Mind Mapping as an Assistive Technology Tool

Learning Differences Symptoms and Commonalities

Learning Difference is defined as "a condition giving rise to difficulties in acquiring knowledge and skills to the level expected of those of the same age, especially when not associated with a physical handicap". While there are many different Learning Differences a lot of the diagnoses share the same symptoms. For example, Dyslexia, Autism, ADHD and APD share at least one of the symptoms of poor memory retention, processing/organizing information or communication difficulties.

Why is Mind Mapping important for Learning Differences?

According to Jonassen, Beissner, & Yacci (1993), concept maps are "representations of concepts and their interrelationship that are intended to represent the knowledge structures that humans store in their minds."

According to the DSA, the most recommended software by students with Learning Differences is *Microsoft Office* with 88% of the students recommending it saying it was very useful, followed by mind mapping (56%) and text-to-speech and speech recognition software (54%). Mind Mapping helps combat some of the common symptoms associated with Learning Differences.

Memory Retention

- The theory behind Mind Mapping is that each individual develops a mental schema or "mind map" which serves to inform future thinking or action (memory).
- Effective learning depends on the creation of a new schema, or on an existing schema being revised, extended or reconstructed (mapping).
- Paivio's research (Paivio, 1991) demonstrated that memory for a given material is better when that material is encoded from different formats. Hence the dual coding theory predicts that if pupils are offered the same conceptual material in a concept/mind map format, versus a more normal, non-graphic format, the concept/mind map approach would lead to better memorization of the material.

Processing / Organizing

- Concept/Mind maps intend to organize knowledge and to show, in a more or less explicit manner, the internal conceptual network. There is a strong consensus that concept/mind maps facilitate hypertextual organization of knowledge.

- The results of a study by (Klois, S. S., Segers, E., & Verhoeven, L. 2013) show the analysis of children's mind maps to provide an effective technique for scholarly reading research. Furthermore, well-designed hypertext was clearly found to foster a deep level of information processing and thus enhance children's learning.

- Concept/Mind maps can also be used as a means of identifying experts engaged in complex activities (such as processing a complex data set). This has been investigated by Quintin & Depover (1998).

Communication

- Concept/Mind maps are communicational tools. Graphics represent information in a way that sometimes may be more appropriate to communicating both contents and an idea about the complexity of contents. Concept/Mind maps are not construed by linearity and are convenient to represent what can be complex and intricate.

- Concept/Mind maps are often presented as having advantages as a communication tool to use in teaching, in that these combine both conceptual and graphical aspects.

Conclusion

To conclude, typically there is an inefficiency in the cognitive management systems of the brain that affects a variety of neuropsychological processes such as planning, organization, strategizing, paying attention to and remembering details, and managing time and space. Although not a learning disability, different patterns of weakness in executive functioning are almost always seen in the learning profiles of individuals who have specific Learning Differences or ADHD.

Studies have shown that children in a very short intervention can be taught to use tailored reading/writing strategies in combination with **mind mapping** to enhance comprehension at the outcome level.

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