



Shaping minds-on and hearts-on digital learning experiences: First lessons learned from the meSch project

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Museums, Cultural Heritage and Digital technologies



Nintendo DS, Louvre (<http://bit.ly/1BOIpAU>)



Musée des Arts et Métiers, Paris

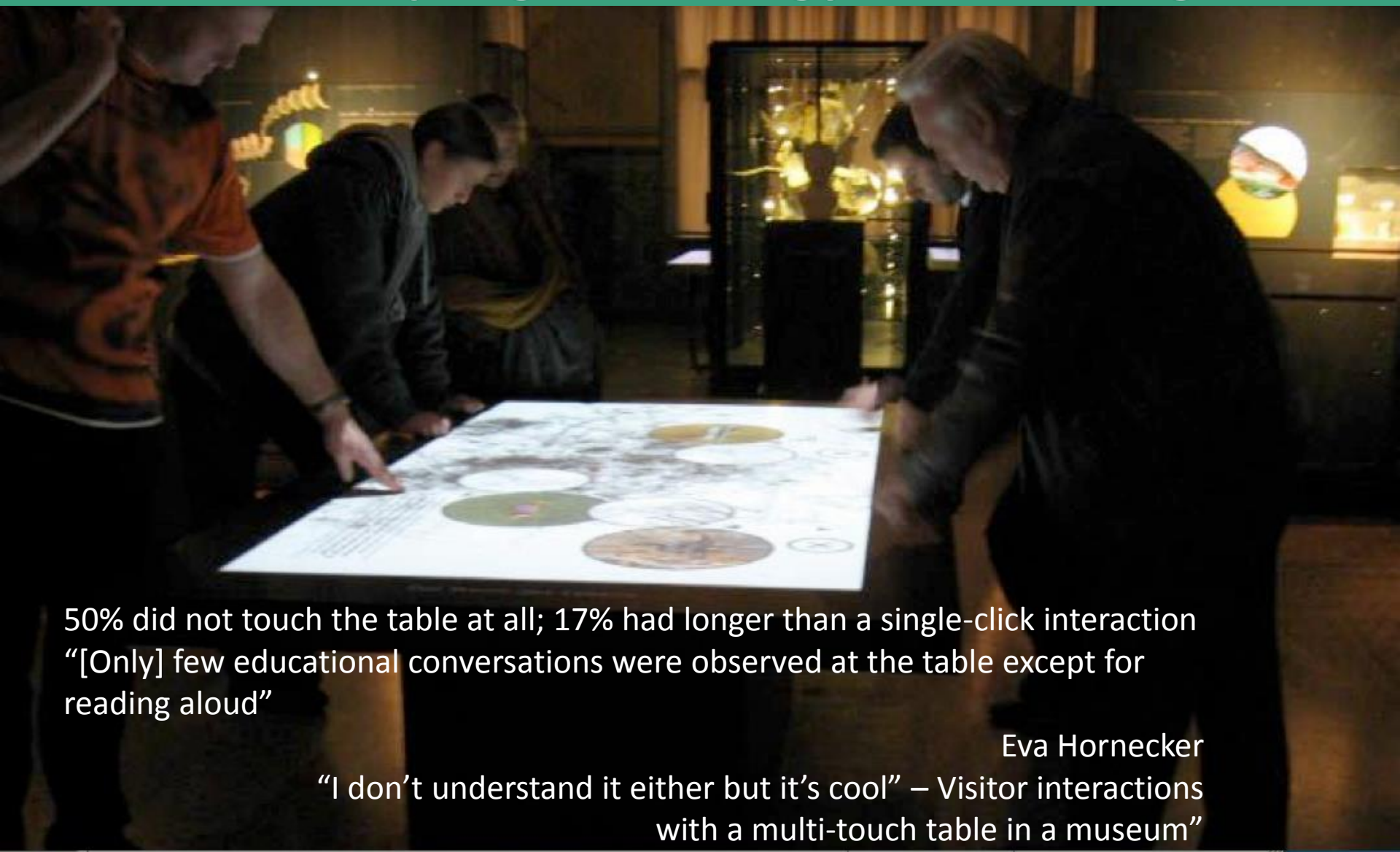


Deutsches Technikmuseum, Berlin



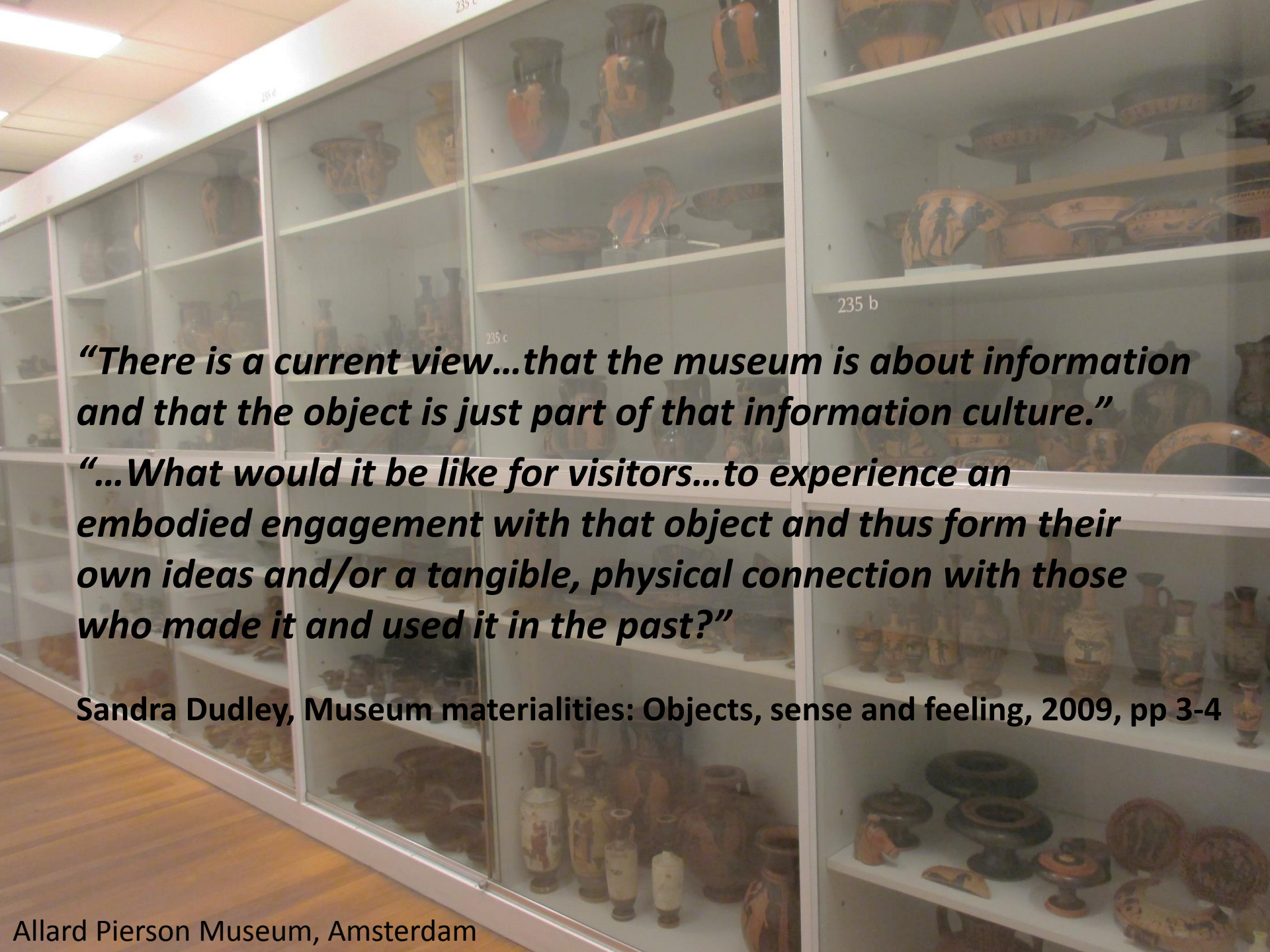
Museo Nacional de Artes Decorativas, Madrid

Risks of de-coupling technology from heritage



50% did not touch the table at all; 17% had longer than a single-click interaction
“[Only] few educational conversations were observed at the table except for reading aloud”

Eva Hornecker
“I don’t understand it either but it’s cool” – Visitor interactions
with a multi-touch table in a museum”



“There is a current view...that the museum is about information and that the object is just part of that information culture.”

“...What would it be like for visitors...to experience an embodied engagement with that object and thus form their own ideas and/or a tangible, physical connection with those who made it and used it in the past?”

Sandra Dudley, Museum materialities: Objects, sense and feeling, 2009, pp 3-4

Back to Tangible and Embodied Interaction



Victoria and Albert Museum,
London



Archaeohotspots project, Allard Pierson
Museum, Amsterdam
(photos by Eva Hornecker, Luigina Ciolfi)

Back to Tangible and Embodied Interaction



Gallery One, Cleveland Museum of Art, Cleveland, Ohio

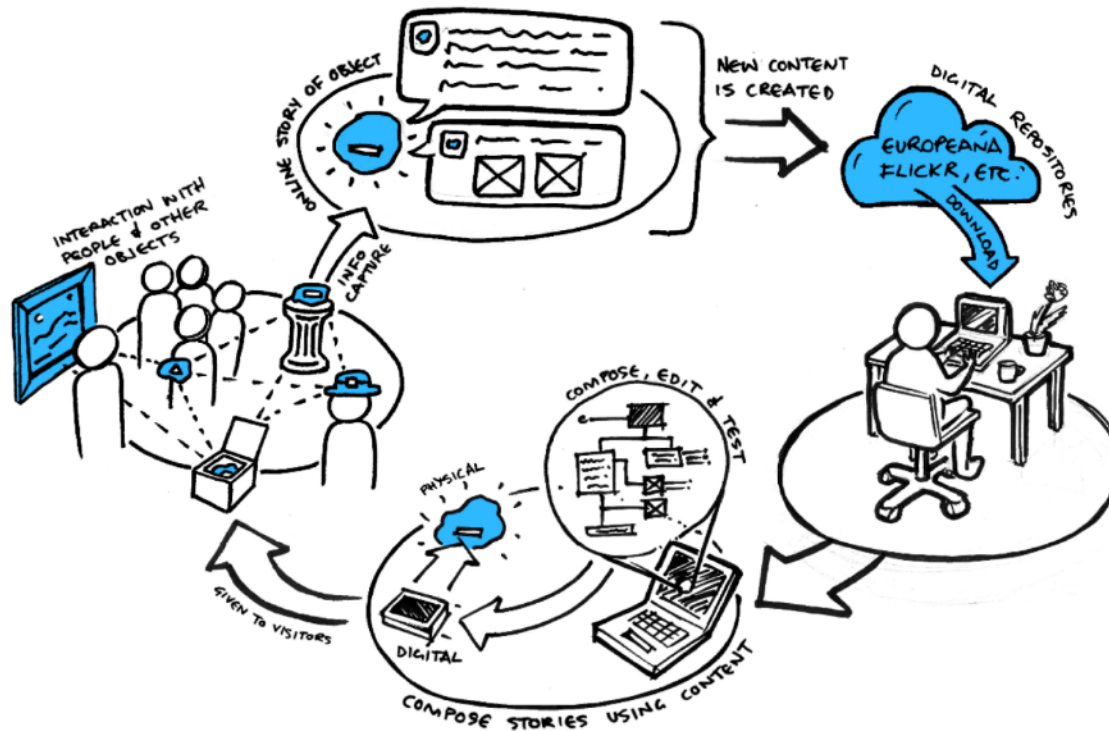
Jane Alexander, Gallery One at the Cleveland Museum of Art, Curator, Volume 57 (3), pp 347-362

meSch: material encounterS with cultural heritage

Co-creation and DIY: Curators, artists and designers are working together to develop do-it-yourself technology for the creation of adaptive smart exhibits.


Tangible Interaction: The core problem underlying all digital artefacts is the loss of materiality. meSch wants to put the physical back in the centre of cultural heritage experience.

Digital artefacts and digital resources: A wealth of digital repositories is available. meSch wants to make innovative use of them by integrating them in a tool to create adaptive smart exhibits.



Co-design and co-evaluation Approach

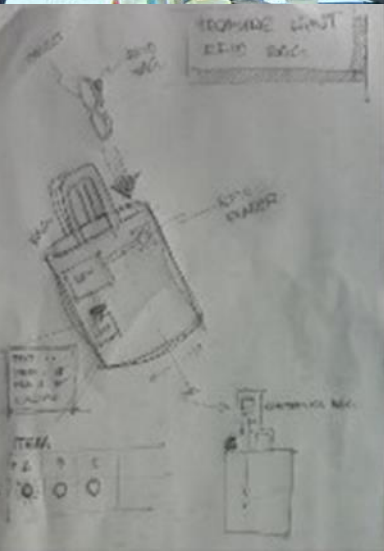
Grandmother: EMMA
71
Interested in culture
Retired craft teacher
Active social life → friends not into museums
Hobby: Gardening
Husband usually drives
When traveling to city: train
Has museum card
Goes on city trips with husband
Nothing too loud/noisy
4 grand children
Goes on trips with one grand child at a time
Husband was clerk, follows her initiative.
Lives in village
Volunteer in local heritage centre



Smiles

Uses web for social contacts → emails, FB as only to follow lives of children/grand children.
Sm gave Paul as gift: precious, seldom used → looking at pictures.

Newspaper + tv + museum newsletters main sources of info.
Follows suggestions of 'reliable' sources.
No risk taker.



Our meSch museums

MUSEON
FURNITURE DESIGN HISTORY MUSEUM



ALLARD PIERSON MUSEUM
Archeologisch Museum van de Universiteit van Amsterdam



**Museo Storico
Italiano della Guerra
Rovereto** (on.I.us.)



The first meSch prototypes

Memento Mori
The World's Largest Cemetery

One **Two** **Three**

USER: Choose Memento Mori (MM) up, middle, down, etc., each linked to a person and grave in the cemetery.

USER: Walk around cemetery, viewing MM.

USER: Walk closer to head object.

SYSTEM: Register that user has picked up MM and start to identify location.

SYSTEM: Headset looking for the relevant Memento Mori interaction zone.

SYSTEM: Headset to indicate interesting proximity - this could be through light, vibration, or in this case, temperature.

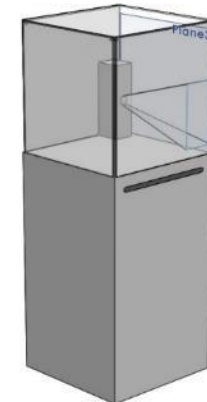
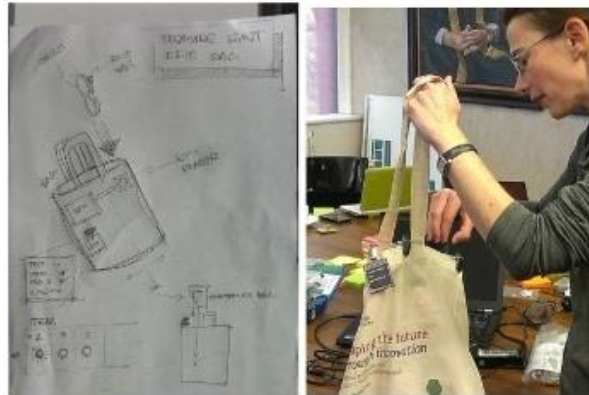
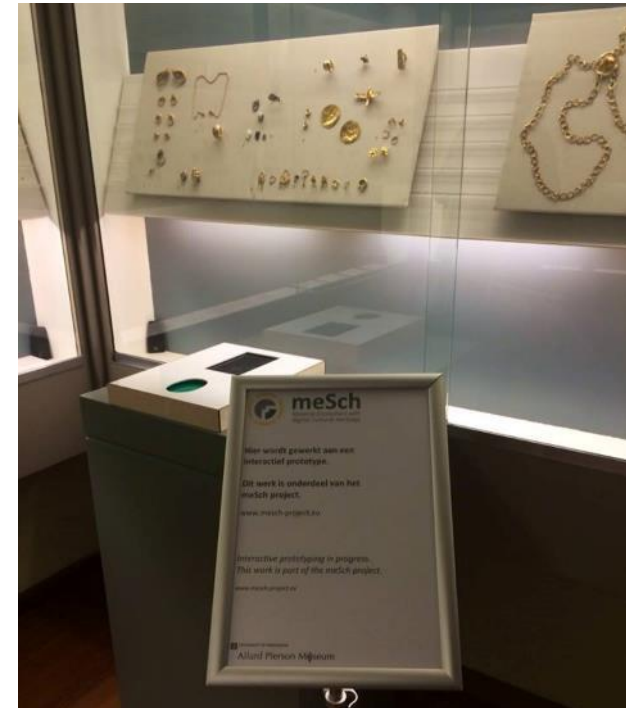
Four **Five** **Six**

USER: Move at linked geo-location.

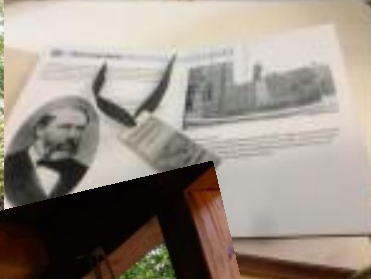
USER: Acknowledge to the MM that you have picked at the location. This could be through a "Yes" button or "No" button.

SYSTEM: When at linked location, switch to audio mode.

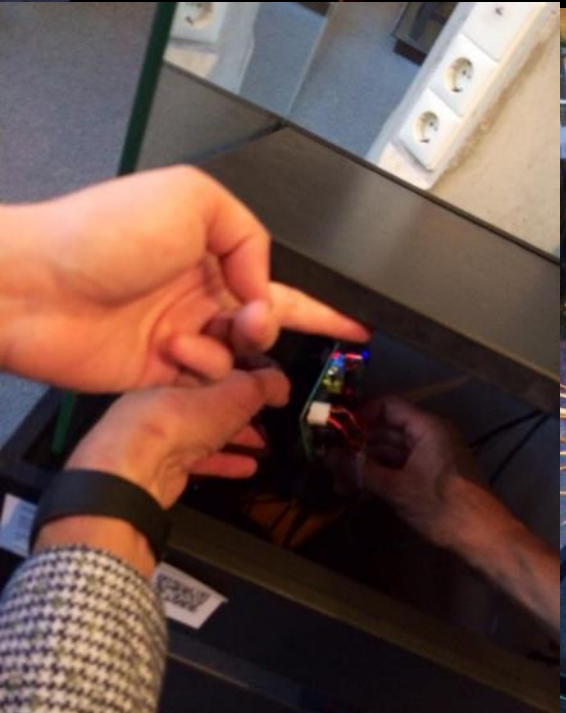
SYSTEM: Headset that user has heard location.



Museo della Guerra: The Companion Novel



Museon: The Interactive Showcases



This cap has been acquired through a king's intermediate.

Deze muts is verworven via een koninklijke bemiddelaar.

Normally I am stored in one of these boxes.

Gewoonlijk zit ik in een van deze dozen.

Tweet me: #EcsiteCap

Aretititi: #EcsiteCap @meschcases, wish I could try you on! <http://t.co/MrjwkY7K9Y>

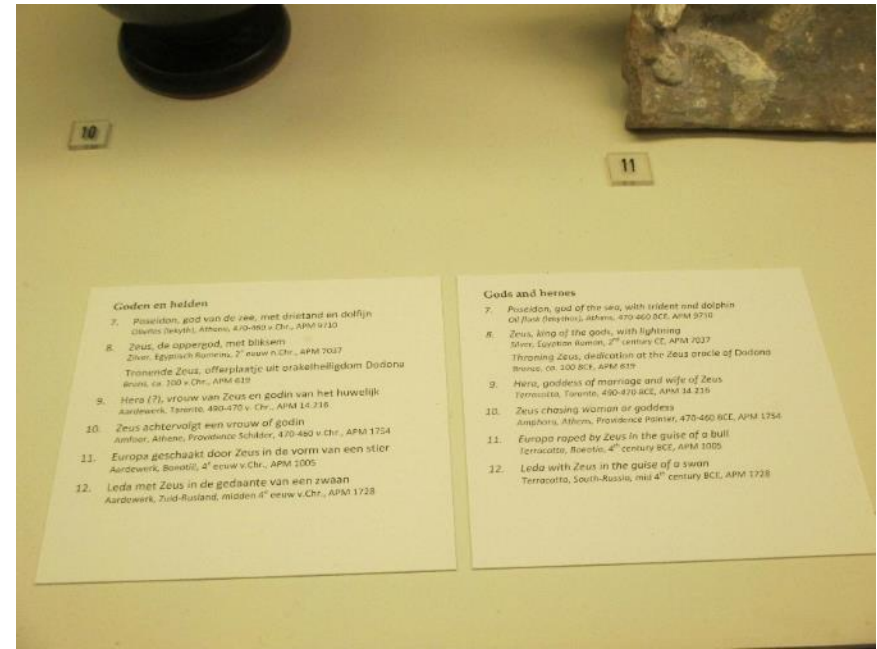
The Loupe



- Easy and enjoyable to use
- Focus on the loupe, not the objects
- A lot of playing but what about learning?

The Loupe study: Research questions

- Where is the focus?
- How easy is it to use?
- Can it be shared?
- How much content should be included?
- Text vs other media
- Cognitive & affective impact



Goden en heidenen

7. Poseidon, god van de zee, met drietand en dolfijn
Oliefles (kylix), Athene, 470-460 v. Chr., APM 9710
8. Zeus, de eppergod, met bliksem
Zilver, Egyptisch Ramesseum, 2^e eeuw n. Chr., APM 7037
Thronende Zeus, offerplaatsje uit orakelheiligtom Dodona
Brons, ca. 300 v. Chr., APM 619
9. Hera (7), vrouw van Zeus en godin van het huwelijk
Aardewerk, Tessalië, 490-470 v. Chr., APM 14.216
10. Zeus achtervolgt een vrouw of godin
Aardewerk, Athene, Providence Schöler, 470-480 v. Chr., APM 1754
11. Europa geschaakt door Zeus in de vorm van een stier
Aardewerk, Boeotie, 4^e eeuw v. Chr., APM 1005
12. Leda met Zeus in de gedaante van een zwaan
Aardewerk, Zuid-Rusland, midden 4^e eeuw v. Chr., APM 1728

Gods and heroes

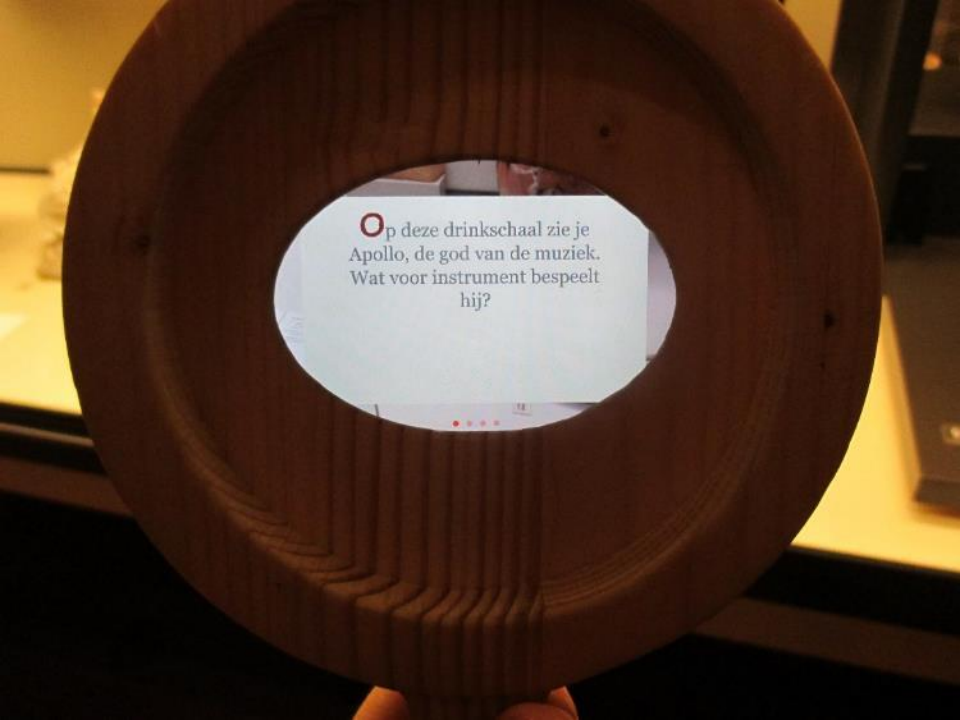
7. Poseidon, god of the sea, with trident and dolphin
Oil flask (kylix), Athens, 470-460 BCE, APM 9710
8. Zeus, king of the gods, with lightning
Silver, Egyptian Ramesseum, 2nd century CE, APM 7037
Throning Zeus, dedication at the Zeus oracle of Dodona
Bronze, ca. 300 BCE, APM 619
9. Hera, goddess of marriage and wife of Zeus
Terracotta, Thessaly, 490-470 BCE, APM 14.216
10. Zeus chasing woman or goddess
Athenian, Athens, Providence Schöler, 470-480 BCE, APM 1754
11. Europa raped by Zeus in the guise of a bull
Terracotta, Boeotia, 4th century BCE, APM 1005
12. Leda with Zeus in the guise of a swan
Terracotta, South-Russia, mid 4th century BCE, APM 1728

The Loupe study

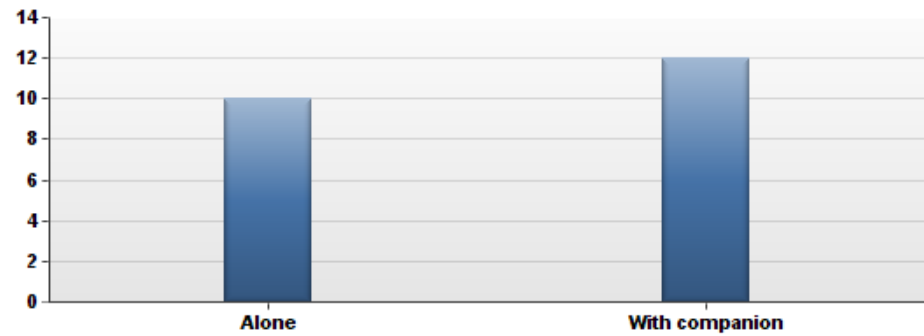
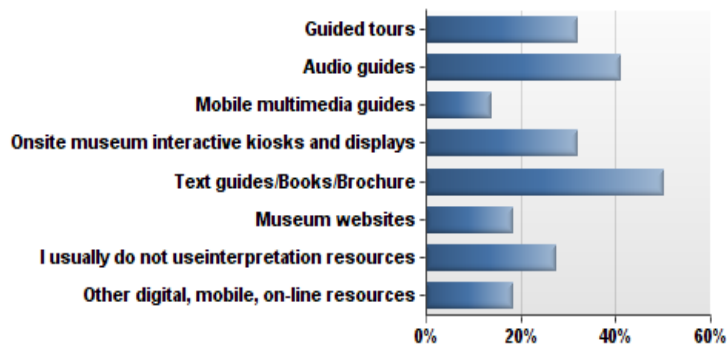
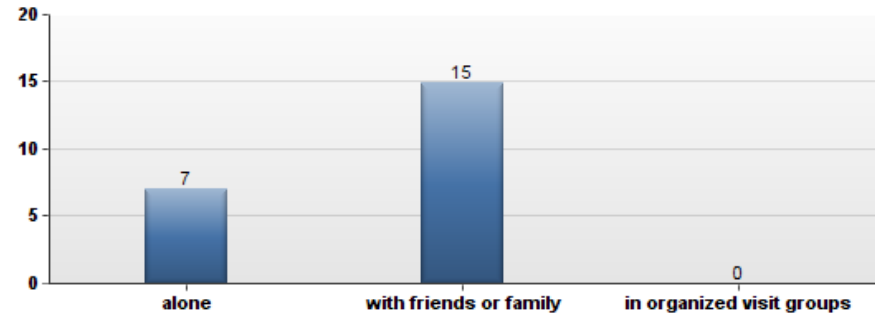
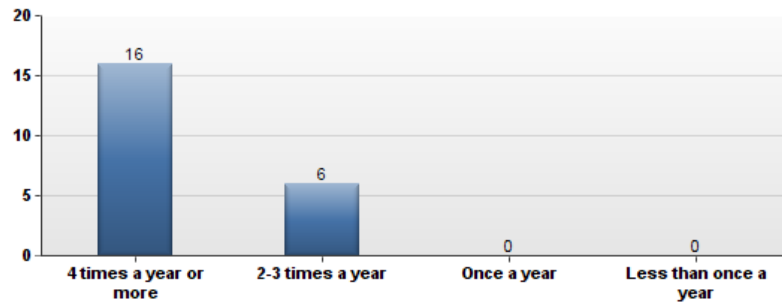
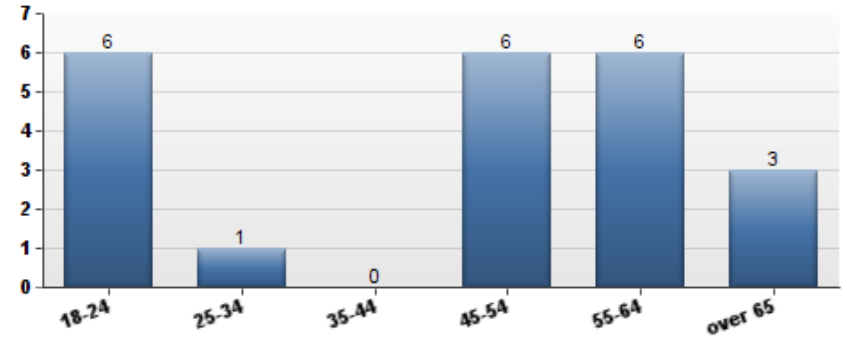
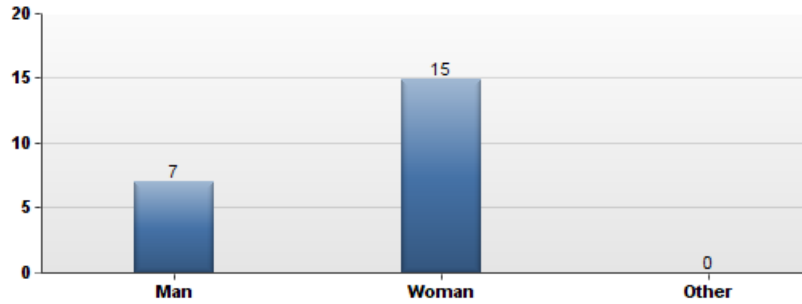
Protocol

- Pre-visit questionnaire
- Observations
- Post-visit questionnaire (25 questions)
- Semi-structured interviews
- 22 participants
- Channels:
 - Allard Pierson Museum, Friends of the Museum
 - University of Amsterdam students' network

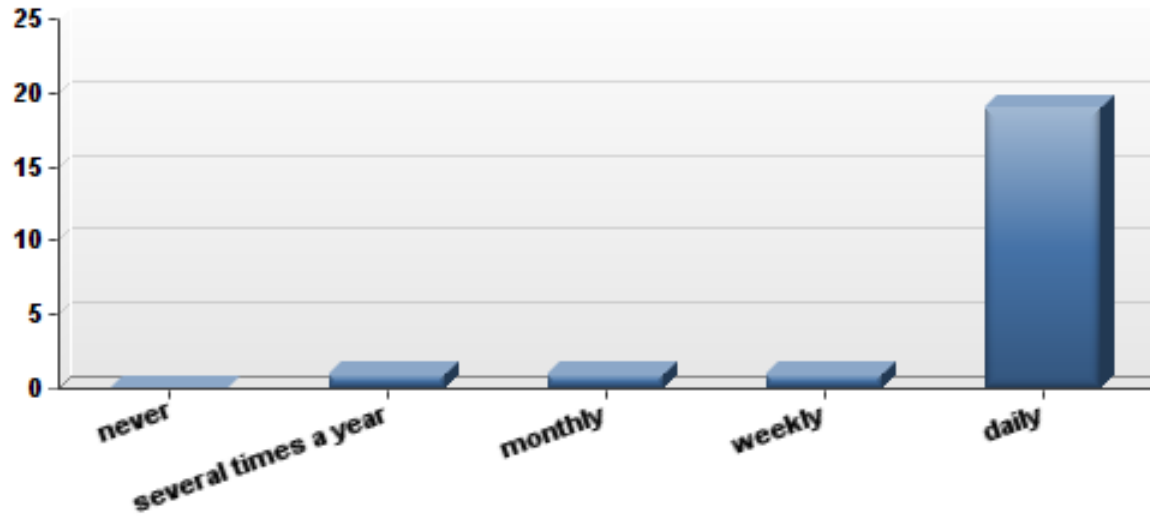




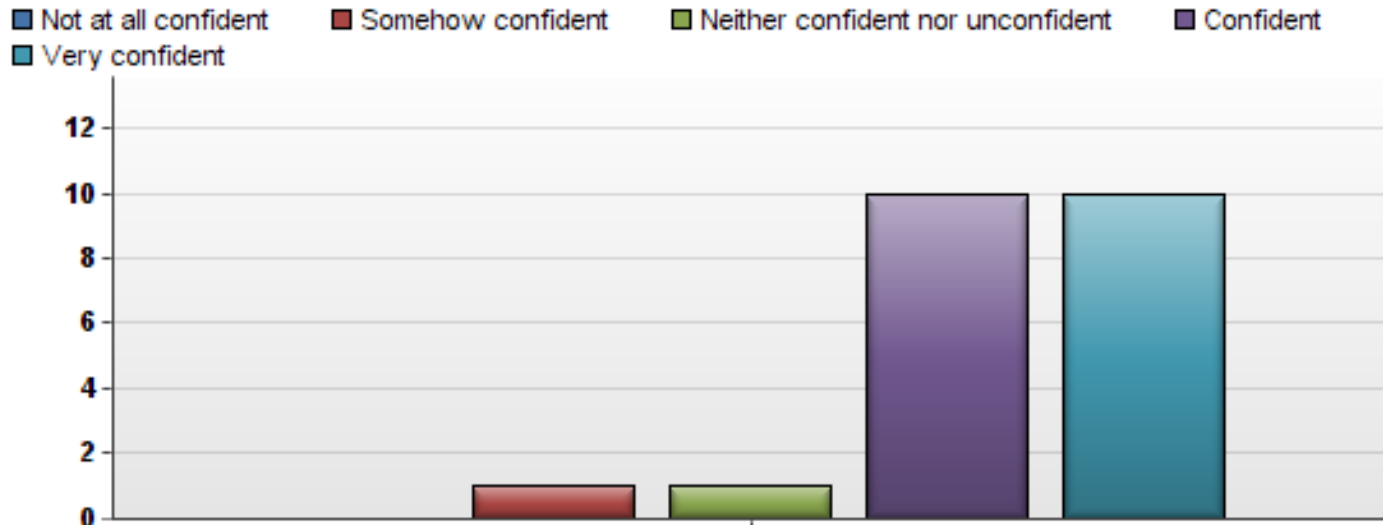
Demographics and visitor profiles



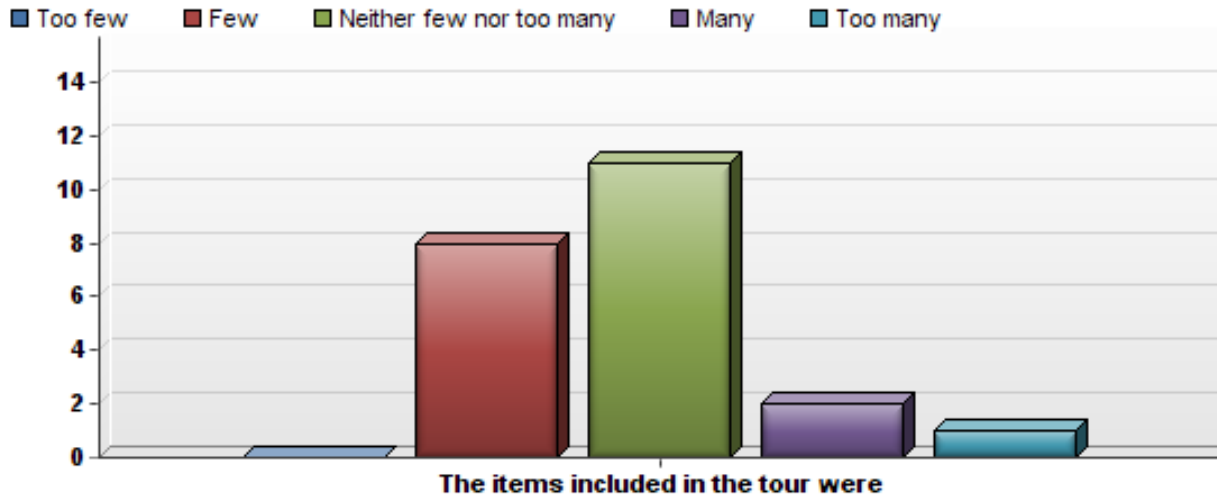
How often do you use the internet to search, learn or communicate?



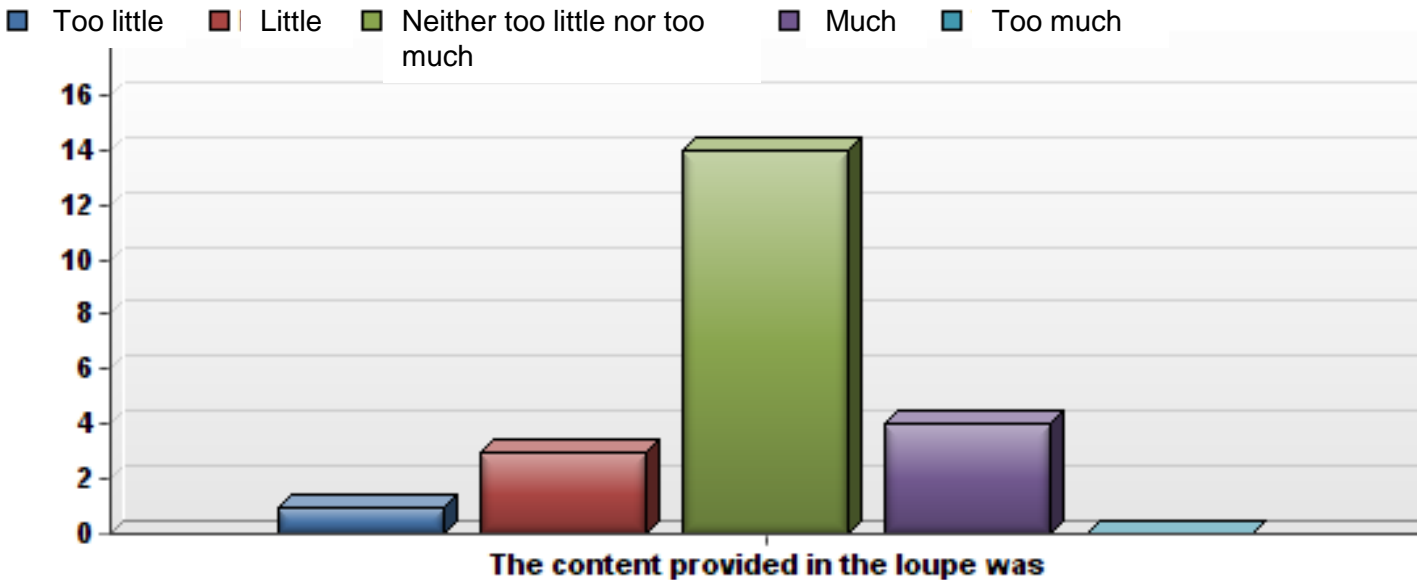
How confident do you feel on using digital applications and devices?



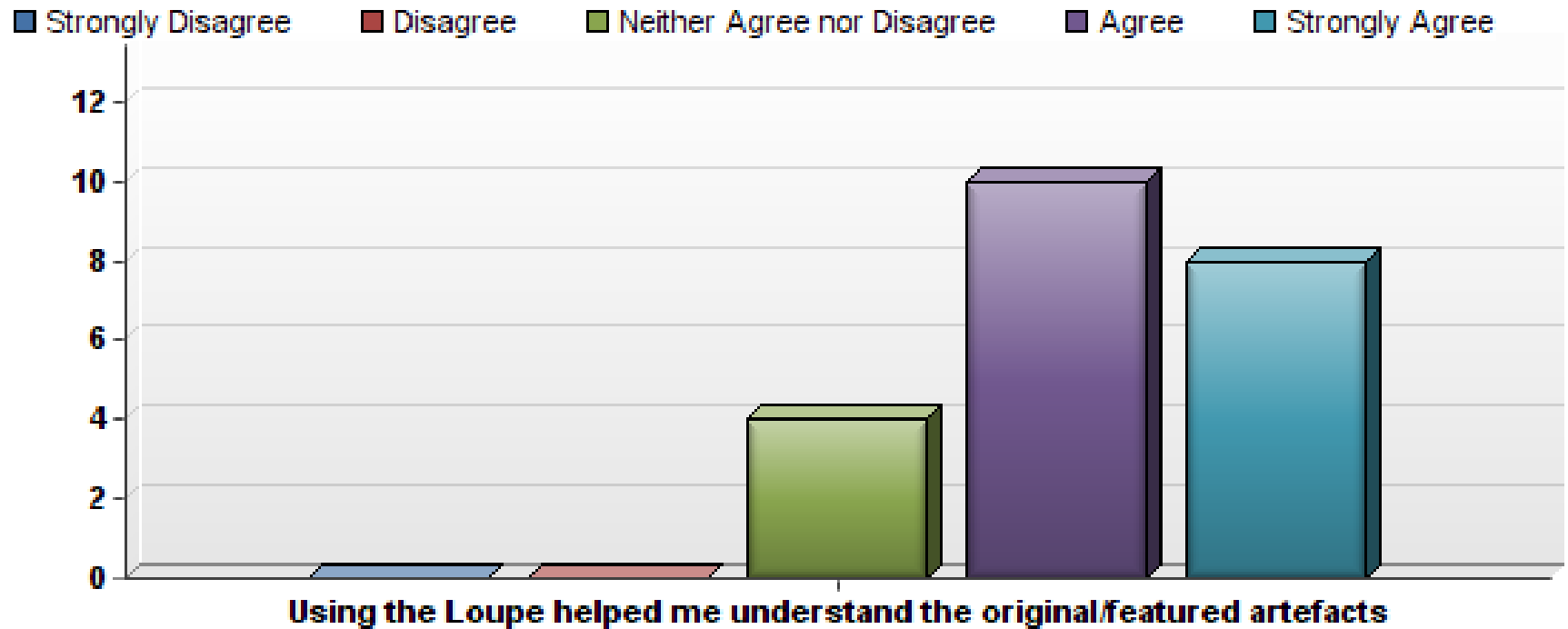
The objects included in the tour were



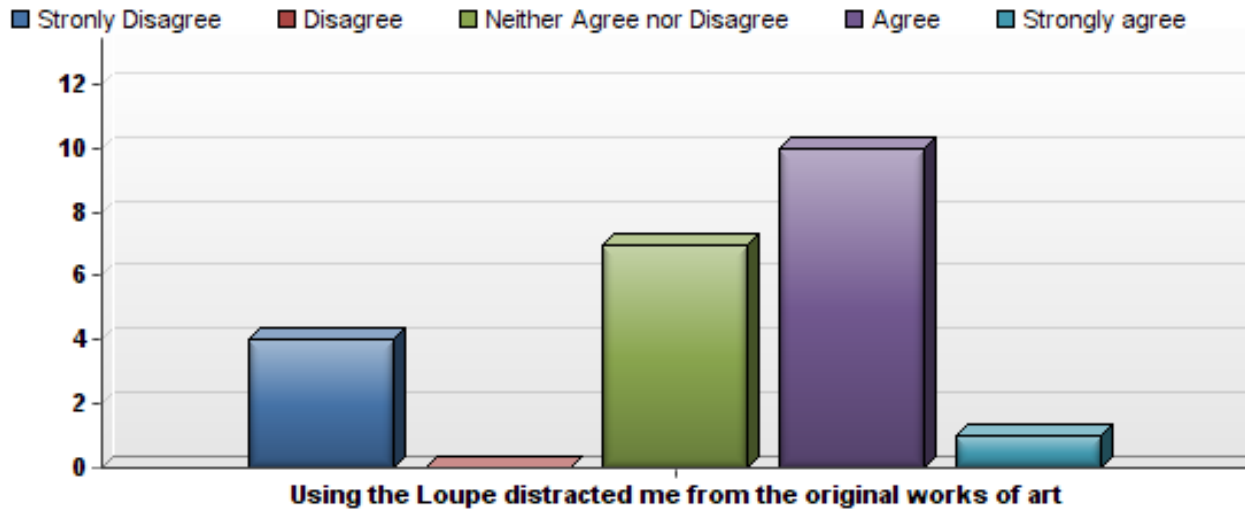
The content provided by the Loupe was



Using the Loupe helped me understand the featured artefacts

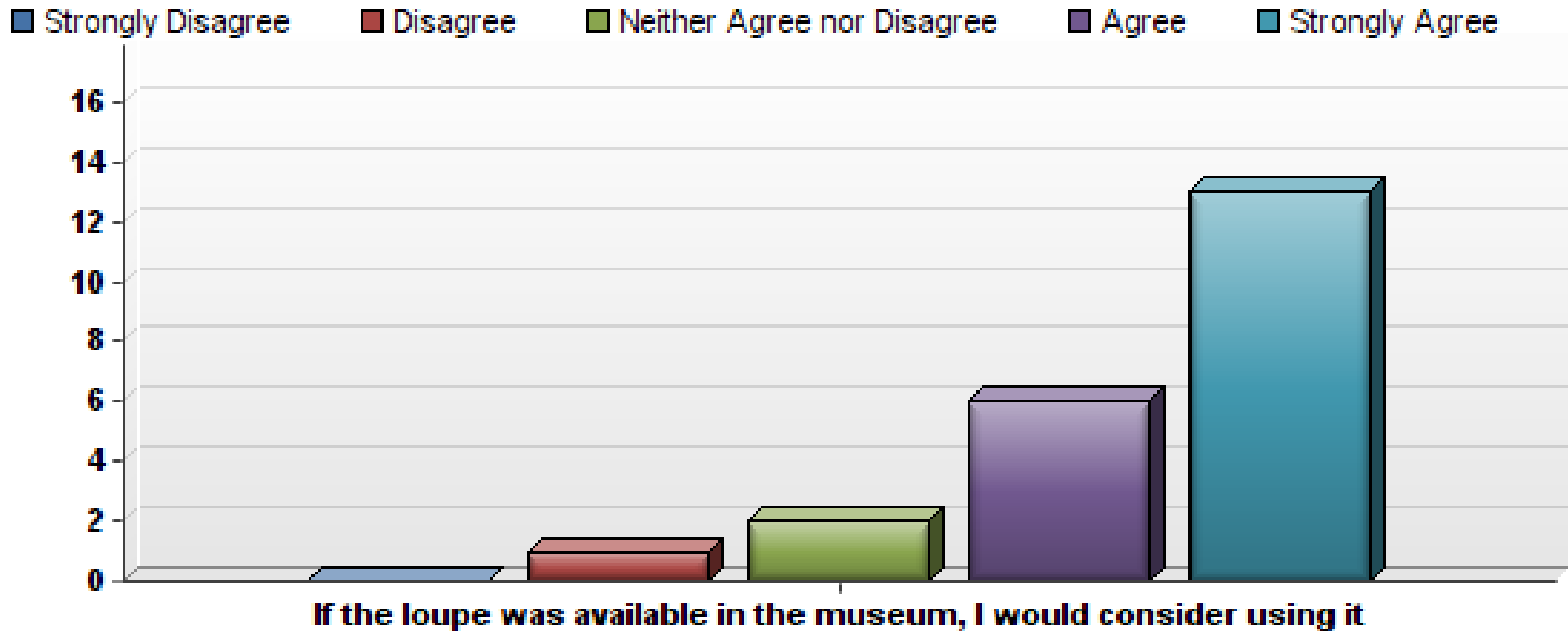


Using the Loupe distracted me from the original works of art



#	Question	Stronly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly agree	Total Responses	Mean
1	Using the Loupe distracted me from the original works of art	4	0	7	10	1	22	3.18

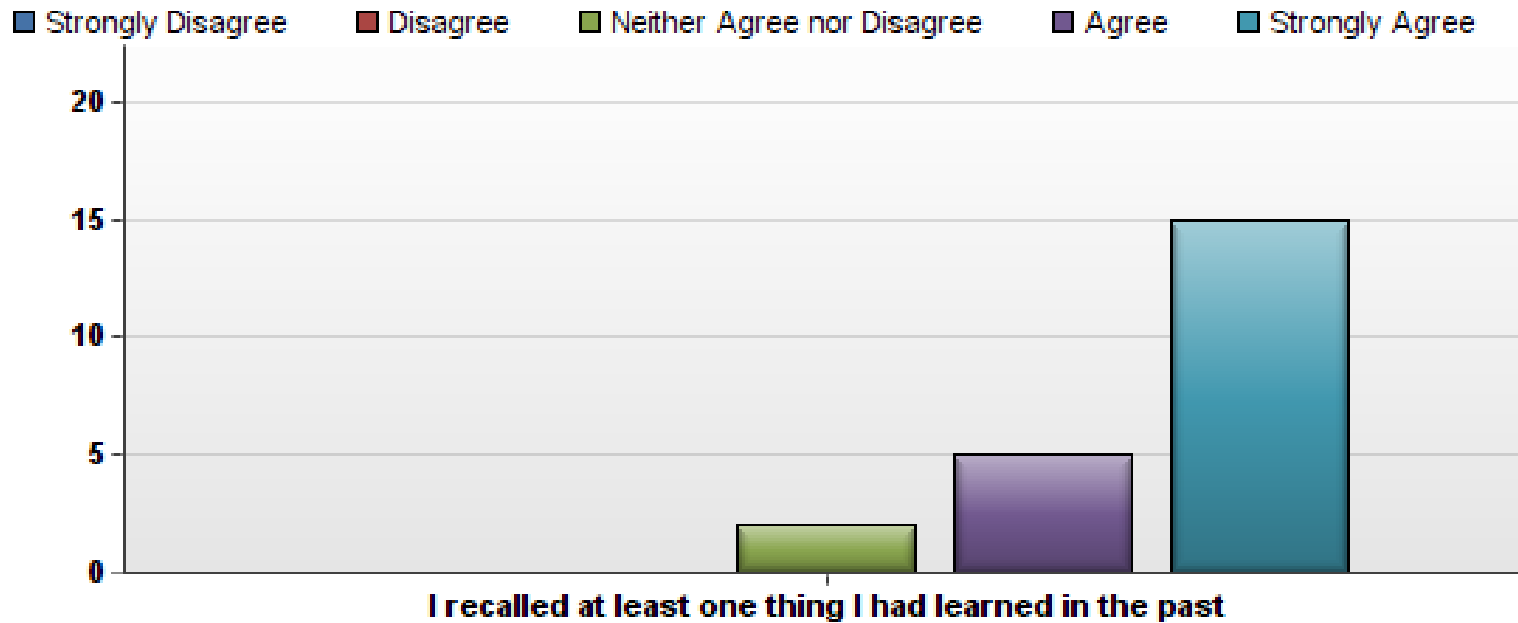
If the loupe was available in the museum, I would consider using it



Cognitive and affective impact

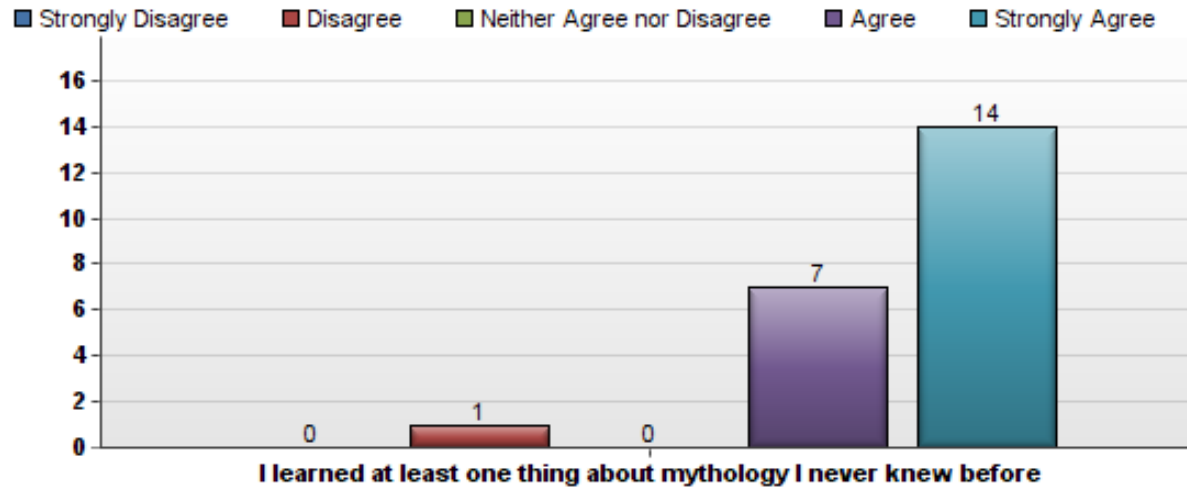


I recalled at least one thing I had learned in the past



#	Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Total Responses	Mean
1	I recalled at least one thing I had learned in the past	0	0	2	5	15	22	4.59

I learned at least one thing about mythology I did not know



#	Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Total Responses	Mean
1	I learned at least one thing about mythology I never knew before	0	1	0	7	14	22	4.55

Post-visit questionnaire

Can you help us understand if any of the moods/emotions below occurred while:

A. Using the Loupe (Question 9)

and

B. Following the tour and going through the content (question 10)

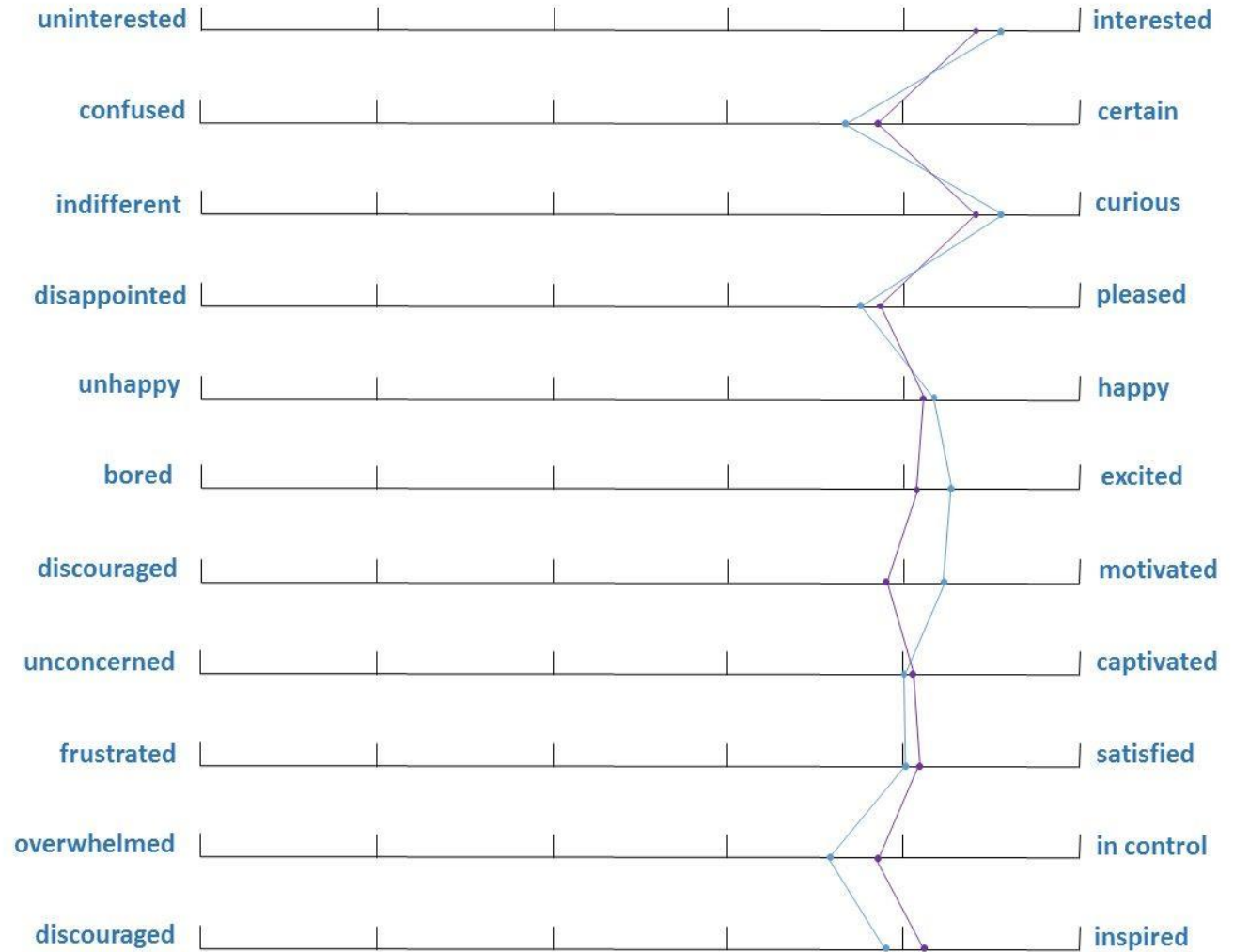
Q9. While using the Loupe I felt:

Uninterested	_	_	_	_	_	Interested
Certain	_	_	_	_	_	Confused
Indifferent	_	_	_	_	_	Curious
Pleased	_	_	_	_	_	Disappointed
Unhappy	_	_	_	_	_	Happy
Excited	_	_	_	_	_	Bored
Motivated	_	_	_	_	_	Discouraged
Unconcerned	_	_	_	_	_	Captivated
Satisfied	_	_	_	_	_	Frustrated
Inspired	_	_	_	_	_	Discouraged
Overwhelmed by my experience	_	_	_	_	_	In control of my experience



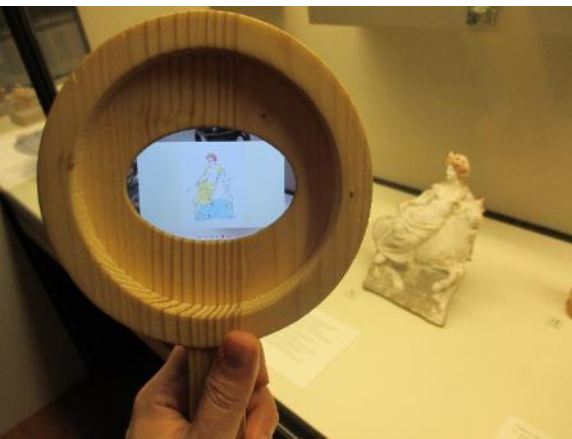
— The Loupe

— The content



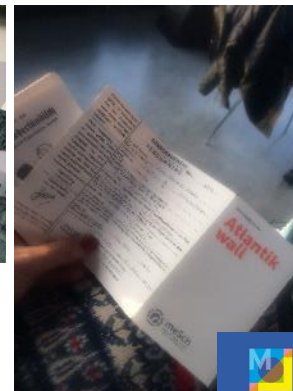
What else did we learn? (interviews & observations)

- Easy vs intuitive (and learning curve)
- The loupe or an app?
- More “experienced” = less distracted?
- Types of content prompting visitors to look back at the exhibit
- The role of text
- Can be shared by visiting companions



What's next?

- Comparative study with “traditional” text delivery
- Three museums, three large-scale exhibitions, three parallel evaluation studies
- Comparative evaluation studies among museums using closely related prototypes (Museon, Museo della Guerra, Allard Pierson Museum)
- Plan for the gathering, analysis, interpretation of “big” data
- Further explore interrelations among tangible & embodied interaction, emotions, cognition and learning



Questions?



Stay tuned!
mesch-project.eu



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The project (2013-2017) receives funding from the European Community's Seventh Framework Programme 'ICT for access to cultural resources' (ICT Call 9: FP7-ICT-2011-9) under the Grant Agreement 600851.

