Marketing mind maps in higher education[1]

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Abstract: This article investigates the use and perceptions of mind map techniques as an alternative, visual learning method in higher education. Mind maps are **multi-sensory tools that may help students organize, integrate, retain,** and **recall information.** Current literature identifies several advantages of using mind maps in various fields of education, which far outweigh the disadvantages encountered. The key elements of a mind map, include a central image and theme, keywords, colours, curved lines of varying thickness, and symbols. A mixed method methodology study was conducted. A survey instrument (20 Likert questions on a 5-point scale) was designed and used to collect student perceptions about mind mapping as a learning tool. Survey responses of 34 first-year and second-year students (16–18 years old) studying Marketing at the Junior College, University of Malta, were analyzed using descriptive statistics. Results showed positive perceptions towards the use of mind-maps in learning and studying Marketing. Furthermore, qualitative research also confirmed that mind maps help students simplify studying, enhance creativity and are effective in memorizing and recalling of knowledge. Mind maps do not teach problem solving or critical thinking skills but engage learners in a tangible manipulation and constructions of their thoughts. A sustained teaching effort and regular practice is recommended if students are to benefit in the long term.

Keywords: Mind maps, marketing education, high school, learning strategies, teaching methods, motivation

Educators and teachers are now facing even more challenging times as they face post-millennial students also known as generation Z (born after the year 2000).

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In a recent article, Tim Elmore points out that, 'While Generation Y grew up with slightly longer attention spans, Generation Z has an attention span of 8 seconds. While Generation Y initiated text messages as a norm, Generation Z prefers communicating through images, icons and symbols.'[2]

Furthermore we live in an information age which means that our problem is less one of obtaining and more of retaining and organizing all the information that we are required to ingest – both during our studies and afterwards to keep up with rapid changes in many fields.[3] These challenges demand that educators and students alike adopt new alternative learning methods to cope and succeed.

Mind maps offer a dynamic learning method to keep students' attention, engage students in a fun, creative way, improve information retention, and recall abilities.[4]

Earliest forms of mind-maps and similar mental image techniques were already used as early as the fifth century BC by the Greek orator and poet Simonides of Ceos. Mind maps techniques were made popular in the 1970s by Tony Buzan, a reputed author in the field of education and learning.

Literature review

Mind-mapping is a note-taking, organizational technique, which allows individuals to 'organize facts and thoughts'[5] in a map format containing a 'central image, main themes radiating from the central image, branches with key images and key words, plus branches forming a connected nodal structure'.[6] In addition, the mind map helps students to assimilate new information, to think and to develop their conceptual schema. Mind-mapping is a technique which enhances creativity and

2 Tim Elmore, 'How Generation Z Differs from Generation Y [online] Available at: http://growingleaders.com/blog/generation-z-differs-generation-y/ [Accessed 11 April 2016].

3 Michael Taylor, *Mind Maps: Quicker Notes, Better Memory, and Improved Learning 3.0*, 3rd edition (United States, 2014).

4 Tony Buzan, *Buzan's Study Skills: Mind Maps, Memory Techniques, Speed Reading and More* (United Kingdom, 2011); Taylor.

5 Id., *How to mind map* (London, 2002).

6 Id., *The mind map book: How to use radiant thinking to maximize your brain's untapped potential* (New York, 1993).

promotes individual learning.[7] It assists in the recall of knowledge and shows the relations between different thoughts and concepts.[8] During teaching and learning, a mind map also helps teachers to explain why they are focusing on a particular aspect of a topic. From the mind maps that students create, teachers may learn whether they understand the topic and whether the students are able to organize and construct a suitable structure for that knowledge.[9]

Studies on the effectiveness of mind-mapping learning techniques have been conducted in various educational fields and with various age groups. These include science and mathematics,[10] economics,[11] chiropractor education,[12] executive education,[13] medicine,[14] engineering,[15] elementary education,[16] middle-school education,[17] and others.

Positive and negative effects of using mind maps have been identified in the literature. Evrekli *et al.* found that, according to science teacher candidates, mind mapping can be effectively used in constructive

7 A.J. Mento, P. Martinelli, & R.M. Jones, 'Mind mapping in executive education: Applications and outcomes', *Journal of Management Development*, 18(4), (1999) 390–416. http://dx.doi.org/10.1108/02621719910265577

8 E. Evrekli, A.G. Balim, and D. İnel (2009) 'Mind mapping applications in special teaching methods courses for science teacher candidates and teacher candidates' opinions concerning the applications', *Procedia – Social and Behavioral Sciences*, 1(1), 2274–9; Tony Buzan, *Mind map: The ultimate thinking tool* (London, 2005).

9 Y. Zhao, 'The Use of a Constructivist Teaching Model in Environmental Science at Beijing Normal University', *The Chine Papers*, 2 (2003), 78–83.

10 Abi-El-Mona and Abd-El-Khalick, 'The Influence of Mind Mapping on Eighth Graders' Science Achievement School Science and Mathematics', *Journal of Baltic Science Education*, 6 (3) (2007), 34–43; O. Akinoglu and Z. Yasar, 'The effects of note-taking in science education through the mind mapping technique on students' attitudes, academic achievement and concept learning', *Journal of Baltic Science Education* (2007); Evrekli *et al*.

11 John W. Budd, 'Mind Maps as Classroom Exercises', *The Journal of Economic Education*, Vol. 35, No. 1 (Winter, 2004), 35–46.

12 A.V. D'Antoni and G. Pinto Zipp, 'Applications of the Mind Map Learning Technique in Chiropractic Education', *Journal of Chiropractic Education*, 19 (2005), 53–4.

13 Mento *et al.*

14 P. Farrand, F. Hussain, and E. Hennessy, 'The efficacy of the 'mind map' study technique', *Medical Education*, Vol. 36 (5) (2002), 426–31.

15 L.A. Zampetakis, L. Tsironis, and V. Moustakis, 'Creativity Development in Engineering Education: The Case of Mind Mapping', *Journal of Management Development*, Vol. 26, No. 4 (2007), 370–80.

16 Özgül Keleş, 'Elementary Teachers' Views on Mind Mapping', IJE 4.1 (2012): n.p.

17 K. Goodnough and R. Woods, 'Student and Teacher Perceptions of Mind Mapping: A Middle School Case Study', Paper presented at the Annual Meeting of American Educational Research Association, New Orleans, 1–5 April 2002.

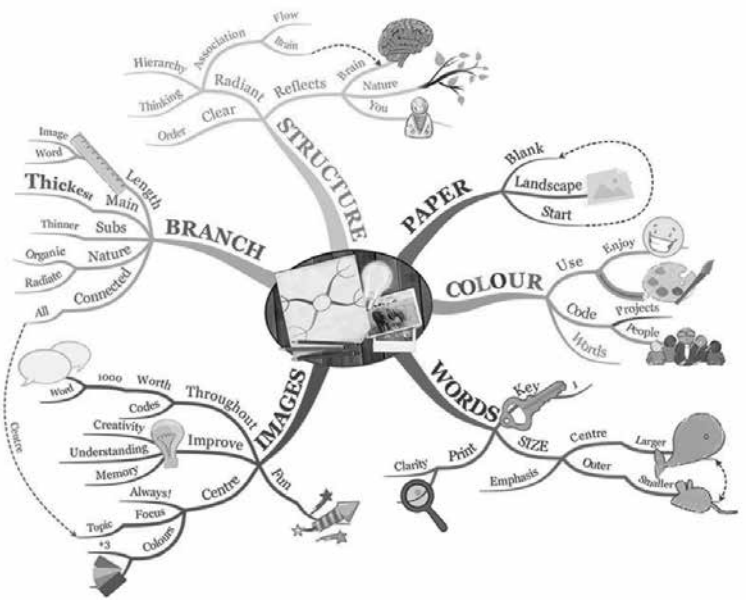
science and technology.[18] For Farrand, Hussain, and Hennessy 'Mind maps provide an effective study technique when applied to written material'.[19]

Williams stated that mind-mapping provided students with an opportunity to improve their learning.[20] According to this study, the mind-mapping technique, as confirmed by other studies, 'is helpful as a study aid and helps learners understand and recall information better'. Taliaferro determined that students enjoyed the mind-mapping exercise.[21] Goodnough and Woods similarly identified that students' perceptions of mind mapping were 'fun, interesting, and a motivating approach to learning'.[22] In addition, students preferred to use mind mapping in an individual situation rather than a group situation because they could express their ideas in their own way.

Negative results of the study were the students' level of cognitive development. Students were unable to 'think abstractly'.[23] Other negative results were that some adults in the studies found this strategy to be 'uncomfortable to use'.[24] Their reasoning was that it lacked structure and required spontaneity. Time and practice were required for adults to feel comfortable with the strategy.

18 Evrekli *et al*.
19 Farrand *et al*.
20 M.H. Williams, 'The effects of a brain-based learning strategy, mind mapping, on achievement of adults in a training environment with consideration to learning styles and brain hemisphericity', Unpublished doctoral dissertation, University of North Texas, Dissertation Abstracts International (1999), 60, 1525.
21 M. Taliaferro, 'Mindmapping effects on sixth-grade students' recall ability', Unpublished master's thesis, Mercer University, Atlanta, Georgia (1998). cited in http://dx.doi.org/10.5296/ije.v4i1.1327.
22 Goodnough *et al*.
23 Keles.
24 Williams.

Key elements of mind maps



Key central image

The central point in the mind map must always be a central image, placed horizontally on the middle of the page, as this stimulates imagination and helps the brain keep focused and concentrated on task.[25]

Branches

Curved branches of different thickness are then used to connect the ideas to the central image. The thickness of the branches varies according to the importance hierarchy of the ideas.[26]

Key words

Each branch should be captured by a single key word, not a phrase or sentence, printed on top of the line. Using single words, reduces ideas to their core. Important ideas are not obscured by extraneous words and new associations are not limited by more specific phrases.[27]

25 Buzan's Study Skills.
26 Ibid.
27 Budd.

The focus on using single key words can foster more expansive connections and confining the entire mind map to a single piece of paper allows one to see the entire picture at once and perhaps stimulate additional associations.[28]

Colours

The use of colour for different branches is very important in creating mind maps as colours are exciting for the brain, boosting attention span, enhancing comprehension, and improving recall and recognition.

Images

Images should be ideally used throughout the mind map to add more focus and make it more attractive. The use of images stimulates both the right and left side of the brain in the process.

Uses of mind maps

Mind maps are particularly adapted for effective note taking, studying, revising, researching, writing, planning, problem-solving, presentations, project time, learning a language, among other activities.[29]

Advantages/ disadvantages of mind maps

Several advantages of mind maps have been identified:

Mind maps are more compatible with the way the brain functions and processes information as they resemble closely the brain's neurological structure, which is made of billions of interconnected neurons.[30]

Mind maps also train and balance the left and right hemispheres of the brain at the same time since multiple sensory channels are used. This produces a significant increase in the individual's total abilities and effectiveness.[31]

Unlike linear way of note-taking, mind-mapping also emphasize associations between concepts and ideas, which emphasizes the comprehension, understanding, and creativity.[32]

28 Ibid.
29 Taylor; Buzan.
30 Taylor.
31 Buzan.
32 Ibid.

Mind maps also make it faster to take and review notes because they take advantage of the human mind's ability to see an image as a whole instead of isolated parts.

Finally mind maps employ spatial mnemonics – remembering where something is located, triggers the recollection of other items around it.[33]

Some of the **disadvantages** of adopting mind maps for studying and learning are that they require habit change as well as time to get used to. This underlines the importance of introducing mind map techniques in early education years when students are less resistant to change. Nevertheless, overall, the positives outweigh the negatives by far.

Aims of the study

The study focuses on the use of mind maps in note-taking, studying, and revising in the context of marketing education at the University of Malta Junior College (National High School 16–18-year-old students).

Context

At the time of the study the researcher was responsible for two classes (80 students) of 16–18-year-old Marketing 'Advanced' level students attending the Junior College, preparing to enter a University undergraduate degree course. The Marketing course is conducted in English, spans two years (300 hours of lectures and tutorials) and covers the major principles of marketing theory. The students are diverse in terms of their learning styles, levels of motivation, social backgrounds, academic grades, written and spoken English, and gender. All of them have a basic level of education in English and Mathematics and have to sit for two State 'Advanced' level examinations and four 'Intermediate' level examinations at the end of the two years.

The researcher was introduced to the concept of mind maps during a talk organized for second-year students in April 2015 by Vanda North, author of *Get Ahead – Mind Map your way to success*, co-authored by one of the modern promoters of the technique – Tony Buzan. Later in

33 Taylor.

the academic year, some of the students presented mind maps they had created on their own initiative. This encouraged the researcher to start using mind maps during lectures and embark on this study which is the first-ever to be conducted in the context of higher education in Malta. The only other study conducted in Malta was by Jacqueline Vanhear and Paul Pace who investigated the use of concept mapping and Vee heuristics in elementary education.[34]

Methodology

A mixed-method research method was used in this study. This method involves conducting research that involves collecting, analyzing, and integrating (or mixing) quantitative and qualitative research (and data) in a single study. The purpose of this form of research is that both qualitative and quantitative research, in combination, provide a better understanding of a research problem or issue than either research approach alone.[35]

Quantitative study

As an exploratory research about the perceptions of mind maps as a learning and study technique, a quantitative case study was conducted using the self-administered survey method with a small sample size of students n=34 taken from academic year 2015–16.

After completing a mind-map exercise in class summarizing notes for one topic, students were asked to complete a questionnaire, which consisted of 20 Likert scale questions (15 positively worded statements and 5 negatively worded statements for validity purposes) on a 5-point scale (1 = strongly disagree to 5 = strongly agree).

Results

The mean scores for several questions in the survey indicated positive perceptions with regard to use of the mind-mapping technique as can be seen below:

34 Jacqueline Vanhear and Paul Pace, 'Integrating Knowledge, Feelings And Action: Using Vee Heuristics And Concept Mapping In Education For Sustainable Development', *Journal of Teacher Education for Sustainability*, 10.1, Pages 42–55 (2008) , ISSN (Online) 1691-5534, ISSN (Print) 1691-4147, DOI: 10.2478/v10099-009-0024-3

35 C. Bulsara, 'Using a mixed methods approach to enhance and. validate your research', Brightwater group research centre (2004).

Question 9. *Using colour and images while creating mind maps makes learning easier and more interesting.* ***3.882 mean score***

Question 16. *Creating a mind map is a good exercise for my brain abilities.* ***3.882 mean score***

Question 18. *The mind maps I created helped me organize the information.* ***3.824 mean score***

Question 15. *Creating mind maps enhanced my motivation to learn marketing* ***3.5 mean score***

Question 19. *The mind maps I created improved my retention of the information in my notes.* ***3.559 mean score***

The low mean scores in the negatively worded statements (***question 2 – 2.38 mean score; question 4 – 2.17; question 7 – 2.76; question 10 – 1.97 and question 12 – 2.44*** support the validity of the results for the positively worded statements.

The results for questions *Question 13 – I prefer individual work rather than group work to create mind maps.* ***3.55 mean score, standard deviation 1.133***, indicate there is a stronger preference among students to work individually rather than in groups.

Results for *Question 20 – I use mind maps when the teacher asks me to –* ***3.147 mean score, standard deviation 1.234***, on the other hand indicate that students are more likely to use mind maps when they are instructed to do so by their lecturer rather than on their own self-initiative.

Though, in both questions 13 and 20 one can note high standard deviation scores, which indicate high variances in the answers given.

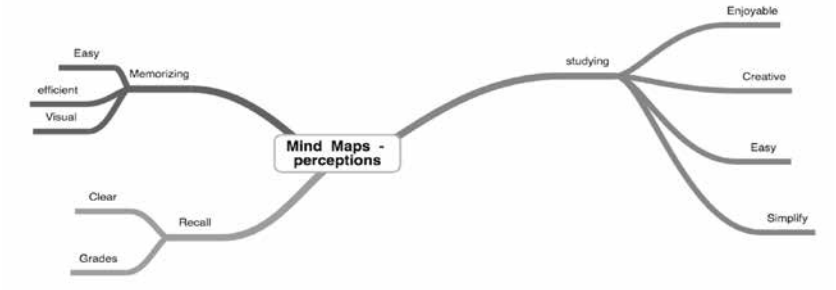
Qualitative study

To further explore the effectiveness of mind mapping as a learning and study technique, some students in the second-year class (Year 2014–16) were asked to give their feedback about their experience in using mind maps.

The mind map below, which was created by a free online mind map software tool – http://mindmapfree.com/ –summarizes the results of the qualitative feedback.

Conclusion

This paper was intended as a brief investigation of the use mind maps as an effective alternative study and learning tool in the context of



the twenty-first-century information-age society. The evidence in the literature and the results of this research show that mind maps may facilitate recall of knowledge and concepts and the interrelations set between them. More importantly mind maps can be effective to create learning environments in which students feel desirous and motivated to learn.[36]

Finally it is to be made clear that mind maps do not teach problem-solving or critical thinking skills, but rather they engage learners in a tangible manipulation and construction of their thoughts. Similarly, even though a learner constructs a detailed mind map, it is not a guarantee that he has committed this knowledge to long-term memory.[37] Willingham states that 'it is virtually impossible to become proficient at a mental task without extended practice'.[38]

Goodnough and Woods reach a similar conclusion, namely that a sustained effort by teaching staff is needed if students are to benefit in the long term'.[39]

36 Evrekli *et al.*
37 *Mind Maps: mindless or mindful?* (Bethlehem, USA, 2010).
38 Daniel T. Willingham, *Why Don't Students Like School?* (San Francisco, 2009).
39 Goodnough *et al*.