

UNIVERSITY OF
BIRMINGHAM

**IPad for Disabled Students Study at
University of Birmingham**

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Summary and key points

Background

The upsurge in the use of touch-screen tablets like iPad over the last 3 years or so has had an impact on education both in the pre-16 compulsory stage and the post 16 higher /further educational fields. In the HE sector what is noticeable is that tablets are not being routinely recommended for disabled students in their DSA assessments but they are in evidence in all educational fields.

Key points from study

This small longitudinal study into the experiences of 8 students might not be significant on its own but in context with research into the educational field in this report, valid conclusions can be drawn.

The following points arising from the study should be considered when dealing with the question of which computer equipment can be recommended in the DSA funding and how institutions and supporting staff tackle the emergence of new mobile learning devices:

- More research is needed into the benefits of iPad/tablet use by disabled students leading to:
 - Increased knowledge for all stakeholders in the support of disabled students;
 - Update SFE and other funding agencies with knowledge of the appropriateness of recommendations of iPad/tablets by DSA assessors;
 - Provide resources for higher education institutions supporting iPad/tablet use by disabled students;
 - Anticipate the students moving into HE that have already used and benefited from iPad and tablets in their pre-16 education;

- Tablet devices and iPads in particular have unique qualities for assisting disabled students in their studies and should be part of the list of possible devices available to DSA assessors on a case by case basis;
- Use of iPads/tablets demonstrate a possible cost saving in certain situations but this should not be used as the main reason for recommendation, the benefit to the student should be the ruling factor;
- Assistive technology and technology has now a blurred line of distinction and the focus must be on how any device or system can remove major barriers from the progress of disabled students, added time and cost being the most pervasive;

Introduction

The project was possible because of a generous donation by an alumnus, “one of the cohort of the 1950s” who specified that the donation was to purchase assistive technology (AT).

Project aims and objectives

The aims and objectives of this project are:

- To evaluate if the iPad/tablet computer has special qualities to assist disabled students in their studies;
- For the participants to evaluate individual apps and select those helpful in their studies;
- To disseminate the information obtained during the project to all potential stakeholders concerned in supporting disabled students in Higher Education;

Dissemination of results

The results of the project will be presented to:

1. Teaching and Learning conference at the University of Birmingham on 24th and 25th June 2013
2. NADP (National Association of Disability Practitioners) annual conference on 27th & 28th June 2013 in Crewe, Cheshire.

These results will be summarised and submitted to the BIS review currently in progress, (see section below “NADP submission to BIS review”)

Participants

This project is working with 8 students of varying disabilities. The range of disabilities is:

- SPLD, (dyslexia and other);
- Asperger’s syndrome;
- Visual impairment;

Basis of selection

The 8 students were selected in conjunction with the disability/learning support/mental health advisors and the assistive technology advisor who is project supervisor. The only assessment was that none already had the use of the iPad or tablet device.

The agreement

The students all signed an agreement which required them to:

- Give feedback reports at intervals set out by the project supervisor;
- Attend 1 to 1 or group meetings specified by the project supervisor;
- Report any loss or damage as soon as this occurred;
- Ask for permission to purchase any apps that were not already agreed by the project supervisor;

At the end of the academic year, if each student had fulfilled the terms of the agreement they would then own their iPad. (Refer to Appendix B for a copy of the agreement signed by the participants).

Rationale behind transferring ownership

The rationale behind the decision to transfer ownership at the end of the project period if the terms of the agreement had been fulfilled were these:

- Tablets and other mobile devices demonstrate a move to a more personalised computing experience unlike more conventional computer systems. This is shown in the iPad setup with the user automatically connected and password protected for app purchase and upgrading;
- Although the iPad permits up to 3 users, transfers of purchased apps from one to the other would be a lengthy process in a context where lack of time is a key consideration;
- To require the amount of extra work needed by the students to maintain their side of the agreement would mean some form of payment and, although generous the ownership for completing their side of the agreement seemed totally practical;
- The idea of providing a device with apps that constitute resources to help the participants to improve their ability to study and then take them away at the end of the academic year seemed wrong;
- A criticism was made that this arrangement was some sort of inducement to the participants to provide feedback that bolstered the argument that iPads were a good solution to dismantling the barriers that disabled students experience in their studies. The feedback itself (see appendix A) can speak for itself on this point;

Why iPad?

The iPad was selected for this project because:

- It has built in accessibility for the range of disabilities, (ref: [Apple iOS accessibility](#))
- Despite much improvement in Android's accessibility for visually impaired, it falls somewhat below the standards of Apple's iOS VoiceOver screen reader, (ref: [switching to Android?](#) and [Evaluating Android 4.0](#))
- Apple App Store now has over 300,000 apps, (ref: [iPad apps in the app store](#))

a significant number being designed for disabled users, (ref: [AppleVis web site](#) and; [apps for dyslexia and learning difficulties](#))

- Windows Surface is a very new device and at the time of the project insufficient knowledge of the number and accessibility of apps was known;
- Kindle, from a recent US college study on Kindle DX as an e-book reader found it has many drawbacks for disabled students, (ref: [Reed College Kindle report](#))

Thinking behind the iPad project

My experience as a Disability Support Advisor and also as Assistive Technology Advisor for the University of Birmingham led to the following questions:

1. Why there were so few tablets recommended in the DSA Assessment of Needs reports coming to my in-box and those of my colleagues? Out of the 17 students I support who have received DSA none of them had a tablet recommended but 90% had a lap-top and 3 had asked for a tablet but were refused;
2. Why are there more studies evaluating the impact of tablets in compulsory education than in HE?
3. What might be the advantages and disadvantages of tablets for a disabled student studying here at UOB?

Why tablets are not being recommended

This question would be difficult to answer from the point of view of the funding agency, SFE as there are no guidelines or written strictures about recommending tablets issued by the Government or within SFE.

Perhaps there are clues in attitudes of DSA (Disabled Students Allowance) assessors and within the disability support professionals in HE. The following examples might clarify the situation a little:

- Views expressed on a web site set up for information on assistive technology and aimed at DSA assessors, disability professionals in HE and in employment;
- Experience within Disability Support department at UOB;
- Controversy about implementation of iPad in US Colleges;

Assistive technology resources in HE and employment

From a web site providing support and resources for assessors for DSA and employment, there are some signs that disabled students might not receive support from their DSA assessors because of negative views within this cohort. A negative view of iPad, iPod Touch and iPhone was expressed in January 2013 that visually impaired people were not having good accessibility gains because:

A new technology had been promised but not delivered and that some blind and partially sighted people were not suited to the touch-screen interface:

“Haptic screens' we were promised, where touch-screens would be able to display a physical representation of the display via touch, have still to materialise.”

“New iPad and IOS disappointing on accessibility features. ”

The potential of these devices continues to be hindered by the ethos that they remain locked-down consumer devices rather than creative enabling and adaptable technologies. “Users are restricted to accepting limited accessibility features that attempt to make sense of an interface designed to work via touch and vision, when the ability to make specialist customisations could be allowed to enable many more people to interact with the devices and apps via software/hardware adaptations and methods that would best meet their individual needs” (ref: [A web resource for DSA assessors](#))

Comment

The argument that the touch screen interface and non-production of haptic technologies is somehow excluding blind and partially sighted users from going

forward with emerging technology is not borne out in research according to the resources below:

[AppleVis.com](http://applevis.com)

Plenty of evidence of how visually impaired users are thriving with this new technology and its built-in accessibility abounds, for example applevis.com are:

“a community, we seek to encourage and support people in exploring the many ways in which these mainstream products and related applications can offer opportunities to the vision-impaired for personal enrichment, independence and empowerment.”

(ref: [AppleVis web site](http://applevis.com))

Maccessibility.net

Maccessibility is a resource for visually impaired and other disabilities using Apple products including IOS devices from where a number of other visually impaired resources and groups can be found:

“Maccessibility is devoted to connecting, compiling, and providing easy access to the best resources for blind, visually impaired, and other disability groups using Apple products.” It is maintained by [A dedicated group of visually impaired volunteers](#), who are Apple enthusiasts themselves. (ref: [link to Maccessibility web site](#))

Evidence of the benefits to two visually impaired students in this project also rebuts this argument, (see Appendix A Student Feedback).

“locked-down consumer devices rather than creative enabling and adaptable technologies”

This criticism that revolves around the competing business models characterised by “walled garden versus open source” is another misleading argument. Should any DSA assessment be based on the outcome of long term projections of 2 competing business models that may or may not be resolved in years to come?

(Ref: [Apple's walled garden versus Android's open source war](#))

Discussion with DSA assessor

A recent discussion with a DSA assessor said that there would be no recommendation for an iPad unless there was an overwhelming case for it such as the student could only operate a tablet and not a lap-top for example. If the assessor felt there were any objections that might be raised by SFE then there would be a refusal of the student's request for one. The assessor would rather discourage the student from wanting a tablet rather than recommend one and have to amend the Needs Assessment report after SFE had turned it down. The assessor had previously experienced Reluctance on the part of SFE to approve iPad/tablets and did not want to cause unnecessary delays by having to re-write part of the report.

This attitude was also experienced in 2 other students who wanted an iPad for very good reasons but were refused by a different assessor from another company rather than put it in the report and have it turned down later. All the students reported that this assessor simply stated that iPad were not possible as recommended equipment.

Controversy re implementation of iPad in US Colleges

The introduction to US colleges and schools of iPad caused much controversy between those keen to use the benefits of mobile learning devices and, in the main, some representatives of IT support management who raised issues about how to implement them in college and school IT infrastructure.

Fraser Speirs blog

In this blog Fraser Speirs, a main instigator of iPad in schools takes on arguments against their implementation in US colleges and schools.

He counters the arguments by maintaining there are clearly laid down steps to provide IT infrastructure with the needed alterations to accommodate iPad on a large scale. The controversy is characterised by some IT senior management resisting

these alterations and not envisaging the way forward with the development of mobile learning:

“To state the problem simply: IPad are designed for consumer use, and as such, they're not set up for large-scale implementations.”

Then later on the same article contradicts itself by:

“For schools making a major investment in IPad on campus, the solution is a combination of new policies and investment in third-party tools for managing the devices”.

(ref: [Fraser Spiers blog](#))

It would not be unusual to find this resistance to IPad/tablet implementation in UK HE institutions. The evidence contained within this report suggests the emergence of mobile device learning and the need for institutions to adapt to this emergence.

NADP submission to BIS

The latest BIS (Business, Innovation and Skills) review of the DSA scheme creates an opportunity for evidence to be submitted to Government on an important point which has a bearing on which equipment can be approved for DSA. This is the possible reduction of the equipment allowance on the grounds that some equipment would be expected to be owned by all students entering HE and therefore removing this equipment from possible recommendation by DSA assessors. If the suggestion were implemented by SFE (Student Finance England) and the funding agencies for Wales and Scotland, lap-top computers would certainly be targeted but the same argument could be used against the recommendation for IPad/tablets.

The question posed by BIS “Q 15: *Based on your knowledge of DSAs, disabled students and the general student population, is there any IT equipment currently supplied through DSAs that you think is generally required by the majority of students entering HE?*”

Part of the NADP’s response to that question states:

“There is no evidence to suggest that students are required to own a computer in order to enter HE”;

List of 1 HE study requires students to have access to rather than own, a range of different technology that varies from HEI to HEI and course to course and disabled students need access to this technology for different reasons to non-disabled students list end (ref: [NADP's response to BIS consultation](#))

Other Government departments

It may be possible to anticipate Government thinking on their seeming focus on the adaptation of technology and (their perceived view) on its appropriateness for state financial support. The DWP (Department of Work and Pensions), Access to Work Scheme withdrew support for a range of equipment and software but had to reinstate these following evidence it disadvantaged disabled people.

The NADP response to the BIS review reported this as:

“That a significant number of disabled people were disadvantaged”. As a result, the DWP has decided to reinstate equipment into the scheme from the current year, in order to ensure that disabled people have full access to the workplace.

Statistics backing up this evidence can be found, (ref: [Statistics from DWP on reduction of disabled people in employment](#))

(last accessed 10 May 2013)

(Report to Houses of Parliament Parliamentary Offices of Science and Technology: PostNote Number 411, May 2012L ICT for Disabled People)

[ICT for disabled people, Parliamentary Report](#)

(last accessed 10 May 2013)

NADP then commented that if a similar situation were to apply in HE then more disabled students would be disadvantaged if any class of equipment was proscribed.

“What is specially adapted equipment”?

There is a further example in which a Government department, HMRC (Her Majesty's Revenue and Customs) have altered their rules on what type of equipment qualifies as suitable for zero-rated VAT.

The current ruling of what is considered for VAT relief for disabled people can be found at: ([Rules for VAT relief for disabled people](#))

Recently a totally blind man purchased a trike (3 wheeled cycle) but because of his visual impairment he then had to purchase another trike to be attached so a sighted person could ensure the safety of the blind man. The HMRC ruling was that, because a non-disabled person could use the trike then it was not a special adaptation for a disabled person and no part of the purchase price would be zero rated. “the trike is not ‘solely designed’ for use by disabled people, therefore the whole trike is subject to standard rated VAT treatment and cannot be apportioned”, (ref: [HMRC rules for VAT relief for disabled people](#)).

Comment

By only recognising “specially adapted equipment” as valid for VAT relief, HMRC are adopting the medical model of disability and not the social model. The special adaptation they reserve for 0 rating implies re-engineering what is already available instead of anticipating that everyone has different needs. What more adaptation does HMRC need than that of a system at extra cost that ensured the blind person could cycle in safety?

Current research on iPad/tablets in education

Why are there more studies evaluating the impact of tablets in compulsory education than in HE?

Pre-16 Education

Currently in primary and secondary education there are:

- Projects evaluating the educational benefits of tablets in schools;
- Government collaboration with private industry to implement tablets in schools.

These 2 projects are either recent or on-going:

1. Cedars School in Greenock, Glasgow reports. The iPad has been ideal for promoting new ways to learn. Cedars has children with a range of different learning abilities. “Those with mild dyslexia find recording their work boosts confidence, and increasing iPad screen size helps them read text more easily” (ref: [Evaluation of iPad at Cedars School Greenock](#))
2. Implementation project: “The British government is pushing ahead with its ‘Tablet for Schools’ initiative, which aims to get tablets in schools across the country by the end of 2013” (ref: [Government sponsored project to equip schools with tablet computers](#)).

The work of Naace

Naace is an association for those interested in ICT and education featured in a project studying the implementation of iPad in Longfields Academy, Kent entitled “The iPad is a tool for education”, (ref: [Research on tablets at Longfields Academy](#)).

Tablets for Schools project

Naace is also involved in researching the implementation of tablets in both primary and secondary education. The findings of its Stage 1 research points out both

advantages and concerns about tablets in an educational context. From this comprehensive study into the experience of 3 schools:

- Honeywood School, Essex;
- Longfield Academy, Kent;
- Wallace High School, Belfast
- (And compared to 2 schools not provided with tablets);

The provisional results showed these advantages and concerns (which are relevant to HE):

Advantages	Concerns
<p>increased motivation to learn. Pupils were reported to be more creative, independent and engaged with their schoolwork.</p> <p>Collaborative Learning</p> <p>Increased collaboration between pupils was evident through applications such as Facetime</p> <p>Touch screen technology was seen as especially beneficial due to its size and weight, portability, intuitive interface, as well as lowered cost compared to PCs</p> <p>Pupils with special educational needs were also experiencing the benefits of using the Tablet in their learning. Due to the simplicity and intuitive nature of the touch screen interface these children were able to access their learning in a variety of ways, as well as accessing applications commonly used with children with learning difficulties.</p> <p>the launch of Ipad2 and its features, especially the camera and film capability, made the decision to adopt the Ipad easier.</p>	<p>Extra costs involved in supplying extra ICT equipment</p> <p>Fragility of devices, but (this was not a lasting negative point because the children took pride in their Ipad and took more care and bought protective covers).</p> <p>Pupils might become over-attached to the tablet and might neglect their school work in favour of playing games;</p> <p>Danger that 3rd party apps would be purchased duplicating apps already purchased and not keeping to a uniformity of app purchase for academic pursuits;</p> <p>Danger of theft and loss;</p>

(ref: Research: tablets for schools)

University of Birmingham, School of Education,

**VICTAR (Visual Impairment Centre for Training and Research)
report to RNIB (Royal National Institute of Blind People)**

This report to RNIB into the experience with iPad of student teachers of visually impaired children suggests benefits for visually impaired children, teachers and the learning experience. The Summary sets out the benefits and cautions:

Benefits:	Points of caution and follow-up questions:
<p>There is evidence that the iPad is proving a useful educational tool for visually impaired pupils in a range of settings.</p> <p>Key strengths identified were the iPad's accessibility features which are built in within the operating system (magnification and speech-based) and the range of available third-party applications.</p> <p>Respondents described a range of examples of creative and innovative practice, including using iPad as: low vision devices (including accessing the whiteboard); reading devices (including speech output and adjustable large print); vision assessment tools; sources of visual training activities; and sources of accessible general applications (word processing, web browsing, and email) and educational software.</p>	<p>Many respondents felt that a lack of financial resources to purchase iPad, as well as a lack of personal knowledge and training, were barriers to greater use of this technology.</p> <p>The small survey sample may mean that other teachers may have different (perhaps less positive) views.</p> <p>Whilst it is potentially very useful having access to vision assessment applications on the iPad, these are made available by third-party developers rather than Apple, and should be evaluated before use with pupils.</p> <p>There may be alternative products (e.g. Google Nexus, Amazon Kindle Fire, and Microsoft Surface) which offer different advantages and disadvantages.</p>

(Ref: VICTAR report to RNIB)

Conclusions

The studies outline above in pre 16 education sector does reveal

- Some measures of the benefits of tablet use for
 - children in general;
 - Added benefits for disabled pupils;
 - In general the usage of iPad and tablets in schools is being widely taken up and these devices have specific value as an educational tool;
 - Children with or without disabilities will be moving forward to higher and further education having used iPad and tablets and expecting mobile learning in their post 16 education;

Post 16 Education

A survey of activity in HE carried out for this report finds an implemented mobile device app and studies in the following:

- University of Birmingham School of Medicine and Dentistry
- An implementation of a mobile device app “UOB Student”;
- Manchester University Department of Medicine;

Lexdis.org: a research resource in which disabled students self report about their experiences with iPad/tablet provides useful evidence of the benefits of these devices for disabled students: (see section below)

- A study by JISC TechDis into the benefits of mobile learning devices for disabled students on a field trip, (see section below);

University of Birmingham – Exploring the potential of iPad in Education

This current study run by the School of medicine and Dentistry measures the benefits to the cross section of students equipped with iPad. It again echoes the upsurge in interest for tablets in all fields of education:

“IPads, and other tablets, have great potential for radically altering student learning behaviour through their ability to capture, store and exchange rich information in an easily accessible and inspirational way.”

“Tablet devices represent a significant new opportunity for engaging young learners.” “This ‘iLearn’ scheme includes loaning six iPad to students from three cohorts for a full academic year, together with inviting existing owners of tablets to share experiences.” “For an investment of £5000 from bequest funds, we have implemented a project which engage 20 undergraduate students representing 12 academic cohorts.” “They share ideas, experiences, recommendation on apps, and help us identify useful library resources.” “This is enabling us to better understand student attitudes towards mobile learning through an online community and voluntary ‘surgeries’.” “We also intend to collaborate with academic staff to exchange findings and train them in new teaching methods.” “We anticipate these will inform future mobile policies in the College.”

(ref: [University of Birmingham Medical School iPad project](#))

UOB Student

Besides the iPad study described above University of Birmingham has released a mobile device app suitable for a range of platforms that provide an information system for the student cohort, (ref: [University of Birmingham UOB Student mobile device app](#)).

University of Manchester –The Benefit of iPads in Clinical Education

This current project also looks at the benefits for medical students who study away a great deal from the ICT resources at the university and being away on placement, lack the technology that is available on campus, looks at these (and other) factors:

- “work on gathering feedback for students”;
- “evaluating resources”;
- “enhancing the curriculum delivery”;
- “delivery of high quality video lectures and interactive case resources.”;

(ref: University of Manchester Medical School iPad project)

JISC TechDis Accessible M-Learning model

JISC TechDis is the HE resource for, among other resources advice, information, training and research into all aspects of supporting disabled students in HE and FE.

JISC TechDis has produced a model of accessible M-Learning (mobile device) which has key points to make in the case for using tablet and other mobile learning devices for disabled students. There is a comparison of mobile technology accessibility with a traditional pedagogic approach to a field study in Dorset for disabled students with the following impairments:

- Mobility;
- Visual;
- Hard of hearing;

In all 3 cases the study concluded that the mobile device approach had definite advantages over the traditional pedagogic approach.

(ref: JISC TechDis research into mobile learning for disabled learners)

Lexdis.org.uk

This web site was set up by the University of Southampton as a resource for disabled students providing:

- Advice on study strategies;
- further links;
- Articles based on disabled student's own experiences;

A random selection of the first two out of three articles from the Lexdis web site shows evidence of how iPad and tablets do provide additional benefits over and above those found in conventional Assistive Technology (AT):

Article posted on 12 April 2013

"I don't like pens and papers! Too much waste and extra cost. I've been using my IPad with a stylus and several note taking/drawing apps so far. I synchronise all my notes with iCloud (it was iWorld before Apple introduced iCloud) and I'm perfectly happy – so is my room as it doesn't have stacks of paper and pens around :)" Trinity – computer scientist

There are so many note taking apps and drawing apps that it is hard to advise which ones are the best but a combination of Evernote and Skitch is a good one – the Appadvice site has a note taking advice page with many more apps and the University of Exeter have a blog with a review of some more useful time management, maps, social network and note taking iPad apps. They mention WritePad that has handwriting recognition.

Article posted on 11 March 2013

"I like to generate a transcript of a lecture session and I use speech to text to dictate into my mobile or I record the session" D.T.

There are several ways of dictating and producing text on the mobile – iPhone has built in speech recognition (Siri) for many of its apps or the use of Dragon Dictation when online that allows short paragraphs to be dictated and collected within its own note pad. Android has Dragon mobile assistant and if you want to experiment there is Utter in beta mode for commands. It does not make the Android totally hands free, but it shows the beginning of an off/online conversation with reactions!

Ref: [Lexdis.org resource](http://Lexdis.org)

Conclusions

1. There is a growing body of evidence showing the distinct qualities of IPad/tablet devices for students studying in HE;
2. There is also evidence that mobile devices give a distinct advantage over conventional pedagogic means of disabled students gathering information and studying on field trips;
3. Disabled students reporting their experience using lexdis.org.uk support the conclusion that IPad/tablets provide specific benefits for disabled students over other computer devices;

Results of the project

Key points from study

The results of the project show these benefits from using a mobile learning device:

- a greater opportunity to engage in studies compared to those afforded to the disabled student if only having a lap-top;
- The outperformance of the IPad/tablet with cheap or free apps compared to dedicated and expensive devices;

- The flexibility of having many different apps on one portable device that is instantly available to use in many situations where a lap-top would not be considered;
- The extra functionality of the tablet compared with the lap-top in terms of its collaborative, camera and video capabilities and organisational aspects
- The highly intuitive and simple use reducing the need for training;
- A rapidly developing stream of innovative functionality designed for mobile devices, including the on-going simultaneous development of specific apps for disabled users in contrast to the need to re-engineer conventional computing applications;
- The iPad, in the opinion of all participants has short-comings when compared with lap-tops:
 - Slower and more limited input via the touch-screen keyboard;
 - Need for wifi to enable printing;
 - Lack of the facility of short-cut keystrokes unless an additional Bluetooth keyboard is obtained;
 - Assumption that intuitive interface will tend to help the view that little or no training would be required.

Student feedback

Some summarising of the students' feedback and comments arising from group meetings and short video clips (see transcripts in Appendix C) are set out below.

There is also a comparison from a recent DSA Needs Assessment report to point out capabilities and costs for a conventional approach compared to an approach using an iPad and specialist Bluetooth Braille keyboard.

Feedback analysis

Analysing the data collected from the participating students, (see Appendix A for detail), the following themes were suggested to the participants before they started in the project, (see the "iPad" feedback research template, in Appendix D of this report):

- Organisation Motivation 

- Orientation
- Time management
- Research methods
- Communication
- Note taking
- (own choice)

After reading the first round of feedback reports the above themes could be distilled into the following:

- Organisation/ Time management
- Research methods/orientation/organisation/motivation
- Communication
- Notetaking

Accessibility

In addition the theme of accessibility emerged clearly, enabling the student to perform a task or tasks they previously had difficulty carrying out or found impossible due to unresolved barriers in the design of that system.

The apps were chosen by the students from recommendations by sources recommended to the project coordinator or from the participants' own sources.

The following table attempts to set out the apps selected to address the themes set out above:

Theme	App	Benefit	Disadvantages
Organisation/time-keeping	iStudez Pro I Planner UK	Assisted organisatio n; saved time and	Not enough time/training to take full advantage-

	Calendar Mail Alarmed	effort	
Research methods/orientation/organisation/motivation	iMindmap Dictionary Inspiration Maps Lite Inspiration IThoughts Mind meister Mind genius	Helped plan work; more available to use than lap-top; worked in conjunction with lap-top to produce work; saved time and effort	Mind maps not transferable to lap-top; need to have time/training to explore app
Communication/collaboration	Mail Evernote Drop box	Having notes/work on all devices saved time and effort	
Note-taking	AudioNote Ever note Penultimate Notes to do Scribe Microsoft oneNote	Added quality of being able to track recordings with written notes; helped organise notes; saved time	audioNote notes tied to app and not available as separate file reduced efficiency; too many note- taking apps and insufficient

		and effort	time to learn all features
Accessibility	VoiceOver Siri Puffin web browser Camera iTunes U Good Reader EZ Reader Voicedream Voice record Adobe Reader	Provided accessibility where previously there was none or little; saved time and effort	Some voices were too robotic; insufficient time to learn to use accessibility features

Impact on studies

This report demonstrates that the participants found on balance much more benefit than lack of it in the assistance they perceived from using the iPad.

To illustrate this follows a selection of comments both for and against aspects of the iPad and selected apps are set out below. The perception expressed by the participants is that either they could fulfill tasks they had difficulties before or reduced the amount of time it took to carry out tasks that formerly would add to the load of extra work and concomitant stress, fatigue and higher risk of lack of attainment.

Task	Difficulty	Perceived benefit	Disadvantages
Planning schedule;	Disability implies difficulty	IPad much more available than lap-top; app more	Not always having the time to learn

meeting deadlines;	organising time	immediate to access	how the apps work
Organising thoughts and ideas	Requires assistive technology wherever this is needed; conventional computers not always accessible at times when mind-mapping tasks are needed to be started	Portability and immediacy of iPad provides more opportunity to carry out mind-mapping exercises	Not all mind-mapping apps transfer to lap-top where main projects are created and edited; lack of transferability due to lack of knowledge and training
Recording lectures; making and organising notes	Conventional digital recorders create difficulties in collating recordings and notes, e.g. finding the place where notes are made in recording	Recording notes and organisation of notes carried out simultaneously, saving time and effort	Needed more time to explore capabilities of app; needed more enhancement and ability to store recordings in a file for use in other applications
Reading PDF documents	Having access to this material wherever study is possible, e.g. on the go; (from discussion) difficulty reading	IPad gives much more opportunity to study and provides clearer screen display	

	from lap-top screens		
Coordinating notes and reading materials with work output	Conventional computing working method requires manual sharing of material to support work output	IPad has automatic sharing with all devices, reducing the time needed for manual sharing.	
Collaboration	Time consuming to manually share if notes are only stored on lap-top	Automatic sharing between devices and use of app like drop box saves time in manually sharing	
Accessing material previously either impossible or difficult.	Needing to use alternative materials not always satisfactory or in existence	IPad has a wealth of apps that make access possible, e.g. accessing the VLE with a magnifier/screen reader was impossible until alternative iOS browser and magnification/screen reading on Ipad made this possible; using the camera to access written material previously inaccessible	
Efficient working method in a laboratory or lecture room	Different dedicated device causes extra time taken and need for more equipment to be carried around	IPad offered 1 device for a range of activities e.g. free Ipad magnifier app saved use of expensive dedicated hand-held magnifier; audioNote app saved student from having to use	

		digital recorder	
Writing up notes	Typing skills inadequate for task	In-built Dictation saved student having to type; on-screen keyboard enables quick notes to be taken	IPad on-screen keyboard is too slow and lacks the facility of short-cut keys available on conventional computers

Summary of feedback

To summarise feedback from research template documents and discussions during the two group meetings, the following points clearly emerge:

- The greatest single benefit from using the iPad as a study tool was the time saved, time being the most pervasive barrier to the progress of disabled students;
- The built in accessibility of iPads was also a unique feature in combination with 3rd party apps designed to ameliorate disability;
- None of the students in the project thought that the iPad or any tablet should substitute for a lap-top but thought great benefits were derived from using a combination of the two;
- The iPad was criticised mostly for the short-comings of the on-screen keyboard, although for limited amounts of typing it was thought adequate and one student successfully used dictation to overcome having to type;
- The portability and immediacy of access was another important feature that provided more opportunities to study and ameliorate the amount of extra time debt experienced by participating students;
- The availability of inexpensive apps providing a range of functions made the iPad a very flexible device with many functions rather than have to carry around different devices;
- The cheapness and availability of the range of apps was also recognised as a unique quality;

- Some students felt the iPad lacked the ability to carry out high end tasks such as number crunching but this clearly is not in its design capabilities;
- The lack of the capability to print via a physical wire where there was no wireless capability was also a negative point but the ever increasing prevalence of wireless networks and the ability to improvise one would counter this point;

IPad/tablet versus conventional solution

An example of a recent DSA recommendation for a visually impaired student who has a requirement for Braille input and output would be useful to compare the capabilities of the 2 approaches with costs.

Conventional solution	Cost	IPad solution	Cost	
Braille Sense note-taker with 32 cell display and Braille input keys	£3495.00	IPad 32 gb (Wifi and SIM card) plus Braillient 32 cell refreshable display, Braille key input,	£2444.00	
Capabilities				
Word processor with foreign language dictionaries Internet browser e-mail DAISY reader (accessible format e-book reader) FM radio Vibrator sensor for deaf/blind English dictionary				Currency recognition Bar code reader and product identifier Magnifier Colour identifier GPS navigation to hot-spots

<p>Scientific calculator</p> <p>Social networking capability</p> <p>(Ref: Braille-Sense product details)</p>	<p>Turn by turn navigation</p> <p>Light level detector</p> <p>Camera/video making</p> <p>e-mail</p> <p>internet browser</p> <p>Braille key input</p> <p>e-book reader, i-Books</p> <p>Public transport information</p> <p>Taxi finder</p> <p>Video/podcast player,</p> <p>iTunes U</p> <p>(additional cost – approx)</p> <p>£30 = Total £2474</p> <p>Ref:</p> <p>http://applevis.com/#main-content</p>
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Comparison of recent DSA assessment report

The table above shows comparative costs and capabilities of a dedicated system versus a solution using IPad. What is clear is:

- The IPad solution gives the same functions as Braille Sense at a lower cost of approximately £1100 allowing £50 for apps which is an over-estimate;
- The IPad and related mobile devices offer many more apps for visually impaired and other disabled students, please refer to the students feedback in this report, aps such as mag lite, Puffin web browser, Siri dictation etc are just a few that can benefit visually impaired students;
- The 1 item that IPad needs further development is a DAISY player, although there are some on the market. For example DaisyWorm (which does not seem to be well supported), (ref: <http://www.daisy.org/tools/1463#t172>);

- Other DAISY book readers suitable for iPad but restricted to US book sharing organisations, (ref: <https://www.learningally.org/support-topic/can-i-place-a-book-order-outside-the-u-s/>)
- The iBooks e-book reader provides accessibility to a range of literature which is growing and now includes educational books, (ref: <http://www.apple.com/apple-events/>).
- iPad has built in and accessible apps that provide more functionality for disabled students, such as those needing the photography (camera and video) app, (see Appendix A for students feedback);

Summary and conclusions

To summarise the findings of this project:

- More research into the advantages and use of iPads/tablets benefitting disabled students needs to be carried out in the HE sector in order to:
 - Disseminate the results to bolster knowledge in the sector by all stakeholders in the support of disabled students;
 - Reassure funding agencies that students are not being provided with devices that are inappropriate in the context of schemes like DSA;
 - Provide resources for stakeholders to institute support for disabled students using tablet devices;
 - Anticipate the students moving into HE that have already used and benefited from iPad and tablets in their pre-16 education;
- Tablet devices and iPads in particular have unique qualities for assisting disabled students in their studies and should be part of the list of possible devices available to DSA assessors on a case by case basis;
- Use of iPads/tablets demonstrate a possible cost saving in certain situation's but this should not be used as the main reason for recommendation, the benefit to the student should be the ruling factor;
- Assistive technology and technology has now a blurred line of distinction and the focus must be on how any device or system can remove major barriers

from the progress of disabled students, added time and cost being the most pervasive;

Recommendations

The evidence from this report indicates the following recommendations:

1. DSA assessors to recommend iPad/tablets based on evidence that the student would address disability barriers with such a device;
2. SFE gives proper weight to DSA assessors' recommendations of devices based on the efficacy of benefit to the disabled student in assisting them to overcome barriers to their studies and not because of prejudice that these devices are recreational;
3. HE institutions start to provide infrastructure to support disabled students in their use of iPads/tablets in terms of:
 - Training and advice
 - IT backup
 - Development of approved apps that conform to accessibility guidelines
 - Enabling academic staff to learn how to create accessible content on mobile devices;

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Appendix A – Students’ feedback reports

The table below shows the summarised reports by individual students.

Name	App	Good points
MA	iStudez Pro	Good, Helped with personal organisation and managing deadlines. Useful to set reminders for assignments up to seven days prior due date. Colour coding feature ability useful allowing user to ‘check at a glance’. I do not use this app as often now as I no longer find myself needing to check my schedule daily; however it is an extremely useful app to help with organisation.
	I Planner UK	It is useful for planning my time and I like the different symbols which can be used to categorise events.
	iMindmap	Not used. Not used this app on iPad as it is on my laptop, however useful to plan essay on the move. I have still not found a use for this app. However I do see the benefits of having an app which will allow me to plan essays on the move.
	Audionote	Very useful. Use to record lectures and make notes at same time. I like the tap keywords feature as it allows me to skip to a particular part of the recording, much easier to use than a Dictaphone which can be very time consuming. I can organise my recordings more efficiently into folders to enable me to keep track of my notes.
JK	Pages	Pages, word processor: “I can choose the format my work is sent in the email which means that it can be put into a Microsoft word format for proof reading by others. Importing work from email/Dropbox is really easy”
	Audionote	Note-taker and audio recording and organising, relates recording to notes (downloaded but not fully implemented) “it works pretty well as I can record whilst looking at other functions for example googling something on the Internet during my lecture”.

	Adobe Reader	Really useful app. This app was very useful for completing my dissertation. I expect it to be useful for revision purposes as I already have papers saved into the app. It will be easier to work on the go as the table is portable.
	Drop Box	Drop Box is excellent for file sharing with myself and other people.
	iStudiez Pro	
EM	Evernote	Most useful app. Good layout and easy to organise my notes and research. Able to synchronise with lap top. I can use a notebook for each of my modules. I find the ability to synchronize whatever I input on IPad with lap top. Excellent for storing notes which were made earlier, easy to find, no more searching through pages in books. Far superior to Notebook+ and Notebook. This app really met my needs.
	Microsoft OneNote	Used for participating in a seminar and I found it useful as I was able to store notes and thoughts. This app helped me in organising myself, researching, orienting and managing time.
	Notebook+	Much the same as for OneNote.
	Inspiration Maps Lite!	Useful in essay writing. The touch screen almost facilitates the building of ideas. Only had limited version. Wrote in thought bubble then move to another. Built map full of questions for me to consider. With reference to migrating Inspiration Lite from IPad (negative response), you are however, allowed to have a physical copy and storing in your email is a very safe place to put it. Easily accessible.
	Fleksy	Fleksy may help people to get used to touch typing, before migrating to IPad touch screen. You can learn to make autocorrect work for you rather than the other way around and build your own dictionary of words of frequent use.
TR	Voicedream	
	Calendar	Good app which allows me to consolidate all my important dates. I also used the 'voice record' to record lectures. The recording quality was awesome. This app allows me to consolidate all my ideas.
	Voice record	This app helped me record lectures as I find it hard to keep up with the pace of lectures. The recording quality is awesome
	Dictionary	Very useful way of checking my spelling whilst improving my vocabulary.
	EZ Reader	EZ Reader has improved my experience of reading documents. It

		has made it easier to multitask when using the iPad as it is possible to have a chosen research paper, or piece of text read to me whilst I make notes. The text to speech is good. It is also possible to select, highlight and make notes about important sentences and paragraphs, which is a useful feature. In addition there is a bookmark feature which is good when I use quite big journals and this app also has a built in dictionary which is good as well.
	Inspiration	Helpful app, it helped me organize my thoughts, as its electronic it was easy to modify and transport ideas. Will be useful in exams as I can condense my ideas about particular topics.
SS	Inspiration	Good value for money. Used thought balloon button to add notes. Visually appealing and superior to iThoughts, easier user face and more simplistic layout.
	iThoughts	
	iMindmaps	
	Good Reader	Good app, give the ability to highlight relevant material and save citations. Able to set up dual screen system on iPad to enable me to read my weeks seminars from my iPad and make notes on my lap top, so increasing my overall productivity of my note taking.
AS	Mail	Useful email app, helped with my organisation, in an easy to read and simple to use format, allowing me to check and send email wherever I am. The dictation feature allows me to quickly and easily type text by just saying it to the iPad. For me this feature is quicker than typing and it is also accurate at the same time understanding my accent.
	Calendar	IOS calendar app very useful. Uni timetable was in very small print, timetable put into an easy to read format. The 'retina' helps to reduce eye strain. Other useful feature is the ability of the iPad to read text to you. IOS has a useful feature for people with visual impairment which reduces their stamina to read as it has built in reader and dictation. I highlight text and the iPad will read it to me. This app also helps keep my complex timetable in an easy access format. The email app constantly keeps me up to date with timetable changes.
	Safari	Safari has really helped my research and is much easier than pc based web browsers due to the lack of a cursor. Dictation and reader features have taken the stress out of searching for and through information.
	Siri	Very useful app, enabling me to check emails and timetables quickly, take notes and send messages, so reducing strain on my eyes as it is so quick. 'Retina' display produces much clearer image again reducing eye strain.
	Penultimate	Allowed me to vastly improve note taking ability. Virtually unlimited storage enables large quantities of notes to be stored in an easy to find way, in one small package. Electronic organisation of notes

		<p>will be highly useful when revising. This app has improved my ability to study, allowing me to make clear, organised notes which will improve my ability to revise for this summer's exams. It has allowed me to easily separate my notes into topics examined in each exam and to quickly find a specific topic I want to revise, which is important to me as I have roughly 800 pages of notes. Because the notes are electronic I can back up my notes so they cannot be lost and also I can download them from the internet anywhere at any time.</p> <p>Easy to use.</p> <p>Accuracy is improved by using a stylus.</p> <p>Another useful feature is the ability to embed photos and videos into notes. I can also back up my notes and download them anywhere anytime.</p> <p>Batter power is still far superior to the lap top.</p>
	Mag Light	<p>Again very useful and I feel it outperforms my dedicated video magnifiers. Ipad camera acts as magnifier, camera quality is far superior and large retina display improves quality all in one device. Totally switched over to this app instead of hand held video magnifier as picture quality, convenience and ease of use far supersedes it. Also very useful helping me to access, for example textbooks with small text easily, where I would have to use a separate video magnifier.</p> <p>Useful for reading label on tins and jars and micrometre in laboratory.</p> <p>Still better at long distances than video magnifier.</p> <p>Useful for distance reading. After a recent update the app has improved due to a light level adjuster which allows you to optimize the quality of the image in different light conditions and image stabilization feature has improved the image quality.</p> <p>I recently searched for a textbook in the university library using this app and was able to locate the book quickly using it to enlarge shelf mark numbers.</p> <p>After a recent update the app has improved due to the new light lever adjuster allowing optimization of the quality of the image in different light conditions and the image stabilization feature has further improved the image quality.</p>
	Measure HD	<p>Many features useful to me in my studies. Like having a toolkit in Ipad, which includes rule (displays a large easy to read rule which can give out 0.01cm), protractor, tesla-meter and seismometer. Very useful in laboratory work. Also contains stopwatch with large</p>

		display also spirit level. All very useful. The protractor feature is very useful as it is possible to put a piece of paper on the iPad and the protractor will shine through the paper making it easy to get angles accurate when drawing diagrams. The spirit level app is very useful for visually impaired people as it produces noise cues which increase in frequency when the surface is getting closer to level.
	GoSkyWatch Planetrium	<p>This app utilises the iPad's compass, accelerometers and camera. App allows me to navigate the nights sky to find constellations, it guides to stars and planets by holding iPad to the sky. It is a much more intuitive way to navigate the sky. If star is too dim for me to see with my visual impairment, images and information can be displayed of the star on the iPad.</p> <p>This app continues to be a useful and fun app as it has helped me to better understand the orientation of the solar system, galaxies and universe, which is what I needed for my astrophysics course. You can use this app to learn more about the orientation of stars and planets in the high sky even if it is cloudy or during the daytime. This app is also fun to use.</p>
AW	Mind meister	Very useful visual mind mapping software app which is useful to me, you can insert photos from your camera and the little images in the text are useful to me.
	Alarmed	Able to set weekly alarms with different tones, which reminded me numerous times when I would have forgotten.
	Mind genius	You can add sub areas easily with a button at the top right of the screen.
	Notes to do	This is really different as most note apps found work in a linear manner, these you can move notes anywhere on the page, also add a tick in a box and a box, to suggest the notes have been fulfilled, the file system is very basic and doesn't suggest how to open the file, I just clicked and hope until I found the right thing. Once I managed however it is quite simple, simply click the file name and click the + button.
	Voice over	
RW	AudioNote	Instant appeal to me, Notes and audio of lectures could be kept in the same file, 'helped keep my house in order'. Voice recording facility excellent for recording lectures, even from large lecture theatres still crisp and clear. To date this is the most important feature and is used in every lecture.

		<p>Useful storing of recording, date order filing system clearly displayed the content of each folder, very useful of accessing lecture notes. Also I can send these files to my emails which was also good.</p> <p>Typing facility is useful for small pieces of text.</p>
	Evernote	<p>Another useful app to help with organisation and take notes although I haven't found my way round this application.</p> <p>No major issues with this app but not sure how to use to full advantage.</p>
	iTunes U	<p>This app is incredibly useful as there are a number of subject areas or topics applicable to my course. This app allows you to enrol on any course that is in their catalogue enabling me to enrol on 8 courses. Each course provided weekly notes or videos. Daily or weekly reminders available on calendar when new material or new lecture becomes available. There are hundreds of educational videos and documents with excellent information.</p>
	Scribe	<p>Not yet used properly however I ploughed files and drop box file storage for all notes taken. Reminders come up in the calendar for when new lecture on any particular chosen subject is available. I am using the voice-over facility on iPad to screen when my eyes are particularly tired. Access to email is important, and if lectures are cancelled or information is needed about particular lecture, having tablet I can access emails wherever I am on campus.</p> <p>Touchscreen is excellent, very clear and contrast and brightness is suitable to me. On line keyboard is okay for short notes or emails.</p>
	Fleksy	<p>Made my typing speed improve considerably. Once I had managed to turn voice over off this feature is pretty useful in lectures.</p> <p>On the whole it does work quite well. This could be a valuable app. Needs works on predictive aspect of this app could be improved on. Typing in lectures can be difficult with speed of lecture. More useful in lectures where not typing continual excessive amounts of information, brief spells of typing in small amounts are better.</p> <p>Incorrect words typed can be deleted with one swipe, which is useful and helps with speed of typing.</p> <p>I would consider typing my essays and send them to my email address to be saves in a word document.</p>
	Puffin Web Browser	<p>This app works quite well and is very useful in helping me to access Web CT information unlike Apple's Safari browser. Being</p>

		<p>visually impaired it is very useful to have slides presented on a large screen, live and visible on iPad screen where I can zoom in and out on previous slides of slides which are about to be presented. I feel this has improved my studying considerable as sometimes in particular lecturers do not provide lecture notes on the day as they prefer to you to print your own after the lecture.</p> <p>I am sure with further trials that the combination of the puffin web browser and Apple's voice-over will be proven to enable visually impaired students to freely access all the required materials on Web CT.</p> <p>Apple's built-in voice over used with puffin web browser to access the material is able to read what is on screen. (As opposed to zoom test in conjunction with Web CT not able to read what is on the screen). Needs verification and further trials.</p>
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Appendix B – iPad Project agreement

Terms of the agreement

The terms of the agreement between the student participant and the University of Birmingham are as follows:

- the student signing this document agrees that the iPad loaned to him or her, is the property of the University of Birmingham;
- The designated period of the iPad project will be from the date of its commencement until the end of the academic year in which it was started;
- the student agrees to report back on their use of the iPad on a monthly basis using the feedback template;
- the content of the students feedback of their use of the iPad as instructed on the feedback template;
- the method of reporting back during the designated period as instructed on the feedback template;
- the student agrees to take responsibility for reporting any loss or damage to the iPad as soon as either is discovered;
- the designated staff member of the University will decide if the terms of the agreement have been successfully followed;
- if the agreement has been successfully followed the student will then gain ownership of the iPad;

- If the agreement has not been successfully followed in the judgement of the designated staff member then the I-Pad remains the property of the University and will be collected from the student;
- The designated staff member is the Assistive Technology Advisor but in whose absence another staff member will be appointed;

I agree to the above terms of conditions:

Signed

Student/participant:.....Date:.....

.....

Signed Assistive technology

Adviser:.....Date:.....

.....

Appendix C – Student video transcripts

Student: Jennifer

Jennifer: Hi I am Jennifer, I am a final year undergraduate studying geography and I have been participating in the iPad project for 9 – 10 months now. The thing I found best with the iPad is that it is something that you can pick up, start working on, and put it down. It's not like having to turn on a computer or anything like that. It has saved me a lot of time over the last year. I have a specific learning difficulty, I have got dyslexia and so my work always takes me a lot longer than my friends but with the iPad it has actually cut out a lot of time I would spend waiting for the computer to start up, waiting to download documents, opening up work, stuff like that, because it (the iPad) is very instant. It is always something I can carry around with me and that I can just start working if normally I would be using a laptop and I couldn't use it in that situation. I have used several apps.

One of the ones that I have found most useful is actually two that I have been working together one is the Adobe Acrobat Reader because for part of my degree I have to read lots and lots of journal articles and so what I do is I can download the journal articles onto my computer and I just have a session and I download all the articles I need to read and then I put them into Dropbox which is based on the computer on the internet so I can download them into Dropbox save them into the Dropbox file and via the Dropbox app on my iPad I can open the app - the journal articles up and read them and what I have done is export them into the Adobe Acrobat Reader which is really great because the screen is really clear on the iPad. It is really easy to pick up. I can sit and be in a more leisurely, comfortable position reading it than sitting at a computer at a desk and straining my eyes over it. The screen is ever so clear, it's really easy to read it and also because of the back lighting it makes it more pleasurable to read so I can just import all of my documents into the Adobe Reader. The Adobe Reader has various different functions. It also has things like a highlighter so I can highlight bits of text, which are really important. I can select sections, copy them out and put them into another document in a different app, which I can then email to myself so I have got the text in front of me. It has been absolutely fantastic for reading on.

The iPad itself, I would never recommend to replace a computer because I think that as I have used both the computer and the iPad over the past year, and I think that although there is a definite need for the iPad, the computer is also really important because it is much more organised for me anyway for me to do my essay work on it. But with the iPad I can pick it up, check my email on it, keep myself organised through a calendar, I can record all my lectures and make notes at the same time on the iPad and the audio quality is really clear. It's changed the way I work.

Patrick: Thank you Jennifer, that was very useful.

Student: Megan

Megan: I am a Masters student studying translation and have been part of the iPad project. I think it is a useful tool for anybody with a learning difficulty or anybody really but in terms of using it for studies its been a massive time saver and its been really useful. I have used a variety of different apps and one of my favourites has been Audionote which is an app which allows you to record and make notes within the app. Previously as part of my DSA I have had just a Dictaphone and writing up notes using that has been quite time consuming so being able to use an app to do everything that using paper and the Dictaphone could do has save me time, an awful lot of time and I had also use a scheduling app called IStudies Pro which I found really useful because I often find it difficult to arrange my time, organisation is one of my pitfalls and I have used this app to schedule my lectures, It lets you colour code things and it lets you set reminders for assignment deadlines which has been incredibly useful for me. It helps me to keep track of things so that has been very helpful as well.

Patrick: Good, thats great, thanks very much Megan.

Student: Richard

Patrick: This is Richard who has been on our project. Over to you Richard.

Richard: Hello my name is Richard W. I am a first year Environmental Science Student at Birmingham Uni. I have got sight impairment, I have got tunnel vision and it gives me problems reading text a great deal of the time. I got introduced onto the scheme to try out the iPad and some of the accessibility features on it. Let me say first of all that I found the iPad to be extremely useful aiding my studies, (my first year studies) and it has given me a good introduction to some of the accessible features within the iPad. There are a number of benefits for me, I shall go through a few of them at least and talk about a few of the applications. First and foremost I use, at home a software programme called Zoom text which allows me to stream read stuff that is on the computer.

Patrick: You got this with your DSA?

Richard: I was issued that from my DSA, absolutely, I think it is a £500.00 programme in all honesty, I use it at home. However on arriving at Uni I have spent considerable time to work it out and it doesn't seem to work with the WebCT facility the University of Birmingham have to offer. I have had various people try out a remote system and also I have had the people, I think it is Sight and Sound, who supply it. They tried to sort it out but they have said it is incompatible with the WebCT facility. Right this is where the iPad actually comes in, the voice over facility, where do I start? On our WebCT we are offered slides of lecture of particular time and perhaps other current information, perhaps pages from books which Zoomtext will not allow me to read, because I have a sight impairment, at times it requires me to access the information via the screen reader. My current Zoomtext won't do it however using the iPad with the voice over facility in conjunction with a browser called Puffin, it's a Puffin Web browser, it allows me to access freely all the information that is put by the lecturers onto WebCT so I can listen to it with Voice over. This I find is invaluable although I prefer to read text whenever I can when my eyes get tired I find the necessity to revert to using a former screen reader so it has been absolutely invaluable. I hope I have covered enough points on that. I go to an app that I have been testing that I have previously mentioned, Puffin Web browser. One of the problems I have found with terrestrial computers, when you are in a lecture theatre it doesn't generally let you scroll through all the slides, previous and current that the lecturers put up. I might want to revisit a previous slides that the lecturer has put up or step forward and look at a slide that is about to be presented, with terrestrial computers it doesn't work. This goes back to the iPad, also using I think iPad Safari web browser it doesn't seem to be that brilliant and compatible with Web CT to allow you to view all the slides for the current lecture however this Puffin web browser which I found out someone suggested I should try it. It was actually really very good. Instantly in a lecture I can open up my iPad, use the Puffin web browser to access slides that are on the current lecture which is good.

Patrick: Have you also been using an app that will record lecturers for you and allow you to make notes at the same time?

Richard: Yes I have been using a couple of apps, but I haven't really got the hang of them yet but there is still time, is Ever note. However the main app I have found extremely useful to me is Audio Note. It has been absolutely invaluable, especially now for me in my exam studying period. It is a recording facility which allows you to make notes, also allows you to type notes, and makes short notes. This Audio note I have found it for recording lectures on the iPad to be superior to any Dictaphone I have ever had. The latest Dictaphone cost £150.00 and is quite high spec, although it works it certainly not as good as an iPad so since I have been issued with an iPad since last November, I have used the iPad to record every single one of my lectures and stored them on Audio note. The superior quality means I can hear every word of it. It has been invaluable.

Patrick: Richard that is brilliant thank you very much. But lastly are there anything that you found that you didn't like about using the iPad and things that they could improve?

Richard: Yeah I think that the keyboard could be improved upon, as I am not the fastest of typers and particularly in lectures. I think the keyboard could be improved upon considerably. I have used a little app that was called Flexsy that probably addresses one of the problems that I do have. I have found the iPad to be extremely useful and it has been good introduction to accessible features that the iPad offers, so much so that I have ordered an I phone now and I am sure that it will be invaluable to me as my eyesight is deteriorating on a monthly bases.

Patrick: Thank you very much for that

Student: Stephen

Stephen: I have been fortunate to be part of the iPad project this year at University. I have thoroughly enjoyed being part of this project. It has been immensely helpful for my studies. Firstly I would just like to say the iPad is useful, it is such a portable device, I can literally take it anywhere. It saves me carrying my laptop day to day onto campus, so it's nicely transportable, very easy, especially if I take a keyboard as well. I can have my own little mini laptop, and in that respect it's very easy to work from, and easy to transport from place to place so in that respect it is a massive plus.

The other way the iPad has been useful, number one is mainly been looking at documents. Documents I find hours and hours usually have to go to the library and print off all the documents spending a fortune, spending my student loan on printer ink. Fortunately due to the iPad I have save a fortune on printer ink. Now I email myself my reading for the week for my seminars and easily have my iPad out with my documents which I can scan through on one screen reading them while making notes on my laptop so I look quite fancy with my two screens so that quite helpful. So that has been a massive plus reading documents on the iPad.

Another way the iPad has helped me is an app called Audionote. Audionote is brilliant for lectures and seminars because you can make notes from the app and it immediately says when that note was taken so along the margin of the app is an exact time you made those notes so however many minutes into the seminar, say 20 minutes, so when it comes to revision time now I can easily go back to my seminars I can find the note I made in class, which I couldn't remember, go easily back to not

only the note but the recording stick my headphones in type up that note and put it where relevant in an essay or in my revision notes so that app has been invaluable.

Another app that has been particularly useful for me interestingly is the camera on the iPad. The camera I find is of very good quality and it has been very useful particularly with my dissertation this year. For my dissertation I have been looking at 19th century British Consular records which to try and read 19 century handwriting is a task in itself, it is very difficult and it requires looking very closely at text and trying to understand the joined up writing, fortunately with the iPad I have been able to use it to take pictures of the documents and then use the zoom in feature on the iPad. To really understand the primary sources so it has been very valuable in that respect, in helping me with the primary research for my dissertation so I am grateful for that, also recently I have used the iPad more and more for revision and its helped me to be more active in my revision which really helps as I find passive revision quite boring and nothing really sticks but with the iPad I can use my revision to make it as active as possible. I have downloaded an app a few days ago called Revision Cards which makes your own revision cards and it enables you to rest yourself on your work which is quite a fun way of doing things. Also fortunately Inspiration have their own app that is immensely useful. There is multiple ways that the iPad has helped me this year and I am grateful for everything, so that about it really.

Patrick: Thank you very much thats been very useful thank you. Thats great.

Appendix D –Feedback template

IPad research template for feedback

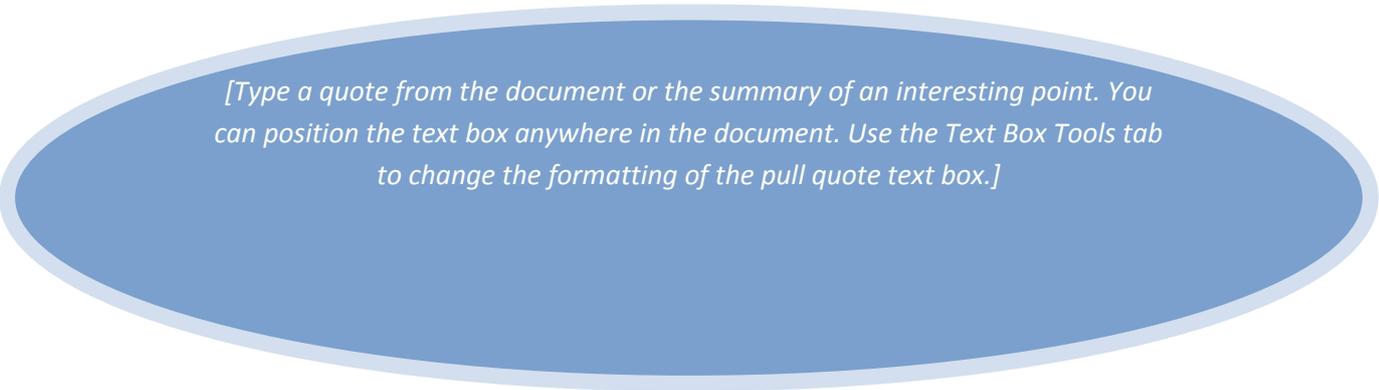
1. What apps did you choose to research?
 - a)
 - b)
 - c)
 - d)
2. What was your reason for choosing each app?
 - a)
 - b)
 - c)
 - d)
3. Prior to choosing to take part in the research what areas of study do you either:
 - a. anticipate being problematic or
 - b. were already finding difficult: (

please tick ones that apply, or type yes)

- | | |
|--|--------------------------|
| <input type="radio"/> organisation | <input type="checkbox"/> |
| <input type="radio"/> Motivation | <input type="checkbox"/> |
| <input type="radio"/> Orientation | <input type="checkbox"/> |
| <input type="radio"/> Time management | <input type="checkbox"/> |
| <input type="radio"/> Research methods | <input type="checkbox"/> |
| <input type="radio"/> Communication | <input type="checkbox"/> |
| <input type="radio"/> Note taking | <input type="checkbox"/> |
- (If none of the above please give brief outline of difficulty)

Each month please write a narrative account of the outcomes you have seen whilst

using the apps chosen in relation to the issues you found difficult, and your reason for choosing the app. The more detail the better (but no more than 500 words each section)



[Type a quote from the document or the summary of an interesting point. You can position the text box anywhere in the document. Use the Text Box Tools tab to change the formatting of the pull quote text box.]