

Meaning Maps

Sarah-Jane Harknett

Meaning maps are a method of finding out a person's thoughts, feelings and ideas around a central theme or topic. Completing a meaning map can be non-linear, compared to a more didactic approach such as a formal questionnaire. Ideas can be linked on the page, joined with other concepts, and completed in any order. They can be successfully used with people of any age, including young children and groups. This method does require some literacy skills. They are an effective method to get individualised responses and work particularly well when used before and after an intervention (such an exhibition, taught session, or event). If used immediately after the intervention, meaning maps will only be finding out short-term changes, but they can also be used over a longer period of time. As it is a very flexible method, it can result in a lot of data to analyse. This should be factored in before deciding whether this is an appropriate method to use.

How to do it

- Decide on central theme. Pilot it.

What is your central evaluation question about? What is the main theme of the exhibition or event that you are evaluating? Will you use one word, a phrase, or an image? It is usually helpful to pilot your meaning map with a small group of people who are like the population you will be sampling. You could run this pilot with two or three different central ideas and then compare the results. Which central concept needed a lot of explanation? Did one of the themes achieve a broad range of responses or did people stop coming up with ideas very quickly?

- Decide on a sampling strategy.

Who will you ask? Will your sample be stratified or random? What is your target number of completed meaning maps? In UCM, we aim for 20 to 30 meaning maps for exhibition evaluation.

- Decide what demographic information will be relevant to collect

What is necessary for you to know when you are analysing the results? Don't ask for demographic information that you do not need.

- Evaluate.

Approach the person before they engage with the exhibition/intervention/event. Introduce the project and its purpose. Ask if they would be happy to take part in pre- and post-event evaluation. If consent forms are being used, get them completed at this point, and give the participant an information sheet telling them what data is being collected, what will happen to it and how they can withdraw should they want to. Include the contact information for a member of staff.

Show a completed meaning map on a different topic and talk it through. If you are happy for people to draw pictures in response to the theme rather than writing words, say that in the introduction. The meaning map you show people should have at least two initial ideas, preferably with some more branching words. Don't use one that has so many things on it that it might seem intimidating. Avoid showing or saying anything that might prime the visitor on the theme you are exploring.

Give them the blank meaning map to complete. If multiple people are carrying out the evaluation, it might be helpful for the sheet to have a space for the evaluator to add their initials. Ask the visitor

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to add their knowledge, opinion, thoughts, ideas, beliefs, experiences, facts, images, memories, etc: whatever comes to mind when they think of the target phrase. Reassure them that this is not a test! If they don't have very much to write that is fine. Sometimes people can worry about putting the 'right' thing, so encourage them to put down whatever comes to mind. Participants might ask whether their knowledge is correct before they put it on the sheet. Ask them to put their thoughts down anyway, and again remind them this is not a test. Ask any prompt or clarifying questions about things they have written or handwriting that you cannot read. You might want to write a script for the introduction and prompt questions so that it is the same for each person. The evaluator can add their clarifications or prompts onto the map but should use a different colour ink.

Take the completed meaning map. Ask the participant to include their initials or date and month of birth or some other means of identifying them. Give them the demographic survey to complete. Don't let them take the meaning map into the exhibition or event with them. Explain that you will return it afterwards. People that take the meaning map with them might write on it before the end. After the intervention, give them back the same sheet they filled in before, but with a different coloured pen. Ask them to add additional thoughts, ideas, feelings, or to explain anything that was already on the meaning map. Leave them to do this without intervention. When they have finished, ask any clarifying questions that you need to, again adding these to the map or your notes in another colour ink. Make sure you have plenty of different pens with you.

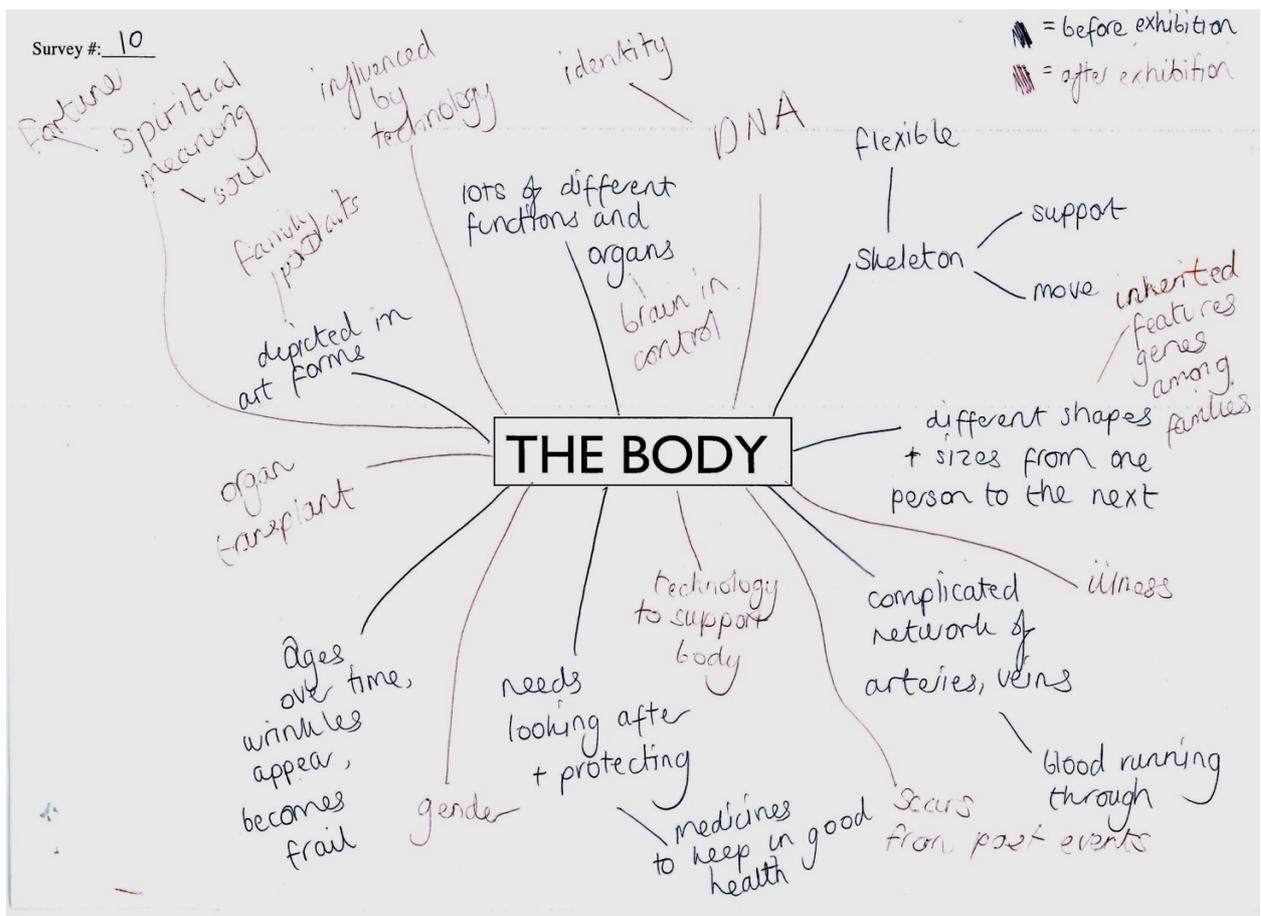


Figure 1. Sample meaning map on the theme of 'The Body' showing visitor responses before and after visiting an exhibition.

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How to analyse the data

In the analysis phase, the evaluator looks at the words used, and the structure of these words on the page. An initial step would be to simply list all words used both before and after the experience; these could be made into a word cloud or graphs. By counting and comparing the number of words insights might be gained into the range of knowledge and vocabulary about the theme.

A deeper analysis can then be carried out on the words and phrases. Are there any common themes that come from looking at the ideas on the meaning maps? Are there patterns? Again, at its simplest this could just be a count of the number of different themes or concepts each person mentions before and after their visit.

You might want to see whether visitors have mentioned specific exhibition elements in their responses. Can you link what they say to objects, cases, or text panels in an exhibition? Which are most frequently mentioned? Can you compare this to any visitor observation that has taken place? Are there signs that particular types of learning have happened? Has there been a change in attitude or an emotional response? Don't ignore any items that you think might be off topic for the theme or contents of the exhibition. These can sometimes give you an insight into what knowledge or understanding visitors are bringing to or taking away from their experience.

You could look at the number and range of words that are put next to the central theme, and those that are one, two or three branches further out. In the example above on the theme of 'The Body', before the exhibition visit the visitor wrote the first level phrase 'depicted in art forms'. Afterwards, they added a new level to insert 'family portraits'. These additional layers might imply an enhanced depth to their understanding. If your sample size is big enough, you might be able to draw conclusions about specific demographic groups by matching the patterns and theme.

Ethics, safety, and security

All relevant museum staff should be fully briefed on the evaluation project before it begins. If gallery attendants are present in the area that visitors will be asked to complete meaning maps, they should be informed each time evaluation is taking place. Evaluators should always introduce themselves to visitor services staff before they begin their session and should always remain within sight of another member of staff or museum volunteer. The venue may request that the evaluator wear a badge, lanyard, or other identification. Your organisation or the venue may require you to submit an ethics application in advance.

Anyone evaluating visitors should be ready to explain what they are doing to any member of the public. If a visitor would like to withdraw from the study, the meaning map should be removed and disposed of. A note should be made that someone has withdrawn from the study. No personal details should be collected from (or given to) members of the public. If the evaluation is to be carried out with children, young people or vulnerable adults, the venue's ethics procedure should be carefully followed. The evaluator should follow venue requirements in case of emergency.

Cautions and caveats

Meaning maps can be hard to analyse. They often become the highly personalised responses of an individual, so connections they make might not be immediately obvious to an outsider. An evaluator talking through what is written on the sheet can add a great deal of value to a study, so if it is possible for you to do this, it is recommended. The analysis itself can become highly personalised as well. How will you ensure your conclusions are robust? Can more than one

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evaluator look through and check the findings?

The importance of piloting the central theme cannot be underestimated. The better this is tested, the better your results can be, making sure they are useful and meaningful. This can take a lot of time; collecting the data can also be time consuming. If the exhibition or event you are evaluating is constrained by time, don't leave it too late before you start collecting responses.

Further reading and other resources

- Tony Buzan, *Use Both Sides of Your Brain*, E. P. Dutton & Co., 1976; Tony Buzan *The Mind Map Book*, BBC Books. 1993.

The original texts describing mind maps.

- John H. Falk, Theano Moussouri, and Douglas Coulson, 'The Effect of Visitors' Agendas on Museum Learning', *Curator: The Museum Journal*, 41.2, 1998, pp. 107-20.

This paper is among the first to use meaning maps in a museum context. It positions the evaluation process within the constructivist approach to measuring museum learning and uses information from meaning maps alongside an assessment of the motivation of the museum visit. The case study is of adult visitors to an exhibition (Geology, Gems and Minerals) in the Smithsonian Institution's National Museum of Natural History in the United States. The meaning maps were used as part of an interview and visitors were also observed in the exhibition. It uses large sample sizes. Some discussion of the analysis of the meaning maps, mostly in comparison to visitor motivation.

- Anthony Lelliott, 'Using Personal Meaning Mapping to Gather Data on School Visits' in *Researching Mobile Learning*, edited by Giasemi Vavoula, Norbert Pachler and Agnes Kukulska-Hulme, Oxford, 2009, pp. 205-20.

A practical step-by-step guide to meaning maps, and a case study with 12- to 14-year-olds who visited either a planetarium or a radio telescope visitor centre in South Africa. A good summary of how meaning maps were used and analysed alongside interviews.

- Eugene Judson, 'Learning about bones at a science museum: examining the alternate hypotheses of ceiling effect and prior knowledge', *Instructional Science*, 40.6, 2012, pp. 957-973.

A paper looking at measuring learning in a science museum context, comparing meaning mapping to other pre-assessment tests of prior knowledge. There were 38 participants in the evaluation, aged 9 to 12 years old. The paper includes images of meaning maps and has a brief discussion on the methods used to analyse the data.

- P.S. Meier, 'Mind-Mapping: A Tool for Eliciting and Representing Knowledge Held by Diverse Informants', *Social Research UPDATE. Department of Sociology, University of Surrey*, 52, 2007.

A short, practical update from the University of Surrey on a slightly different use of meaning maps: as communication within a multi-disciplinary team and as the stimulus for discussions with the team and external stakeholders.