

Visual thinking: exploring current practices and perspectives re student note taking

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Presentation abstract

Despite its importance, student note taking is under-researched and under-theorised. Many studies are outdated, analysing pre-digital behaviour. Hence, we question whether earlier findings still apply (as does van der Meer, 2012). Although we find some innovations useful, such as collaborative note taking (Orndorff, 2015), much recent research is also problematic. For example, consider widely reported claims that students taking longhand notes perform better than students using laptops (Mueller and Oppenheimer, 2014). Recent studies suggest more complex relationships (Luo et al., 2018) but typically adopt short-term experimental approaches. As a result, current advice and guidance for university students tends to be limited, often listing different techniques with relatively little commentary/analysis.

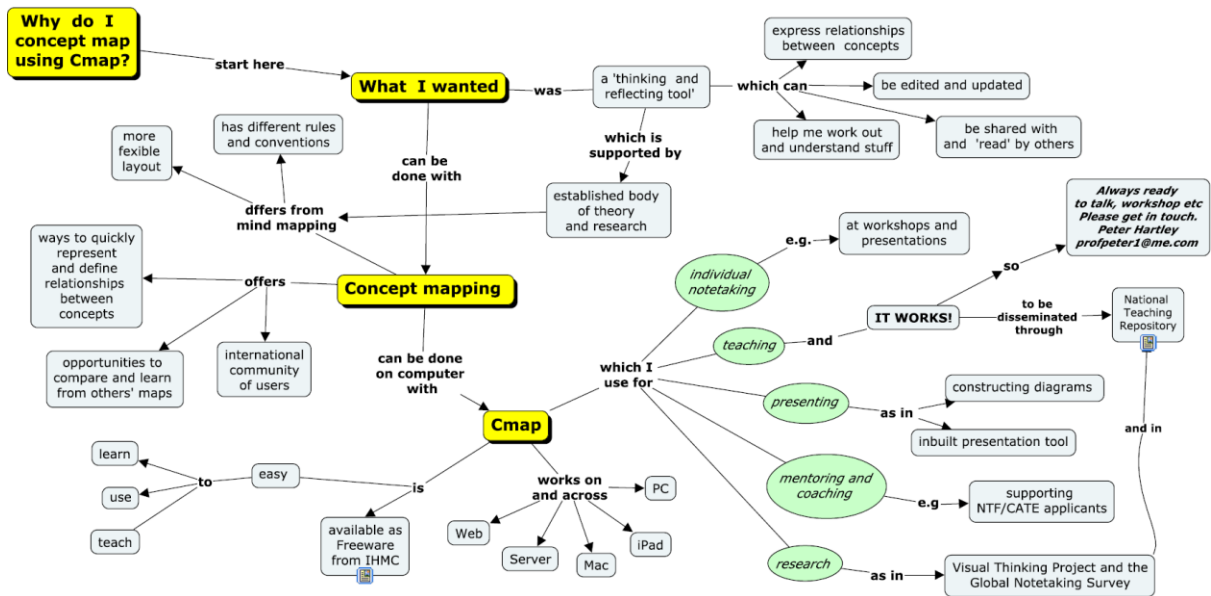
This session enabled participants to review progress on this ALDinHE supported project, inviting discussion on issues/development regarding our three main aims to:

- 1) Investigate current students' note taking practices/preferences and develop transferable models to inform guidance and further research.
- 2) Pilot structured interventions, introducing different methods.
- 3) Produce/disseminate tools/approaches for longer-term investigation and application/adaptation by colleagues elsewhere.

Our practical explorations with students have focused on two methods (sketchnoting & concept mapping), offering key differences in approach. While both offer visual representations, concept mapping (see Figure 1) uses quite 'strict' conceptual links/rules,

whereas sketchnoting (see Figure 2) offers a more ‘free-flowing’ and personal approach. Both methods are paper and/or computer based. Most importantly, both are supported by research, demonstrating their contribution to learning and understanding (for example, Fernandes et al, 2018; Kinchin et al, 2019). During the presentation, we shared the outcomes of our research to date via a practical workshop informed by our theoretical explorations and discussed their implications.

Figure 1. A Concept Map (CC-BY Hartley, 2022).



This map was produced in Cmap which is freeware supported by the Institute for Human and Machine Cognition (available as a download at <https://www.ihmc.us/cmaptools/>). The map aims to answer the question at the top left of the map which always crops up in our workshops. It includes a few weblinks which work directly if you have the map in its original format. Maps can be exported in a range of formats, such as JPEG and PDF.

One of the questions we hope to resolve as our project develops is why and how individuals decide on particular tools.

Figure 2. A Sketchnote (CC-BY Irving-Bell et al., 2021).



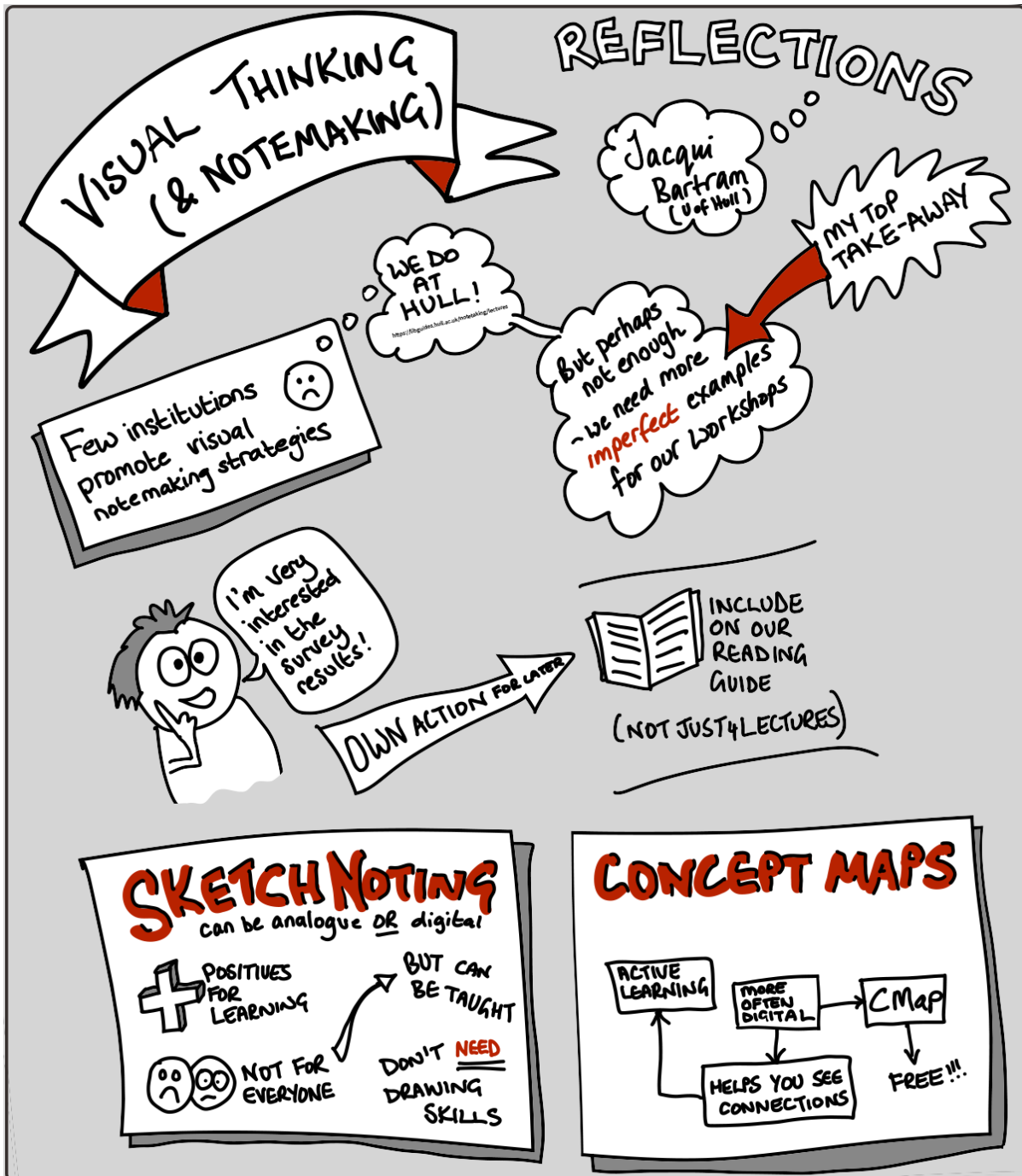
This sketchnote was produced using Procreate®, a two-time Apple Design Award winning digital creative application made for iPad (available as a download within AppStore). Sketchnotes may also be produced using similar Apps (for example, Paper 53) on other mobile and tablet style devices and exported in multiple formats (such as PDF and JPEG), and of course, by hand, using paper and pens.

Community response

These community reflections were contributed by 12 members of the community. These reflections have been presented thematically (and split up where necessary to facilitate this). All indented content represents original, unedited content from the community.

1) A visual overview

Figure 3. Visual thinking (and note making) by Jacqui Bartram, University of Hull.



2) General feedback and reflections

There were many positive comments on the presentation and the approach to note taking. These are presented here to represent how well this work was received at the conference:

A nice, quick overview of two types of note taking
Was very interesting and gave me food for thought
Thank you for the presentation!

Alongside these general comments, contributors went into more detail to support Irving-Bell and Hartley's work. One contribution notably supported sketchnoting as a positive approach to support memory and comprehension:

Sketchnoting combines text AND visuals which is based on the dual coding theory. It is generally shown to have a greater impact on what the note takers (and audience) remember, comprehend and/or share. Very good for revision as well.

This links to Clark and Paivio's (1991) work on dual coding, which argues that learning can be expanded through verbal associations and imagery. The positivity was furthered in another reflection, focusing on how the presenters had helped broaden their understanding of visual note taking approaches:

Starting with building one's visual vocabulary helps to get people hooked!
Thanks for the presentation. Will get in touch.

There is also an offer to get in touch, suggesting there will be ongoing dialogue on this topic.

2) Terminology

Multiple reflections focused on the terminology and phrasing associated with note taking, sketchnotes and concept maps. One of these comments nicely summed up the discussion at the conference session:

There was some conversation in the chat about the friendliness of phrasing i.e., sketchnoting may sound quite daunting to students. Is this another barrier to add to the ones mentioned in the session? I think

students might find 'concept mapping' quite a scary prospect too. Could we start to use different language to make these fantastic ideas more appealing?

This presents an interesting question, suggesting that the terminology can be off-putting to students. One potential solution was raised in another reflection:

This presentation certainly reignited my drive to consider how to teach such a valuable area. Interestingly, 'note taking' along with 'reading' have often been problematic terms to use with my students. I have frequently resorted to hiding them underneath different guises and titles with the aim to 'tempt' students in! Students frequently separate the concept of research/note taking from the act of writing when the two are clearly entwined. I go forth with renewed rigour for this often-overlooked skill.

This suggests that covering note taking by stealth may be one solution to the terminology barrier.

3) Language

Another aspect of language that was discussed related to students with English as a second language. For such international students, there was further reflections on how concept mapping and sketchnotes may or may not help:

To some international students who may be struggling with the English language, the visualisation could also come in handy for them to quickly jot down important ideas whilst listening to a lecture or skimming a book. However, I am concerned how many details could be left out, which may be essential for students to do their assignments.

This line of thinking was furthered by another contributor who asked some more specific questions about supporting international students:

... following [the above] ideas, for those international students who may struggle with the English language, they may try to note down every word

so as to present an accurate and precise description/argument in their exams/assignments. In this case, **how may you help these students figure out the purpose of note taking?** For example, exams might need professional and accurate vocab, while notes for understanding do not?

This suggests further avenues of research are still to be explored in the support of international student note taking.

4) Questions and recommendations for the author

This session provided the opportunity for delegates to reflect on their own practice and experience, though it also raised follow-up questions that may be useful for Learning Developers to address:

Which students would benefit from sketchnoting/concept mapping?
Which purpose of note taking would they be most suitable for?

There were also some substantial reflections based around questions and recommendations:

Based on the examples shown in the presentation as well as my experience of using mind-mapping tools to take notes, I am pondering upon the role of sketchnoting or/and concept map noting in students' study. Are they utilised to replace traditional text-based note taking, or to complement it? A sketchnote, or concept map seems very useful to capture what is in a lecture or in a piece of writing and provide one with an opportunity to digest or synthesise information in-situ. [...] I also have a question about how to make a good sketchnote or concept map note. Could you provide some online resources about this?

I know some researchers who are very systematic about their digital note taking (in all areas of life, not just work!) and can quickly find ideas or information they recorded years ago. Supporting skills development in naming, filing, and storing notes could be an interesting follow on. I will be thinking about this for our resources too.

I have some questions about transferring ideas into notes and the retainment of information in a graphic form. **I wonder if there were any resources or training you could recommend for students majoring in humanities and social sciences.** I singled out these groups of students, as the knowledge they learn could be philosophical and might need the effort to transfer into graphics. And in this case, would visual note taking be more effective than the traditional text-based ones? Besides, speaking from a student's perspective, **are there any effective note-taking methods you recommend to students when understanding the knowledge itself turns out to be a difficult task and when lecturers are not able to be re-listened to?** I found myself overwhelmed with cognitive tasks in that situation, and my instant reaction turned out to be noting down every word the lecturer said, which may not be a clever way of retaining information [...] and **how would you construct a conversation to students who are high achievers, that visual note taking is a good way to go,** and they do not need to note down everything in the lecture or in the textbook?

This presentation has made me revisit key questions – what is the student doing when being presented with new information? How are they processing that information? When will they come back to their notes? As an extension, it could be interesting to explore how students are categorising and documenting their notes over time so they can hopefully revisit them later and make further connections in their learning. Perhaps the physicality of one sketchbook per subject may help students develop a good structure to locate and revisit notes. This could be one advantage of physical doodles.

5) Note taking scholarship and the Great Global Note taking Survey

Figure 4. The Great Global Note Taking Survey (Slide 31 of the presentation).



<https://doi.org/10.25416/NTR.20036534>



Despite being viewed as an essential skill, Van der Meer (2012) argues that note taking is an area that is both under-theorised and under-researched. As part of their session, Irving-Bell and Hartley introduced *The Great Global Note Taking Survey*, which they have launched alongside Baff, Beckingham, Faulkner, Hallam, Swanton, and Wooff (Baff et al., 2022, see Figure 4). The survey aims to address the lack of scholarship on notetaking and was well received by delegates

...interesting to hear about the current state of note taking support across the institutions, thank you. I have not had much to do with note taking as a skill since before lockdown, so it was useful to get a digital update! It will be interesting to follow The Great Global Note Taking Survey.

The presenters received many positive comments regarding their approach and The Great Global Note Taking Survey. It is fair to say there will be much interest from the Learning Development community regarding the outcome of this survey.

The conversation reflected that there is also a need for a broader scholarship on note taking within Learning Development. One delegate shared that they were also conducting research in the same field, focusing on:

... the impact of students' copying and pasting into their notes versus noting key concepts and the importance of engagement (deeper processing of the information) with the text was reflected in both the use of sketchnoting and concept mapping.

This was noted by the presenters, who responded with:

Thank you for the comments and positive feedback! - and for sharing how you are working with your students – we would be interested to speak to you – so if you revisit this page and would like to – please get in touch!!!

There is certainly much discussion around note taking, and you can reach out to the conference presenters by contacting the corresponding author.

Authors' reflections

Thank you to everyone who joined us and supported us in our presentation, and to those who have reached out since to share their practice, ideas, thoughts, and reflections.

The Great Global Note taking Survey and the National Teaching Repository

Joined by a number of interested colleagues we are seeking to discover more about visual note taking practices and have created a short survey. If you would like to participate, we would love to hear your thoughts. Here is a link to The Great Global Note taking Survey:

<https://doi.org/10.25416/NTR.20036534>.



We hope to use the data from the survey to inform our thinking, and to help us to shape a series of resources for use across the sector. Once in place we will be sharing all resources via The National Teaching Repository (visit us on Twitter: @NTRRepository), which is an Open Educational Resource (OER) hosted on a secure platform via Edge Hill University and Figshare. There are already a few resources in place so if you wanted to have a look please visit https://figshare.edgehill.ac.uk/The_National_Teaching_Repository.

We would also welcome your contributions, so if you would like to share your research and resources please visit <https://figshare.edgehill.ac.uk/submit> and select The National Teaching Repository or the NTR – Visual Thinking folder. Work uploaded secures a DOI and citation, so you can track engagement with your work via Altmetric data. You set the level of CC Licence permission you prefer, and your work remains your intellectual property.

If you would like more information, help, or have ideas to share please do not hesitate to get in touch!

Community Feedback:

It was good to hear from delegates how they are using note taking, both in use of 'software' packages and approach. Also, the mini discourse on 'graphic recording' (the professional recording of conferences) was interesting and highlighted that this activity can add to the intimidation of those taking notes due to the aspiration to create those 'perfect pages' – which detracts from the purpose of note taking which is to aid your own recall and improve your own learning.

Presenter reflections:

Firstly, we would like to thank the delegates not only for attending our workshop, but for taking the time after the session to share with us their invaluable insights. These have really given us 'food for thought' and combined with very early data from the Global Note Taking Survey, we have refined our thinking and the data is helping us to re-shape our research planning going forward.

Based on the comments and questions from our wonderful delegates - it is clear that note taking - in whatever form (pen and paper, tablet or mobile device, handwritten or computer

generated, visual note taking, sketchnoting, mind and concept mapping) is of benefit to learners to aid cognitive recall.

Delegate feedback indicates that colleagues would like to know more and find out about the 'best' ways they can use visual note taking both for themselves and to support their learners. Therefore, it is clear that more help, information and support around the 'how' of visual note taking would be of real value and benefit.

Working with our colleagues Debbie Baff, Sue Beckingham, Suzanne Faulkner, Sarah Hallam, Katrina Swanton, and David Wooff in our next phase of work, in addition to continuing our research, we are looking at the feasibility of hosting a handful of practical (probably online) workshops. Plus, as we develop resources, we will be sharing our research-informed resources via The National Teaching Repository OER platform. So please visit the repository, contribute if you feel able to do so, or to get involved and join us please get in touch.

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Further reading

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