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INCLUSIVE TECHNOLOGIES TO HELP PEOPLE WITH VISUAL IMPAIRMENTS

Cases of Inclusion

OUTLINE OF THIS PRESENTATION

There will be two case studies:

- Emma, an engineering student from the UAE
- A project developing participatory design in Europe

This presentation shows the evolution of developing inclusion with people with visual impairments

- Through working with people to develop their own inclusion in work and study
- Through involving people with visual and other impairments in the design of technologies

WHAT IS ASSISTIVE TECHNOLOGY?

A device, an app, a digital technology that helps to help, improve or maintain the lives of people with disabilities

Architectural and Transportation Barriers Compliance Board. (2000). Electronic and Information Technology Accessibility Standards (36 CFR Part 1194). Federal Register, 65, 246, 80500-80528.

WHAT IS INCLUSION?

A philosophy of cultural equality with others

- People should not be physically or socially separated

That equality should lead to physical and social integration

Difference should not signify inferiority, particularly intellectual inferiority

Hayhoe, S. (2016). The Epistemological Model of Disability, and Its Role in Understanding Passive Exclusion in Eighteenth & Nineteenth Century Protestant Educational Asylums. International Journal of Christianity and Education 20(1):49–66.

WHAT IS INCLUSIVE TECHNOLOGY?

"Inclusive technology is … technology that can be used with either no or minimal adaption 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, S. (2014a). The need for inclusive accessible technologies for students with disabilities and learning difficulties, In L. Burke (Ed.). Research, Reflections & Arguments on Teaching & Learning in a Digital Age. Melton, Suffolk: John Catt Educational Publishing.

MY RESEARCH OBSERVATIONS ON THE BACK OF A CIGARETTE PACKET

We all need to feel included – I call this a *sense of inclusion*

We all develop skills and habits to help ourselves become included

These skills are shared with our communities, friends and families

Working together to consciously develop skills can:

- Help to develop habits and skills
- Provide power to develop your own inclusion

Hayhoe, S. (2019). *Cultural Heritage, Ageing, Disability and Identity: Practice, and the development of inclusive capital*. (1 ed.) (Routledge Studies in Heritage). Abingdon, Oxfordshire: Routledge.

EMMA – A BEDOUIN STUDENT WITH VISUAL IMPAIRMENT

Sharjah, United Arab Emirates

THIS CASE STUDY FEATURED IN NEW BOOK

Hayhoe, S. (2019). Inclusive technical capital in the twenty first century. In S. Halder, & V. Argyropoulos (Eds.), *Inclusive Practices, Equity and Access for Individuals with Disabilities: Insights from Educators across World* (1 ed., Vol. 1, pp. 223-241). Singapore: Palgrave Macmillan.

EMMA

Sharjah, United Arab Emirates, 2012

I call the student I supported Emma

Emma studied electrical engineering

Emma had a family sight problem

- Others in her family had it

She was from a traditional desert community (Bedouin)

She was the first generation in her family to be educated

EMMA'S VISUAL IMPAIRMENT

- October 2011, Emma had cataract removed and a plastic lens
- Her surgeon warned it would take time to adapt
- It was likely that Emma would eventually lose her sight completely

Emma's technology when I met her:

- Traditional assistive devices had been used with some success
  - Computerized camera with an arm that cost US$2895
  - A large print keyboard that cost US$65
- Emma found it possible to see other equipment such as her laboratory's oscilloscope

EMMA'S TECHNOLOGICAL SUPPORT STRATEGY

We developed three support strategies:

- Support had to be as socially inclusive as possible
  - Devices I recommended should be as close to mainstream as possible
- I needed to find a cost effective solution for Emma's support
  - No specific funding for assistive devices or new equipment
- I needed to develop support with future-proofing built in
  - She would be a person with very little or no sight
  - Technologies needed to be upgradeable

EMMA'S IPAD

I advised Emma to buy an iPad2, approx. US$580

It received good reviews from organizations for the blind

- The UK's Royal National Institute for the Blind
- The US's National Federation of the Blind and American Association of the Blind

POSITIVE OBSERVATIONS

- Free literature was available, including science and science fiction
- The screen zoom was useful, eventhough it had to be held close
- The white writing on a black page made the text easier to see
- The devise was small, light and could easily be carried
- As it was mainstream, fashionable technology Emma wasn't embarrassed
- It was considerably less expensive than her traditional technologies
- Emma also had access to other interactive multi-media features

NEGATIVE OBSERVATIONS

- The control panel was complicated and confusing
- Emma couldn't read the icons and writing on Accessibility screen
- It was difficult to get used to taping the screen
- Even with the zoom facility, she had to hold the screen to her eyes
- The instructions in the booklet were in small print
- The voice facility to name the icons could be confusing and was a loud and embarrassing American voice
  - Culturally, this was considered rude in the UAE

ACCESSIBLE RESOURCES FOR CULTURAL HERITAGE ECO-SYSTEMS (ARCHES) – FEEDING INTO THE TECHNOLOGY DESIGN PROCESS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 693229

THE PROJECT'S AIMS

Develop participatory groups of people with differences in museums, to lead the development of inclusion

ARCHES aims to create inclusive cultural environments for those with sensory and cognitive impairments

Develop in-depth research analysis and innovative applications, functionalities and practices

PROJECT PARTNERS

Partners:

- come from Spain, UK, Austria and Serbia
- are national, specialist and local museums, technology companies and universities
- have experience of working with the stakeholder groups

PARTICIPATORY METHOD

Participants from stakeholder communities and supporters

Three principles of working with participants

- Addresses issues and improves lives
- Accesses and represents views and experience
- Participants treated with respect

Walmsley, J. and Johnson, K. (2003). *Inclusive research with people with learning difficulties. Past, present and future*. London: Jessica Kingsley Publisher, 2003.

SESSION PARTICIPATION

Participants attend regular sessions

- Sessions started in London, beginning of 2017
- Began in Spain and Vienna, early 2018

Professionals, intended end users and researchers attend

Sessions develop a community, giving participants a voice

Sessions includes exercises, feedback from groups, touring galleries/exhibitions, participating in exercises such as mystery shopping

CASE STUDY: LÁZARO GALDIANO AND THYSSEN- BORNEMISZA MUSEUMS, MADRID

Acknowledgement to Felicitas Sissini, Thyssen Museum & Jara Diaz, Lázaro Galdiano for the Slides

PRESENTATION IN MADRID – MEETING THE PARTICIPANTS

Image of the audience attending the presentation held in Madrid, September 2017.

One member of the audience asks a question during the presentation in Madrid.

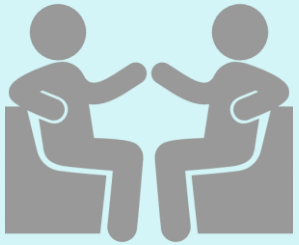
WHAT WAS PARTICIPATION?

¡Think!

¡Give your opinion!

¡Discuss!

¡Work together!



HOW WE PLAN SESSIONS

Activities

- We experience technologies and document results

Process

- We discuss the process of design and share our ideas, which are fed back to developers

Development

- We plan and create our own exercises that feedback to technology developers

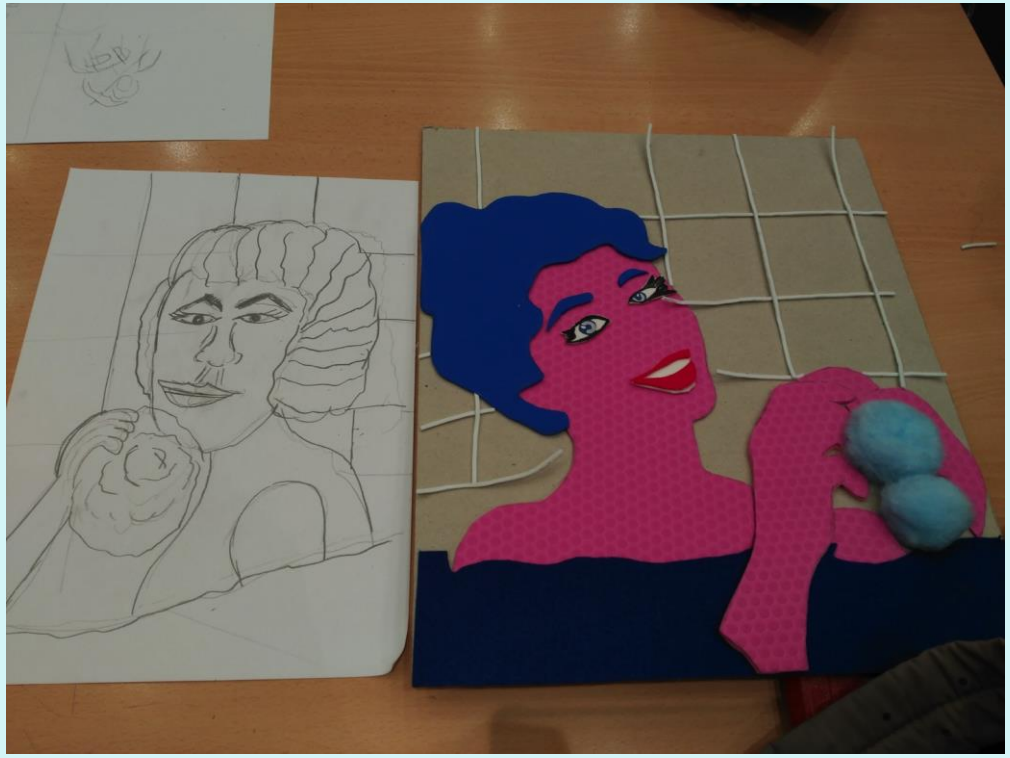
CHALLENGE – ADAPTING MATERIALS FOR EVERYONE

An educator audiodescribes an artwork to a group pf participants at Lázaro Galdiano Museum

A group of participants tests an app at the Lázaro Galdiano Museum

UNDERSTANDING EACH OTHER'S LIMITATIONS AND POSSIBILITIES

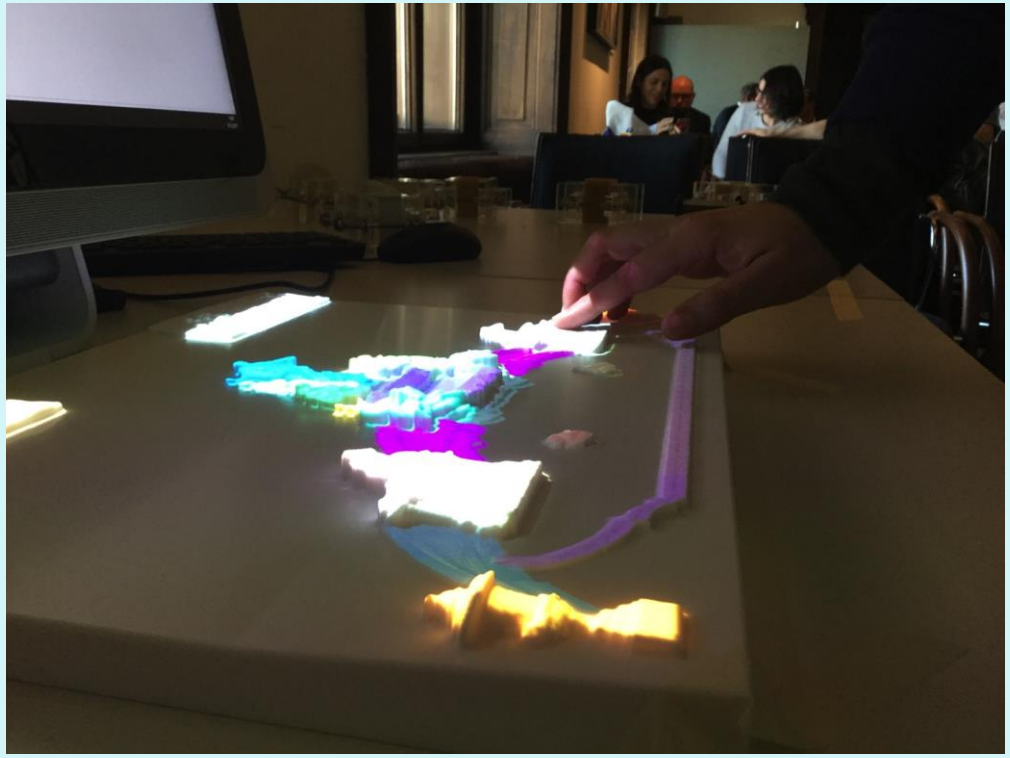
Materials used for the audiodescription activity: black paper, tactile image and blooklet for notes.



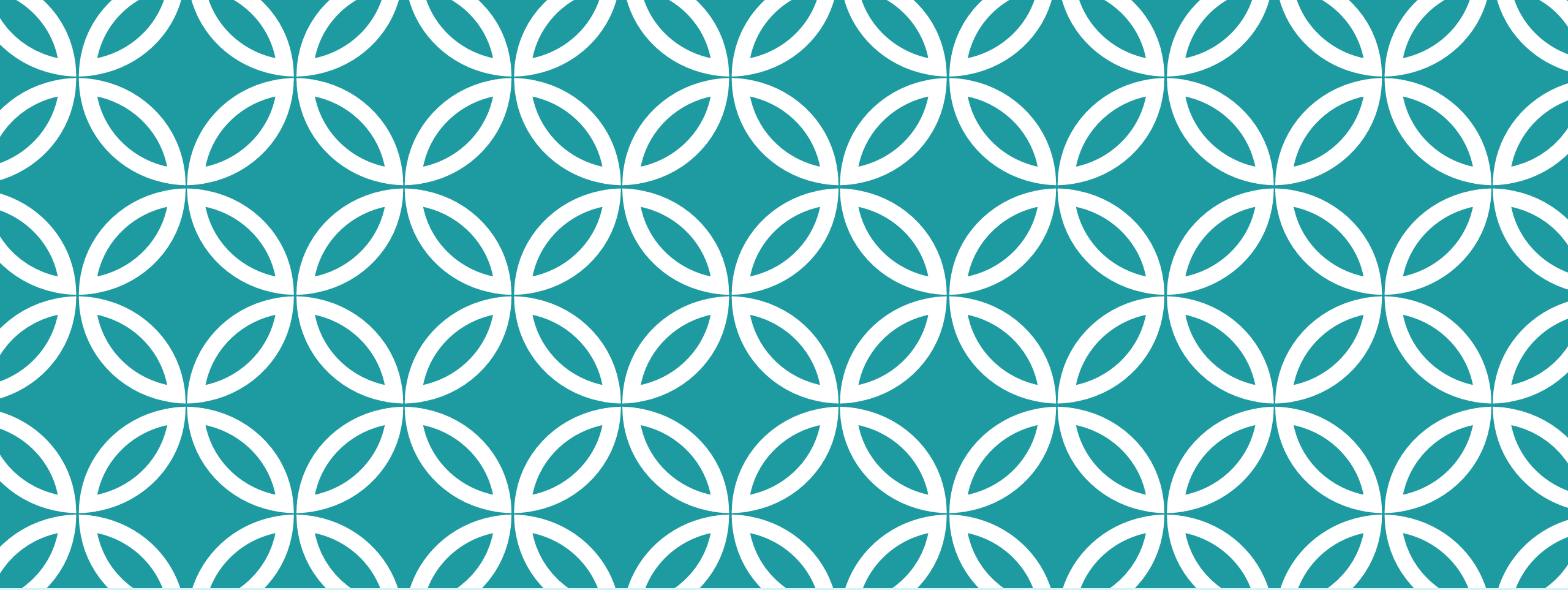
Comparison between the tactile image and the drawing resulted from audiodescribing it.

PROTOTYPES AND FIRST TESTINGS

The sprout colours the different sections of a reliefs and identifyes the hand movement.



A person exploring the tactile relief with the sprout machine prototype.



CONCLUSION

Final messages

THREE TAKE AWAY MESSAGES

Technology is one of the last barriers to inclusion

- Assistive technology has separated people with visual impairments – and other disabilities

Good inclusive technologies listen to people in the design and development process

Good inclusive technologies can only be such if their use is tailored and led by the individuals that they are designed to support