assessment is that the line of communication seems to sometimes breakdown between the instructions provided for student needs from a disability office and the staff at the point of examinations. This needs to be an area of priority to reduce its incidence. Secondly where possible alternatives to the standard examination need to be explored and offered to students who will not receive an assessment that fairly reflects their learning in standard exam conditions.

11.6.2. Essays and assessment pacing

While in general there was a preference for essay style assessments, a number of students in the interviews commented on the stress a few large essays can cause, and on the value of a more evenly paced out assessment structure across the study period to avoid this. These are both areas that need to be taken into consideration as part of assessment design.

11.6.3. Group work assignments

There was a common theme throughout the interviews of students who found group work assignments difficult or in some cases impossible to work with. Like group work used as a tool for learning and teaching group work used as a form of assessment needs careful evaluation of its pedagogical value, and alternatives offered in order to accommodate students from a number of different impairment types.

11.6.4. Assessment extension policies

Many institutions working through Open Universities Australia have quite onerous policies on when an extension can be granted. As one student observed:

> *"The standard that we work to the same level as regular university although valid is difficult if you have an insane schedule or children. I think it would be nicer if the lecturers were more open to a relaxed style of learning and relaxed discussion on their boards. Some of us aren't geniuses we are just mum's or dad's trying to get back into work."*

While there is value in both discipline and equality across a student cohort in making sure that all students submit assessment by the same deadline, institutions should examine carefully the trade-off involved in having less prescriptive polices and providing a higher degree of flexibility, particularly for a student body with a high representation of mature age students many balancing jobs and families alongside their studies, and often facing problems that do not easily map on to existing extension criteria.

These problems encountered by many students studying through OUA are then magnified for students with disabilities who may find it more of a burden to produce the documentation necessary to satisfy existing university extension policies, and who might have impairments that create a much higher need for this type of accommodation. This report recommends a more flexible and student focused approach to awarding assessment deadline extensions.

11.7. Future directions

11.7.1. Universal design in eLearning

The next step from this research should be to explore what universal design in eLearning looks like. The main types of impairments that need to be accommodated, rather than what is the normal focus of sensory and cognitive problems – although these are obviously still important – are students with mental illness, complex and varying medical disabilities and mobility impairments that can impact on the way students are able to access their learning material. This design needs to address areas related to online teaching platforms and how they are utilised, teaching methods and assessment policy, and how the timeframe around learning and teaching is administered. The students in this study have shown that they are willing and eager to have their voices heard and they need to be included in these design processes.

11.7.2. Staff voices

One of the gaps in this research is the lack of a voice from staff in higher education institutions. This is an important omission. The opinion of both professional and academic staff in relation to access for students with disabilities in the institution, and the challenges and successes they have encountered is an area of insight conspicuous by its absence. Similarly, the experiences in an eLearning environment for staff who themselves are people with disabilities is another voice that needs to be heard as part of developing best practice in this area.

11.8. Conclusion

For many students with disabilities studying online it makes the experience of higher education more fulfilling and less difficult. For others is the only way they can access higher education.

> *"I think Open University is wonderful but people like myself use it because mainstream university would not work for us."*

The design and implementation of accessible eLearning environments involves cooperation from a number of parties (Seale, 2006, p. 284). Accessibility guidelines need to be developed according to the needs of students, based upon their real-life experiences, while accessible course design needs to occur in tandem with universally accessible web design standards, and information must be disseminated in a variety of formats to ensure that no student misses out. Most significantly, universities and other higher education institutions need to not treat disabilities as an individual problem for students to solve, and instead must use tools, teaching methods and design standards that make content accessible to all. As Seale and Cooper discuss, it is not only the technology that must be adapted to improve the accessibility of online courses, but also teaching methods and teacher awareness of the needs of disabled students (Seale & Cooper, 2010, pp. 1114-1115).

This report has highlighted the existing experience of students with disability studying online. An overwhelming majority of these students recommend this as an effective way of participating in higher education. It is hoped that these recommendations can further enhance the appeal and accessibility of this type of learning environment both through Open Universities Australia and more generally across the higher education sector.

12. References

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