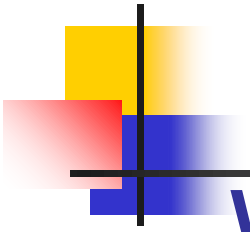

What can concept mapping do for you (and your students, and your colleagues)?

Prof Peter Hartley
profpeter1@me.com

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Peter Hartley

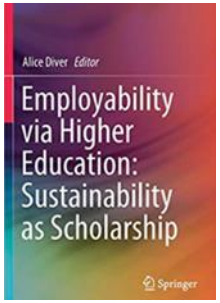
Now in my 3rd career:

- **Career 1:**
  lecturer in Communication Studies.
  Lecturer to course leader to dept head.
  National Teaching Fellow /Professor of Communication.
  Textbooks - interpersonal/group communication.
- **Career 2: educational developer.**
  Head of Ed Dev unit.
  Professor of Education Development.
  National projects, e.g. LearnHigher CETL; PASS (programme assessment - ongoing)
- **Career 3: educational consultant.**
  Visiting Professor at Edge Hill.
  External examiner, reviewer and writer.
  Working/ed on: project evaluation, NTR, moves to online teaching, learning spaces, assessment strategies, visual thinking, ethical issues re learning tech, NTF/CATE mentor, SEDA/Jisc student partnership impact award etc.

https://www.routledge.com/Group-Communication/Hartley/p/book/9780415111607

https://he.palgrave.com/page/detail/Learning-Development-in-Higher-Education/?K=9780230241480

https://www.routledge.com/products/9781138854710

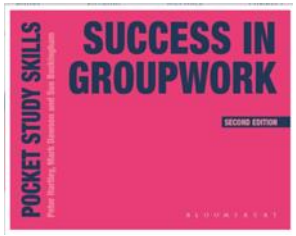


Chapters with Ruth Whitfield in.....and in .....

Supporting programme leaders and programme leadership
Edited by: Jenny Lawrence and Sam Ellis
2018 ISBN: 978-1-902435-61-9

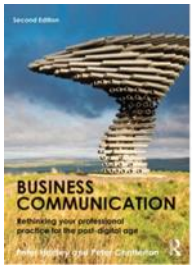
https://www.springer.com/gp/book/9783030263416

Just published with Mark and Sue:



https://www.bloomsbury.com/uk/success-in-groupwork-9781350933491

For 2023:
With Helena Knapton and Susie Marriott (Edge Hill)
3rd edition of …



http://www.routledge.com/books/details/9780415640282/

Why bother with concept maps#1

- We all ask students to 'present and represent' their understanding of particular topics and/or issues.
- This means they have to manipulate and relate concepts.
- We should be showing them different ways of doing this.
- And we all do it ourselves.

Why bother #2

- Students need flexible approaches to their learning.
- Research evidence of improvement in student performance after mapping is introduced and used.
- Makes learning/understanding more visible and easy to share.
- Can monitor/see change over time.

Why bother #3

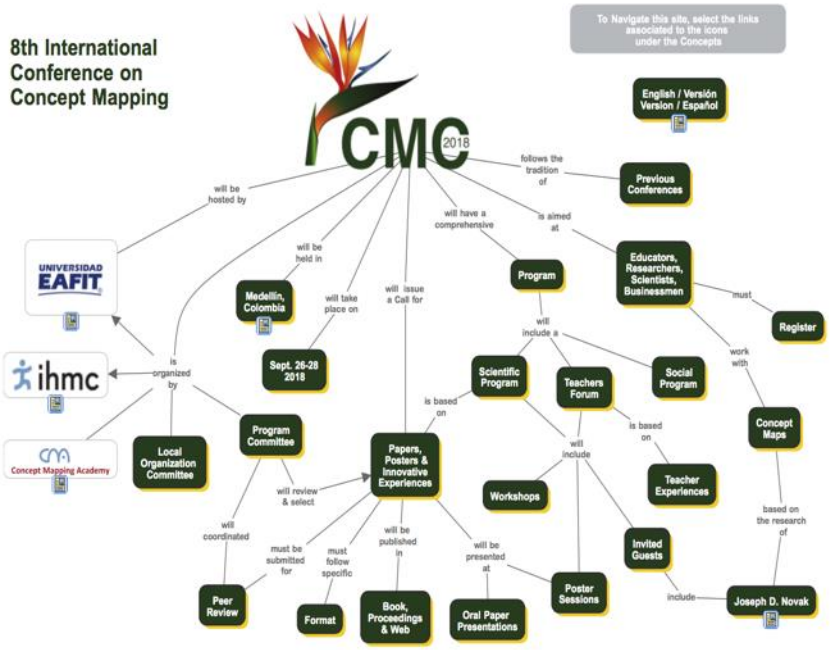
- Mapping techniques now being used in organisations (possible career benefits and implications for your students).
- Software available with different facilities (e.g. formats and presentation options) and at different price levels (including freeware and free versions of commercial products).

Why bother #4

- Mapping approaches are now readily available on laptops/mobile devices (e.g. iPad).
- Concept Maps are relatively neglected (compared to Mind Maps) so you can develop a distinctive and valuable skill.

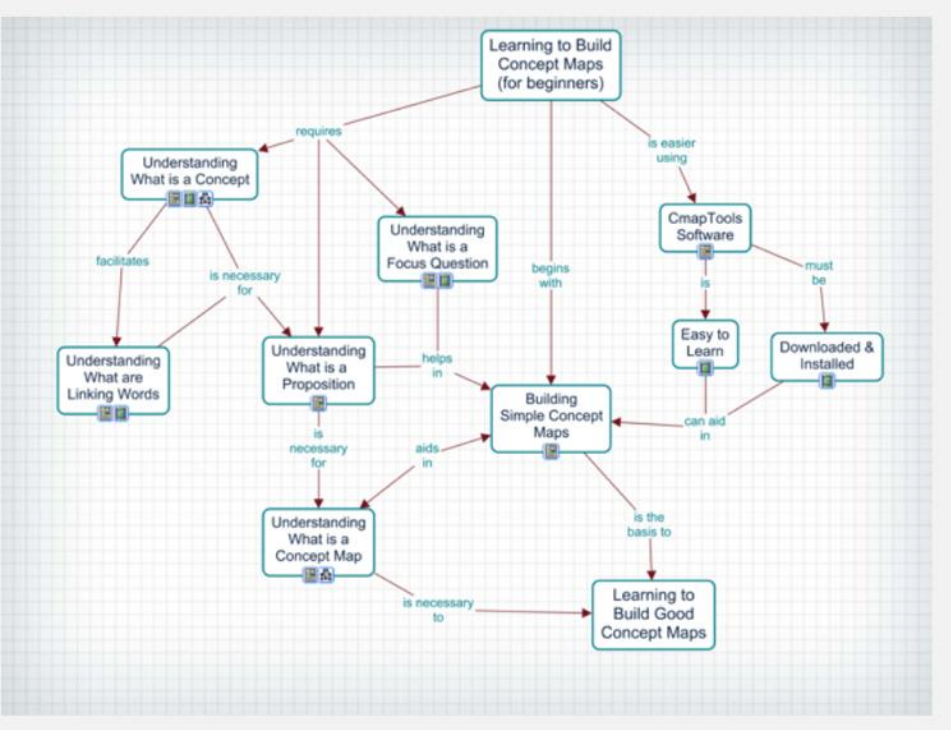
Why bother #5

- Potential for research into student understanding and development
- Potential for national and international collaboration – e.g. international conference.



What do concept maps look like?

- Several examples I have used are at the end of this slide deck.
- You can find many more examples on the Cmap website



See this map at:
https://cmap.ihmc.us/docs/learn.php

Why do I prefer concept maps to mind maps?

- You have to specify links between concepts
- More flexible diagrams possible.
- Stronger research base.
- Everyone can use it – don't need to be 'artistic'.
- We now have the software to do them (and to share them) more easily.
- See a concept map with more detail on this (and why I use Cmap) at https://figshare.edgehill.ac.uk/articles/poster/Concept_mapping_using_Cmap/21379242

Research evidence re advantages of concept mapping?

Whilst mind mapping is a helpful study tool that can facilitate rapid note-taking and the retention of information (Noonan, 2013), concept mapping is a tool that promotes a greater level of reflection on learning that encourages the student to uncover the systematic relationships between concepts (Eppler, 2006). It is this reflective power of concept mapping that provides potential as a learning tool in higher education …

Kinchin (2014, page 41)

Concept mapping and Cmap

General characteristics of concept maps

- Based on concepts & connections.
- Flexible layout (not just 'star').
- Formatting using colour/fonts.
- Can observe change over time.
- Can share/edit/compare maps.
- Complexity of maps can indicate quality of learning. (findings from research).

Key features of Cmap

- 'Freeware'. (includes server version).
- Clear/relevant 'focus question'.
- Coherent links.
- Cross-platform. (PC/Mac/iPad)
- Can include docs/links in the map (e.g. weblinks).
- Presentation can be stored in the map.
- International community.

Sources on Concept Maps

- Rationale and development.
  - http://en.wikipedia.org/wiki/Concept_map
- Software and support
  - http://cmap.ihmc.us
- How to start a map
  https://www.youtube.com/watch?v=nu46uDbTZvc
- An example (not from me/he has a slightly different approach but the basics are the same)
  https://www.youtube.com/watch?v=22YeW55POBs
- Variants, e.g. Bryson et al.

Cmap quickstart: my suggested steps.

- Open software – select new map.
- Decide on your 'focus question'.
- Type in main topic(s).
- Add branches/sub-branches (& label links).
- Format (use styles, as in Word).
- Add links/documents (if necessary).
- Save/print/export
  (several formats available, e.g. jpg, pdf etc.).

Different ways of using maps.

See Canas and Novak at: http://cmc.ihmc.us/cmc2012Proceedings/cmc2012%20-%20Vol%202.pdf

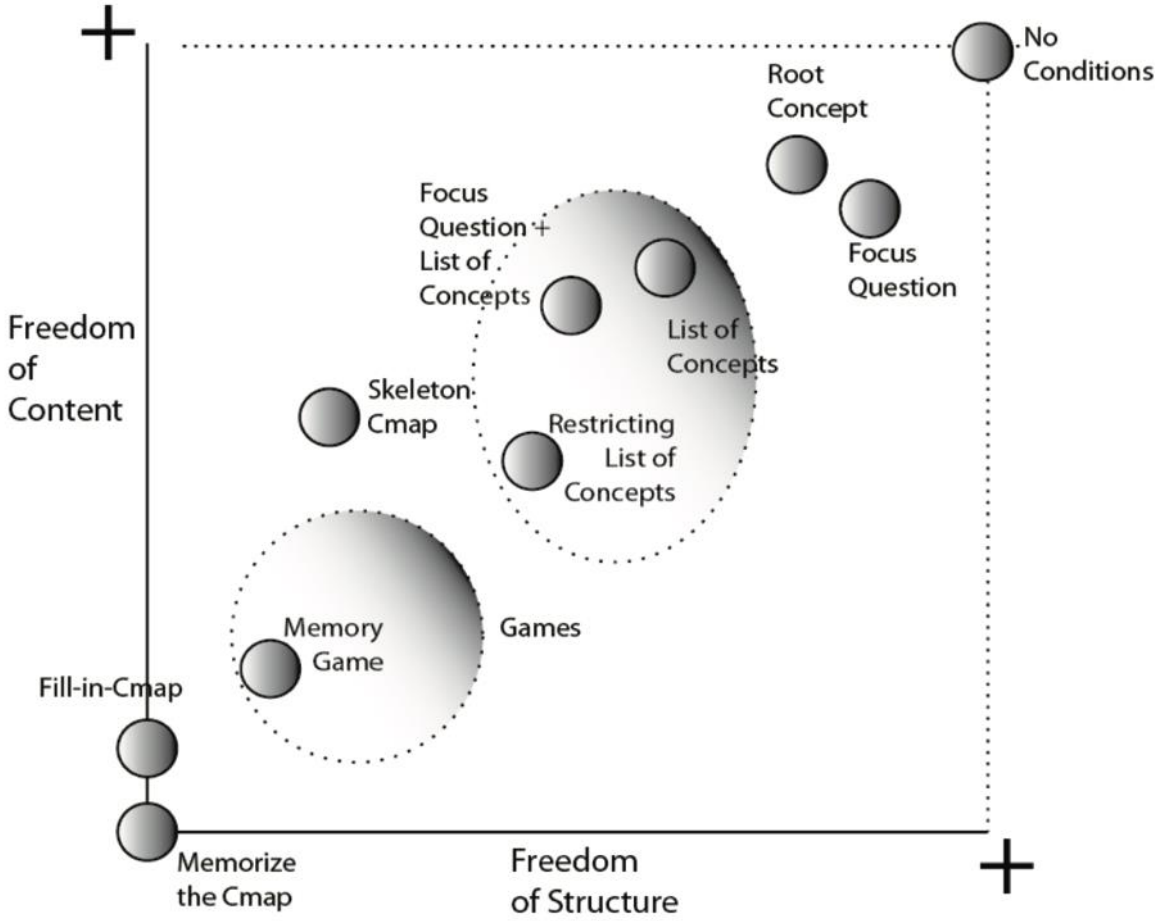


Figure 1. Freedom of Structure and Freedom of Content conditions during concept mapping.

Some useful recommendations

From:

Kinchin, I. (2013). Concept mapping and the fundamental problem of moving between knowledge structures. *Journal for Educators, Teachers and Trainers*, Vol. 4 (1), pp. 96 – 106.

a decrease in failure rates" (p. 243). Some studies have attempted to experimentally isolate the influence of concept mapping, and by doing so they may have diluted the effect they have set out to measure. This provides researchers with a methodological paradox if isolating mapping from other measurables then dissociates mapping from its context and so reduces ecological validity.

Pudelko and colleagues (2012) are correct in their assertion that "acceptance of concept mapping… came about as a direct transfer of an educational solution from one context to another . . . without undertaking an in-depth analysis of the nature of the learning problem" (p. 1,222). It is important to analyse higher education from a knowledge structures perspective (Kinchin, 2011b; Kinchin, Cabot, & Hay, 2008) before considering how concept mapping may actively contribute to students' learning to ensure that we do not promote an inappropriate structure within any mapping activity. This has also been emphasised recently by Gamble (2014), who offers an analysis of the way in which the structure of disciplinary knowledge can determine peda-

nature" (p. 1,221), and would suggest that this should be re-phrased to say ". . . with due regard to its nature."

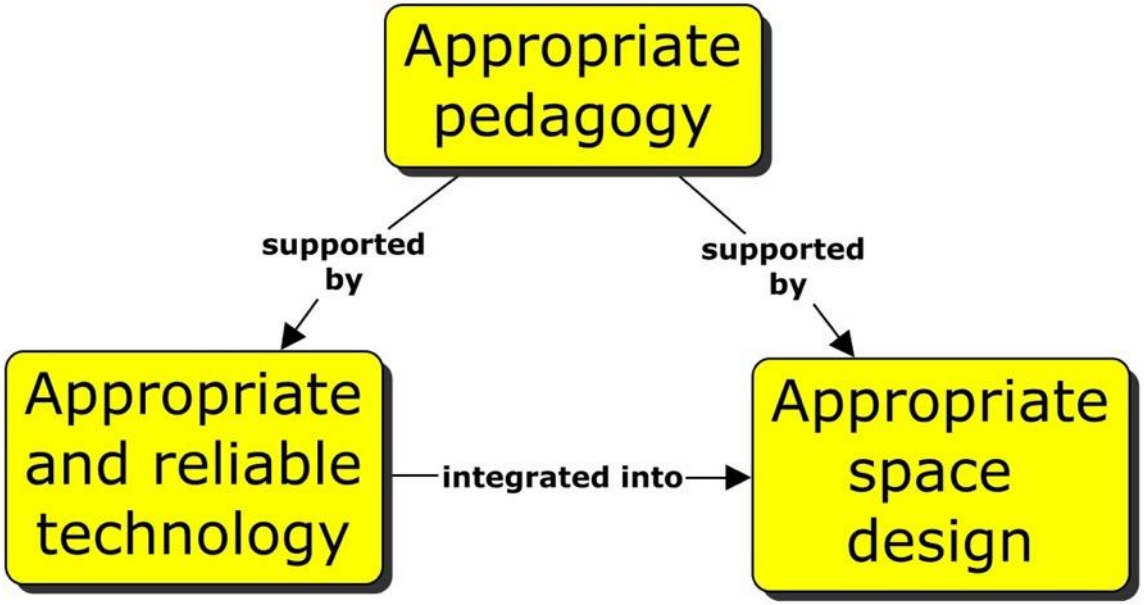
Recommendations

In order to avoid some of the weaknesses highlighted with the literature reviewed by Horton and colleagues (1993) and by Pudelko and colleagues (2012), the following recommendations are offered to guide the development of future concept mapping interventions:

- *Concept mapping should be used in compatible curriculum settings that reflect the constructivist underpinnings of the tool.* It is important that the concept mapping tool is epistemologically aligned with the context in which it is set. If the teaching and the assessment regimes within a curriculum are intent on transmitting fixed information from teacher to student, then the potential utility of concept mapping is lessened. There must be room in the curriculum for students to visualise personal understanding if the tool is to be helpful. Concept mapping should be used where assessment regimes are focussed on meaningful learning and not memorization and recall.
- *Concept mapping should be used as a learning tool, "directing" the search for information, not "ending" it.* If the expert concept map represents the answer to be memorised by students then the curriculum intent is *non-learning* (Kinchin, Lygo-Baker, & Hay, 2008) rather than *meaningful learning* (Novak, 2010). Possible pathways to meaningful learning must be recognised if concept mapping is to play an active part in the students' development.
- *Teachers/researchers should have clear instructional objectives for the use of concept mapping that need to be conveyed to students.* It is not helpful to students to simply deposit concept mapping as an activity within the teaching scheme unless there is a clear aim in doing so. Teachers need to be clear regarding what the benefits of a concept mapping activity might be, and should share this with their students.
- *The degree of freedom afforded students in a concept mapping intervention should be justified and explicit.* Students may be presented with a blank sheet of paper or with a list of concepts to link. Either approach has validity, depending what it is that the teacher is hoping to achieve.
- *The structural grammar used within a concept mapping intervention should be representative of the discipline.* It is only sensible to insist that students construct hierarchical concept maps if the structure of the discipline being mapped is indeed hierarchical. It is, therefore, important to determine the structure of the discipline before asking students to map it. It should also be noted that a single map may not be adequate in representing the structure of applied sciences, and that sequential mapping over time may be required to observe changes in understanding.
- *Concept mapping should be combined with other learning strategies such as retrieval practices, collaborative learning, dialogue, and feedback.* Concept mapping is most effective as a learning tool when combined with complementary activities to enhance the learning environment. Students' interactions with concept mapping will be personal and idiosyncratic, with some students requiring more scaffolding and supplementary learning tools than others in order to gain the most from concept mapping activities.

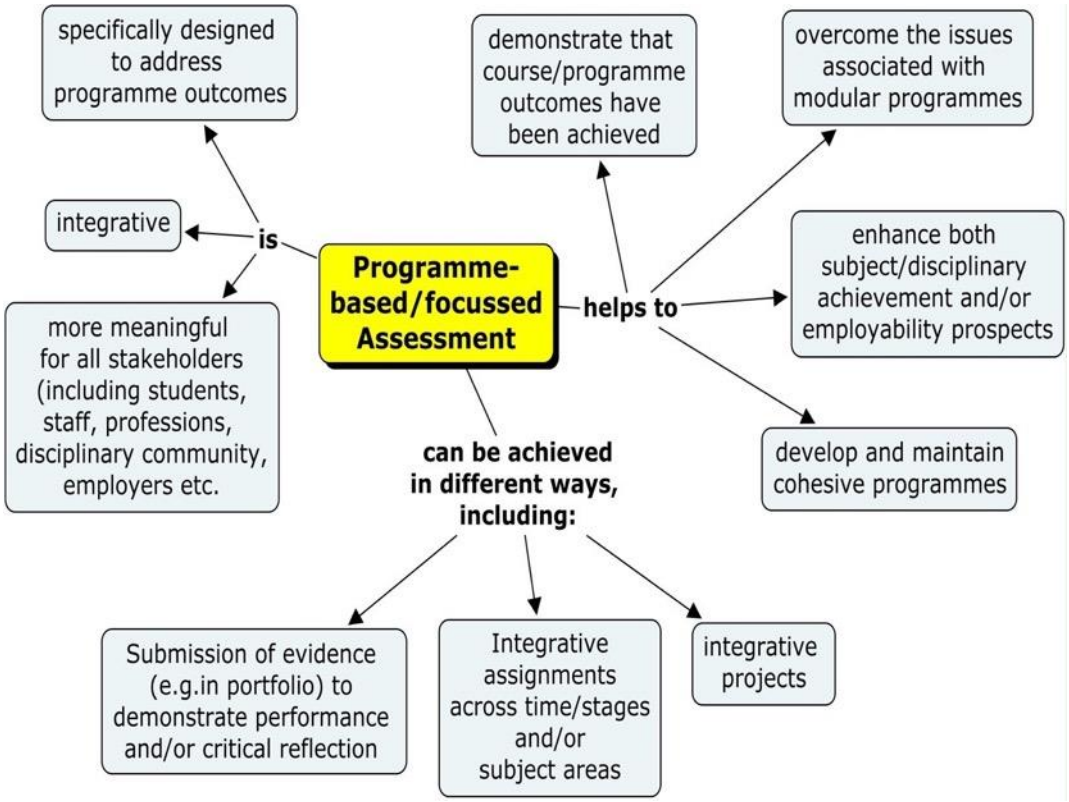
Mapping interventions that offer consideration to these six points are likely to offer greater utility to the students involved, and result in more robust and ecologically valid research reports in the future.

Examples of my maps
1. Educational aims.

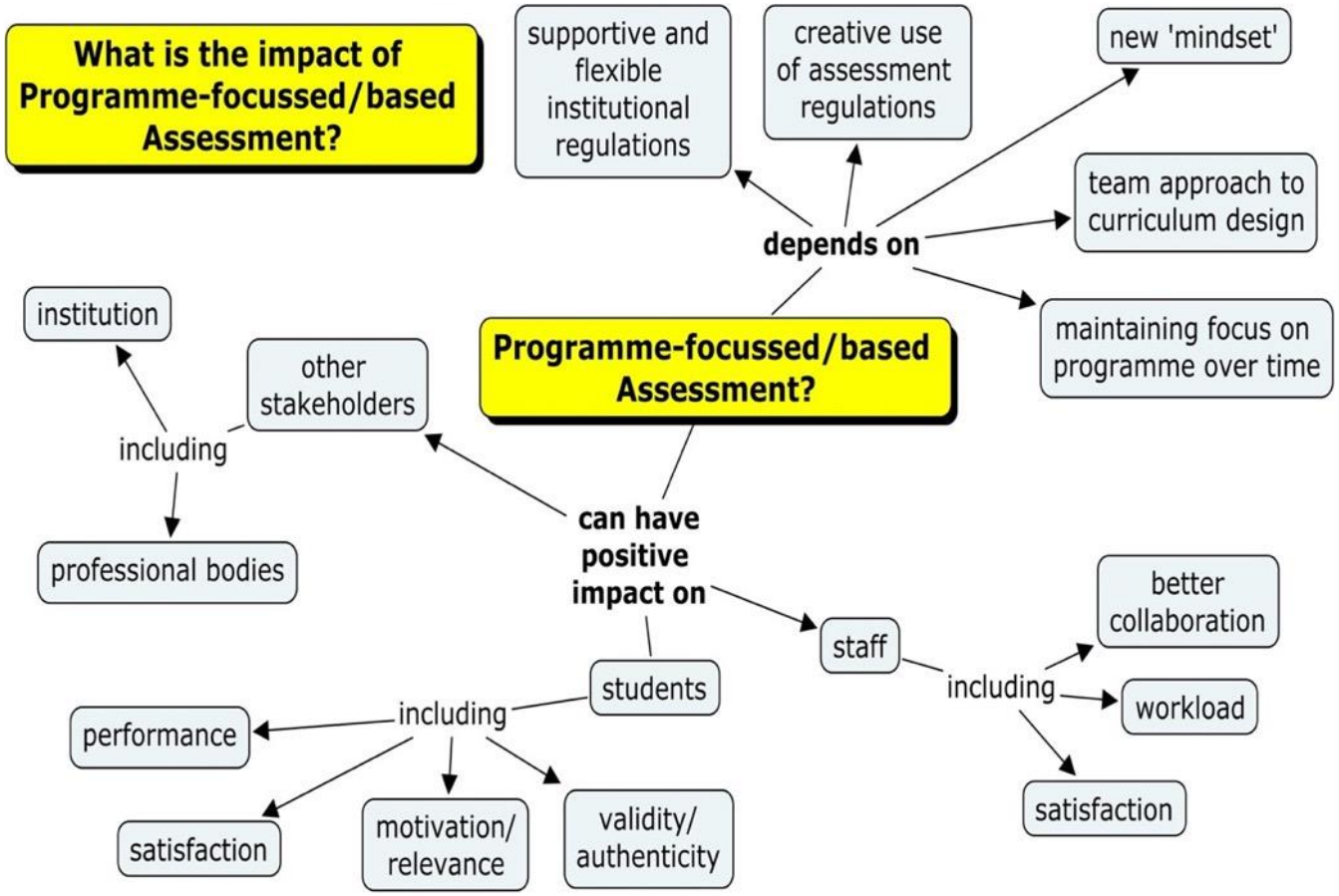


A very simple map which illustrates basic principles: concepts with specified links.

Example 2: shows how Cmap can do 'mind map' structures

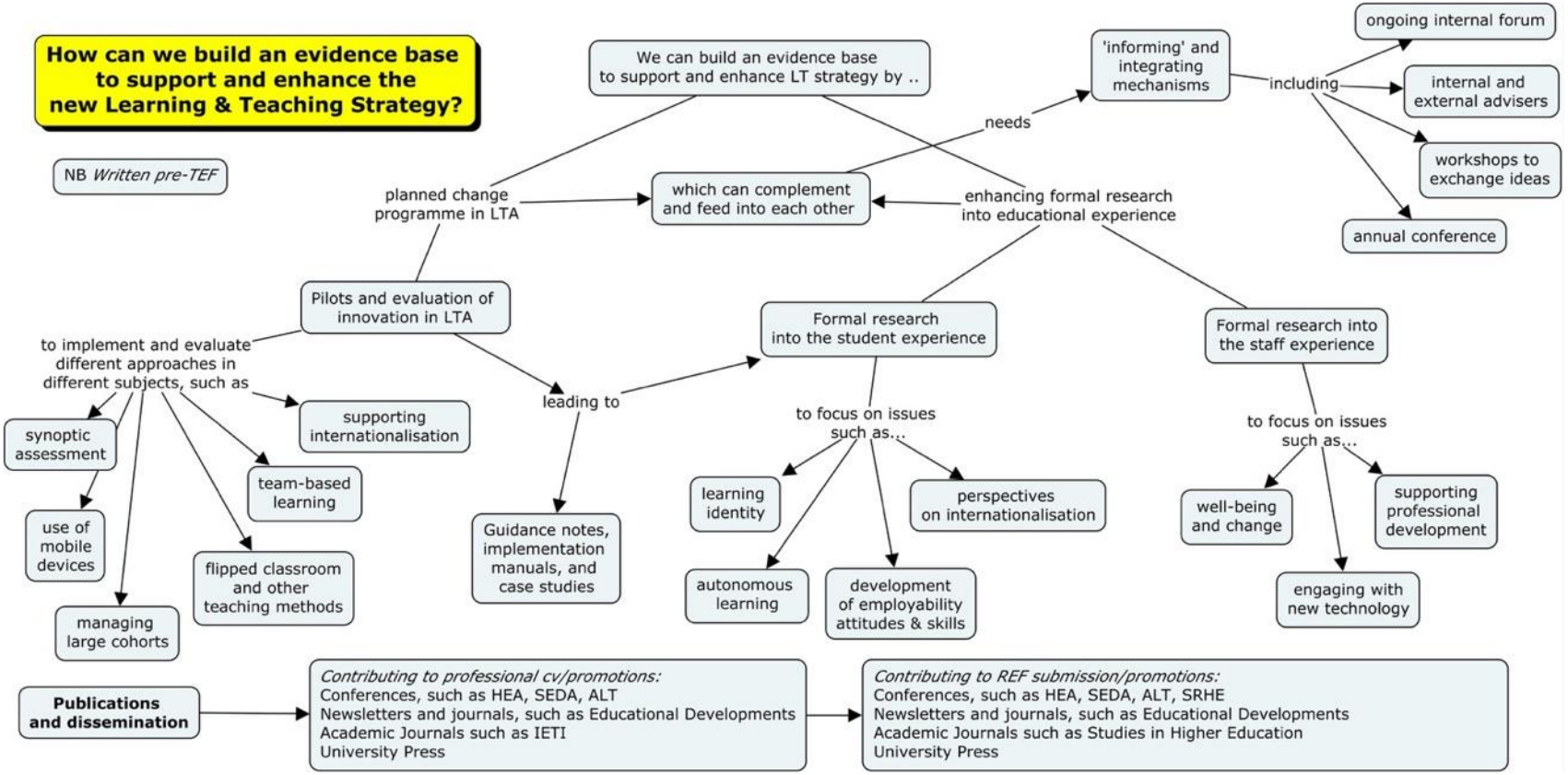


Example 3: see the 'Focus Question' (top left box)

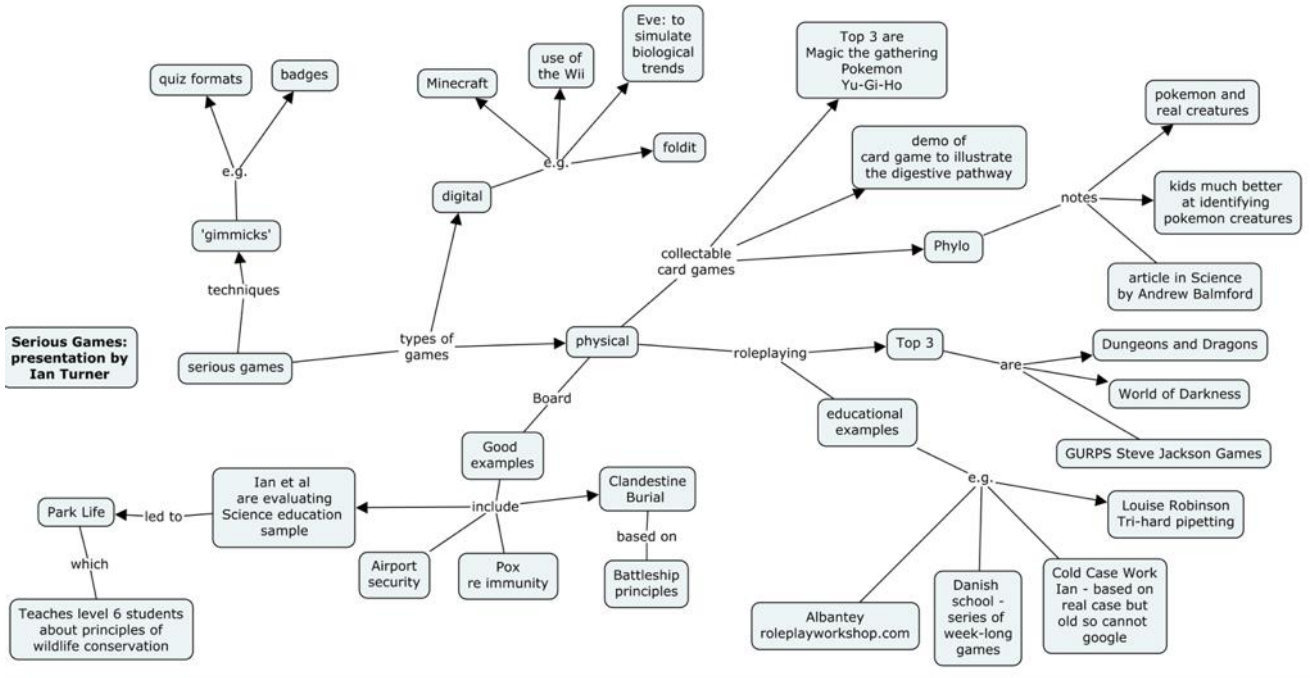


Another example of a 'mind map' or 'spider diagram' structure

Example 4: some work on a University Teaching strategy

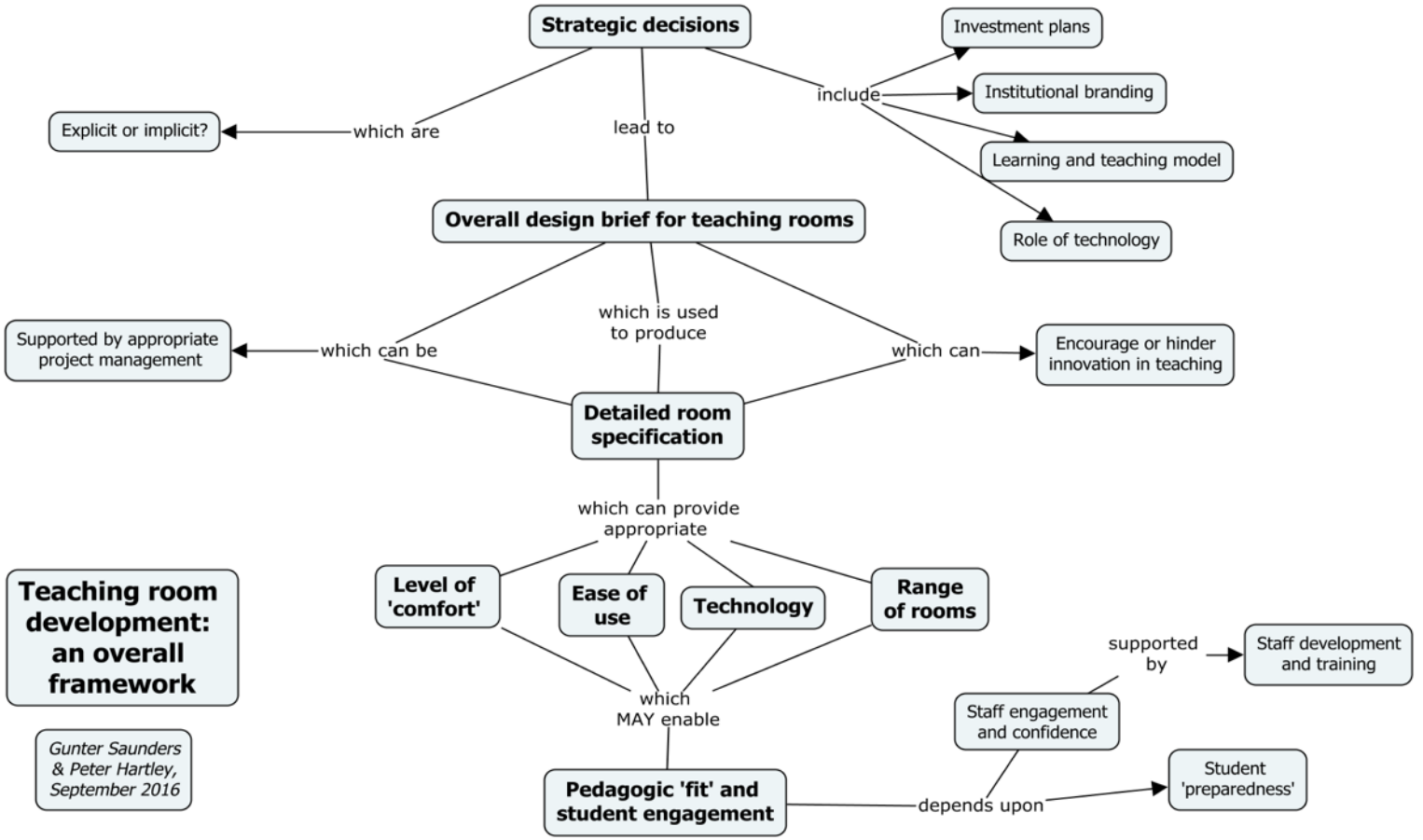


Example 5:Notes taken 'live' at conference presentation



These are the notes I took 'live' in the session so they have not been formatted.

Example 6: framework example.



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