MOBILE TECHNOLOGIES TO SUPPORT DISABLED STUDENTS

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THE INITIAL PROBLEM

Defining technological evolution
THE NATURE OF TRADITIONAL ASSISTIVE TECHNOLOGY
THE PROBLEMS WITH ASSISTIVE TECHNOLOGY

Existing assistive technology is highly immobile, clunky and restrictive

It is expensive and uneconomic in mainstream classes — it needs to be subsidised

Assistive devices often identify a person as having a special need and can be stigmatising
There is little research on m-learning and its use with assistive / inclusive devices

- those that exist mostly cover all needs

This provides a problem in research, and highlights an area in need of evaluation
THE PROBLEM IS COMING TO AHEAD IN HIGHER EDUCATION — CASE STUDY IN THE UK

The Disabled Students Allowance (DSA) is a government grant for students aged 18 years and over in UK higher education.

In April 2014, the British Minister for Universities and Science proposed cuts to the DSA.

Although a later announcement has suggested that these cuts will be postponed until the academic year 2016-2017, a number of universities are already preparing alternative means to support disabled students in future.
The DSA was designed only to provide non-medical support (Stevens, 2013):

- **Specialist equipment allowance.**
- **Nonmedical helper’s allowance.**
  - Examples included sign language interpreters and note takers.
- **Travel costs.**
- **General and other expenditure allowance**
  - Examples included photocopying notes and enlargement of materials.
THE TECHNICAL SOLUTION
Technology as a tool of inclusion
TECHNOLOGY AS FACILITATOR

A move away from the traditional notion of teaching technologies in different settings

A move away from technology merely assisting people with

The notion that technology is not just a tool of inclusion
  - Technology can be used to drive inclusion

The notion that inclusion can be driven by technology
WHAT IS TECHNOLOGICAL INCLUSION?

The notion that students should not have a separate form of technology

The philosophy that disabled technology users have social and cultural equality with mainstream users

That disability should not signify inferiority, particularly of intelligence — the deficit model

That disabled people have valuable human capital that can be valuable in economic settings

Technology is a powerful tool of social inclusion
WHAT IS INCLUSIVE TECHNOLOGY?

“Inclusive technology is defined as a mainstream technology that can be used with either no or minimal adaptation by a person with a disability as an accessible technology. It is also seen as technology that provides social inclusion, such as communication and interaction, for people with disabilities” (Hayhoe, 2013)
INCLUSIVE TECHNICAL CAPITAL

The development of the model
Bourdieu (2010) argues distinction in life chances through capitals, e.g.
- Financial capital
- Social capital
- Cultural capital

Habitus is the process of developing non-financial capital:
- principles which generate and organise practices.
TECHNICAL CAPITAL MODEL

Yardi’s technical capital is related to cultural capital

“[Technical capital is] the availability of technical resources in a network, and the mobilization of these resources in ways that can positively impact access to information and upward mobility.” (Yardi, 2010)

i.e. Technologies and the knowledge of the use of technologies
“Inclusive technical capital can be defined as practice which uses inclusive mainstream technologies to promote inclusion in further forms of social, cultural and financial capitals, through enabled habitus in education and training…

It can thus be argued that inclusive technical capital appears to be more applicable to students’ use of new forms of mainstream settings and apps that have been embedded in modern tablet devices and therefore, either purposely or accidentally, lend themselves to redefinition as inclusive technologies.” (Hayhoe, 2015a)
London School of Economics
Model on Inclusive Technology

Android and iOS mobile operating system models
SUMMARY OF FINDINGS OF THE EVALUATION OF APPLE IOS AND ANDROID (HAYHOE, 2015B)

Provided a Learning Technology Innovation (LTI) grant to examine mobile technologies as a tool of technological inclusion.

Both systems have relatively similar inclusive accessible settings.

Have similar potential for enhancement rather than transformation of tasks.

Some settings and functions that make each operating system less useable as tools of technological inclusion.
THE LONDON SCHOOL OF ECONOMICS MODEL

Developing inclusive technical capital through

- Utilising mobile apps and settings — designed around categories of perceptual and cognitive inclusion

Developing study skills with various apps:

- Basic inclusive settings
- Note taking
- Recording and searching for information — audio and visual
- Mind mapping

Developed through tutorials
The images above describe how to access the settings in Android – example a Galaxy S4. Go to the settings icon and choose “My device”. From here scroll down to accessibility. This is shown in the diagram above.
EVERNOTE CREATING NOTES

Record the memo with the sound wave showing the recording level → Play back to sound file to check sound levels
ANDROID’S SIMPLE VOICE RECORDINGS

Simply press the red recording button to start and stop.

The files are saved as MP3/4 files.

Voice recordings can also be monitored for the level of volume and voice clarity through the visual display.

Parts of the lecture can be paused.
Another alternative is to have time lapse photography of the whiteboard:

- This helps form an understanding of the development of notes.

This can be set on the iPad’s / iPhone’s camera.

NB This will not record sound, and is therefore not the same as videoing.
On Apple devices, the app Photo Booth can also be used to invert the colours on a page, making text easier to read. The graphic on the left illustrates the x-ray option on the bottom right in Photo Booth, and the illustration on the right shows a paper page which has had its text inverted. Graphics, however, are distorted when inverted.
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CONCLUSION

Overall findings and possible future directions
Android and iOS have similar inclusive accessible settings

Some settings and functions that make each operating system less usable as tools of technological inclusion

Disabled students, teachers and those that support students with disabilities must evaluate systems according to their own impairments and educational needs
REFERENCES  And further reading


FURTHER READING


