Concept Mapping:
A Tool for Both Sensing and Intuitive Learning Styles

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Type practitioners agree that each dimension of type contributes to learning. As in earlier studies on type and academic performance, I also have found that the strongest influence in this area is that of the sensing and intuitive functions. Our sensing function is used to focus on *information*, both what we already know and what is new information. Our intuitive function is used to construct meaningful *relationships* between the known and new information. Thus both sensing and intuition make essential contributions to our learning.

Concept mapping can be a valuable tool for developing both sensing and intuitive skills in students of both preferences. This study method uses circles (or other shapes) called "nodes" to enclose key concepts. The shapes are linked with lines and words describing the connection. For example, ground coffee beans and caffeine might be two concepts in circles, and the link between them would be described as "naturally have." (see example) Mind mapping, while similar to concept mapping, uses a more random "starburst" pattern.

Concept maps make relationships between facts and concepts more obvious to sensing types by helping them visualize groupings and connections in the material to be learned. More literal in their learning, they typically rely on the teacher or textbook for both the necessary facts and the way they are related. Finding relationships is difficult at first unless accompanied by specific instructions. Sensors prefer learning tasks to be defined with certainty, and concept mapping is far from certain.

The student should create his or her own concept map, not just copy one presented by the teacher. Sensors need to understand that it is natural to be uncomfortable at first as they change the way they study. Instead of reading linearly through the text, they now need to explore the text for ways to organize the information by groups. They must also learn to connect material located far apart physically in the text by drawing crosslinks between nodes in their maps.

It is helpful for students to talk about the map since verbalizing seems to help sensors identify patterns. Learning through concept mapping becomes an active discovery process for the sensing type student. Those who become confident in the method often say, "I see the material differently now!" This reflects the development of their intuitive skills.

For intuitive types, concept mapping provides a structure on which to hang those elusive details. In general, the relationships among facts are discovered more spontaneously by intuitive students but at the expense of those facts that are not essential to forming a "big picture."

Therefore, the advantage of an intuitive's concept mapping is increased attention to details. Verbalizing about the map as they draw it helps intuitive students see where facts are missing. Many intuitive students have reported that while they are taking the exam, they can remember drawing the detailed map. It serves as a visual file cabinet for them. Thus while constructing their maps, sensing students will reason from the facts to the big picture while intuitive students will reason from the big picture to the facts.

There are type-relevant barriers as well as advantages to using concept mapping. Sensing students are uncomfortable when they can no longer read linearly through the material while they search for inclusive

topic areas. They are also uncertain about whether "I did it right." Therefore, sensing students may need to be walked through the process the first time or two with reassurance that more than one correct diagram is likely for any subject. They will greatly appreciate the teacher reviewing their maps and commenting specifically on the levels of hierarchy, the way they grouped the general concepts, and especially cross links they discovered between different branches of the hierarchy.

Intuitive students, on the other hand, often resist concept mapping because they feel they already see the relationships in the material and see no point in writing them down. The teacher needs to show such students examples of how concept mapping provides a structure on which to hang details they otherwise may overlook or forget.

Students of both types go through an initial period of adaptation as they change from passive readers to discoverers. Once they adopt the method, they are usually pleased with the insights it provides, the ease of review for exams, and the overall savings in time. Most important, it taps into an intelligence that is already there, but not accessed.

Of course both sensing and intuitive students are far from homogeneous in their use of their preferred mental functions. They will have developed their own types and their own skills to different extents. All, however, need to develop the capacity to actively organize new information so it forms associations with what is already known. Concept mapping can help students of both sensing and intuitive preferences achieve that integration.

See Sample Concept Map

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Constructing a concept map (See example below)

- Select the topic to be studied. Since it is going to be subdivided, the size of the topic is not critical. It can be part of a lecture or material that is covered in several lectures.
- Identify the major concepts by listing or highlighting them in the text, paying particular attention to material in lecture notes that was especially emphasized.
- Rank the concepts (and facts) from most general to most specific.
- Try to branch out at each level with more than one link.
- Arrange the concept map with the most general, or inclusive, concept at the top level, enclosed in a circle of other shape. Link it to more specific concepts placed on the next level and enclose those as well. Label connecting lines with linking words that explain the relationship, if needed. Arrowheads can show direction, cause-and-effect, etc.
- Identify and draw cross-links between related concepts. This is a powerful step in developing integrative thinking.
- The top down type of diagram shown in the illustration is far more useful for sensing types than a "cluster" pattern that spreads out from the center like a spider web.

Sample concept maps