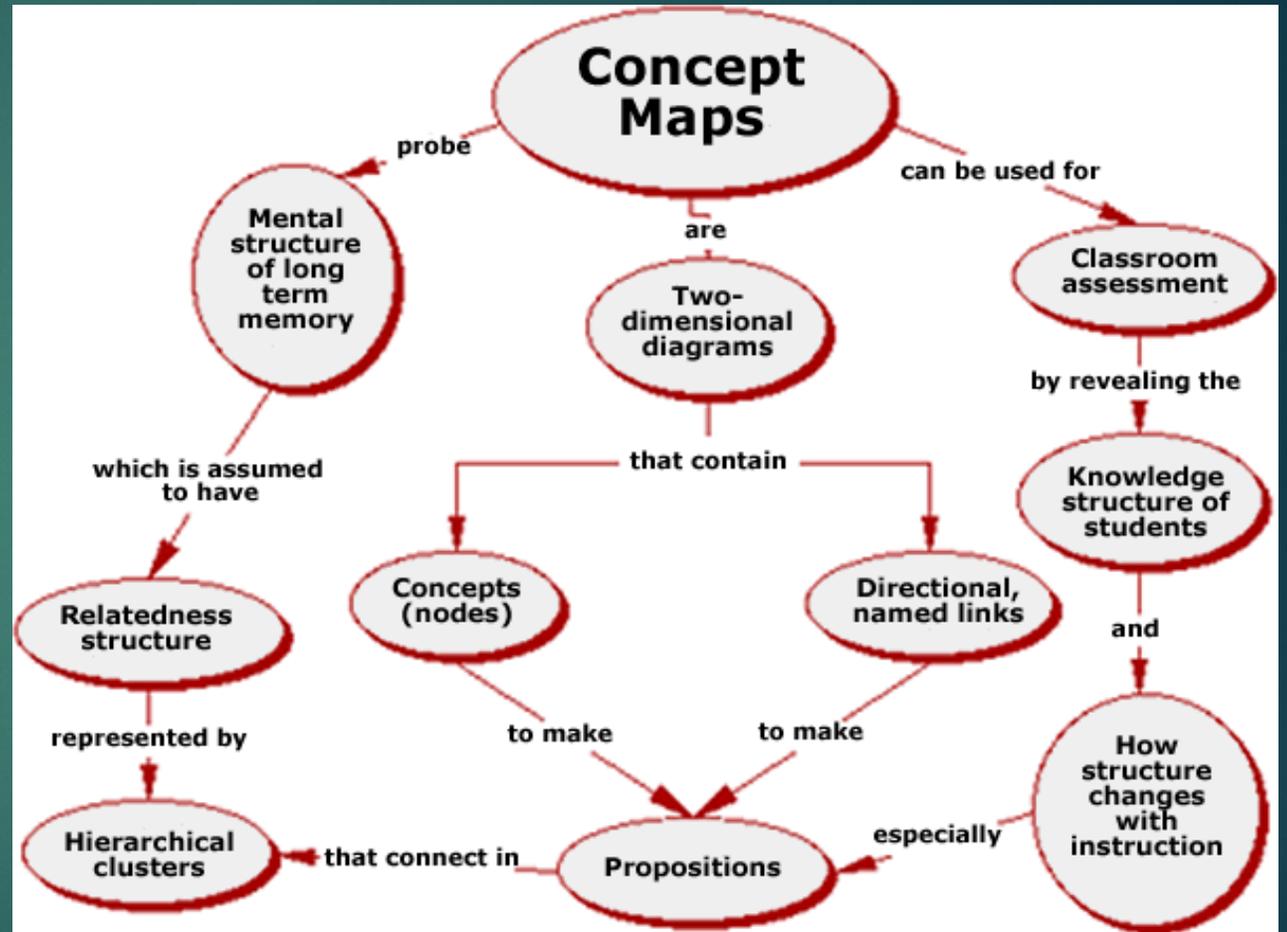


Using Concept Map Activities to Show an Increase of Student Knowledge

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Concept Map

- ▶ A concept map is a pictorial representation of a domain that consists of concepts represented as nodes (circles) that are connected to each other by arcs (lines)... the connecting arcs represent the conceptual links – stating that the concepts are conceptually and logically related in some manner” (Freeman & Jessup, 2004, p. 151).



Why Concept Maps?

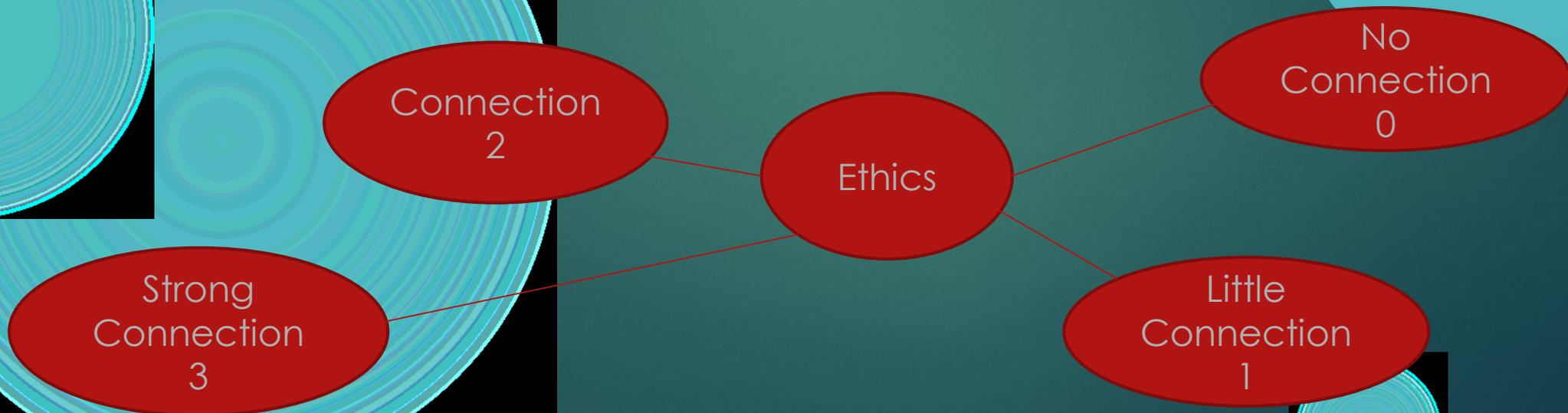
- ▶ Represent how students link hierarchical material together (Nicoll, Francisco, & Nakkelh, 2001)
- ▶ Allow students to see and represent the interconnectedness of complex concepts (Lawless, Smee, & O'Shea, 1998)
- ▶ When completed in groups, students experience cognitive social constructivism (Buriak, McNurlen, & Harper, 1996)
- ▶ Concept map activities promote critical thinking by stimulating deeper understanding of the material (Giddens, 2006)
- ▶ Concept maps "can both promote and assess conceptual change in a higher education setting" (Kinchin et al., 2005, p. 2), and therefore become an innovative tool in the evaluation of students' learning

Methods

- ▶ Students were placed in groups of 5-7 and asked to complete the concept map activity during the first week of class (Pre-test)
 - ▶ Assimilation theory states that new information is processed and then assimilated into already existing structures in the memory and mind (Freeman & Jessup, 2004).
- ▶ Students were then placed back into their same groups and asked to complete the concept map activity during the last week of class (Post-test)
 - ▶ Associationist theory states that as learning occurs, the “network of concepts and relationships becomes more and more elaborate and complex” (Freeman & Jessup, 2004).

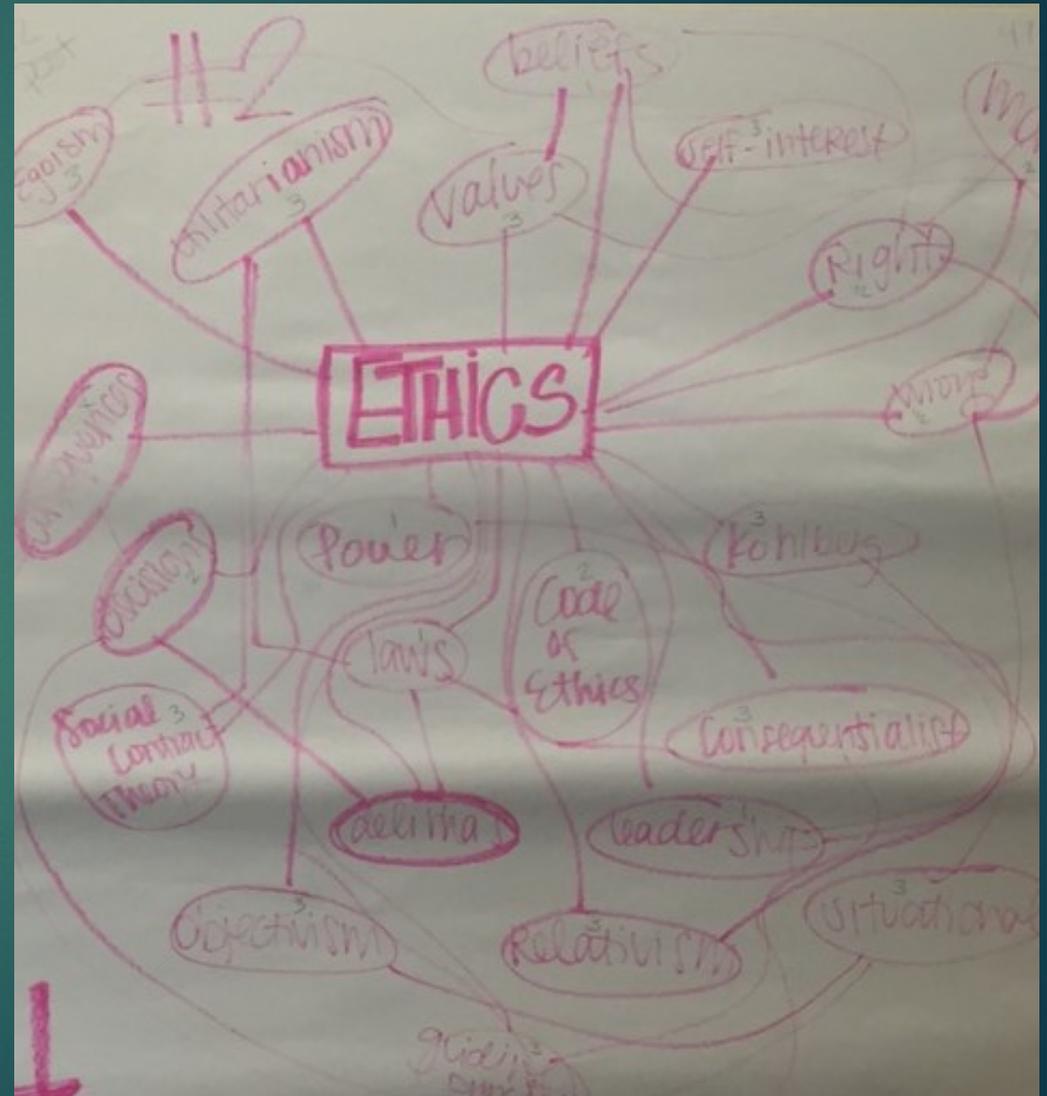
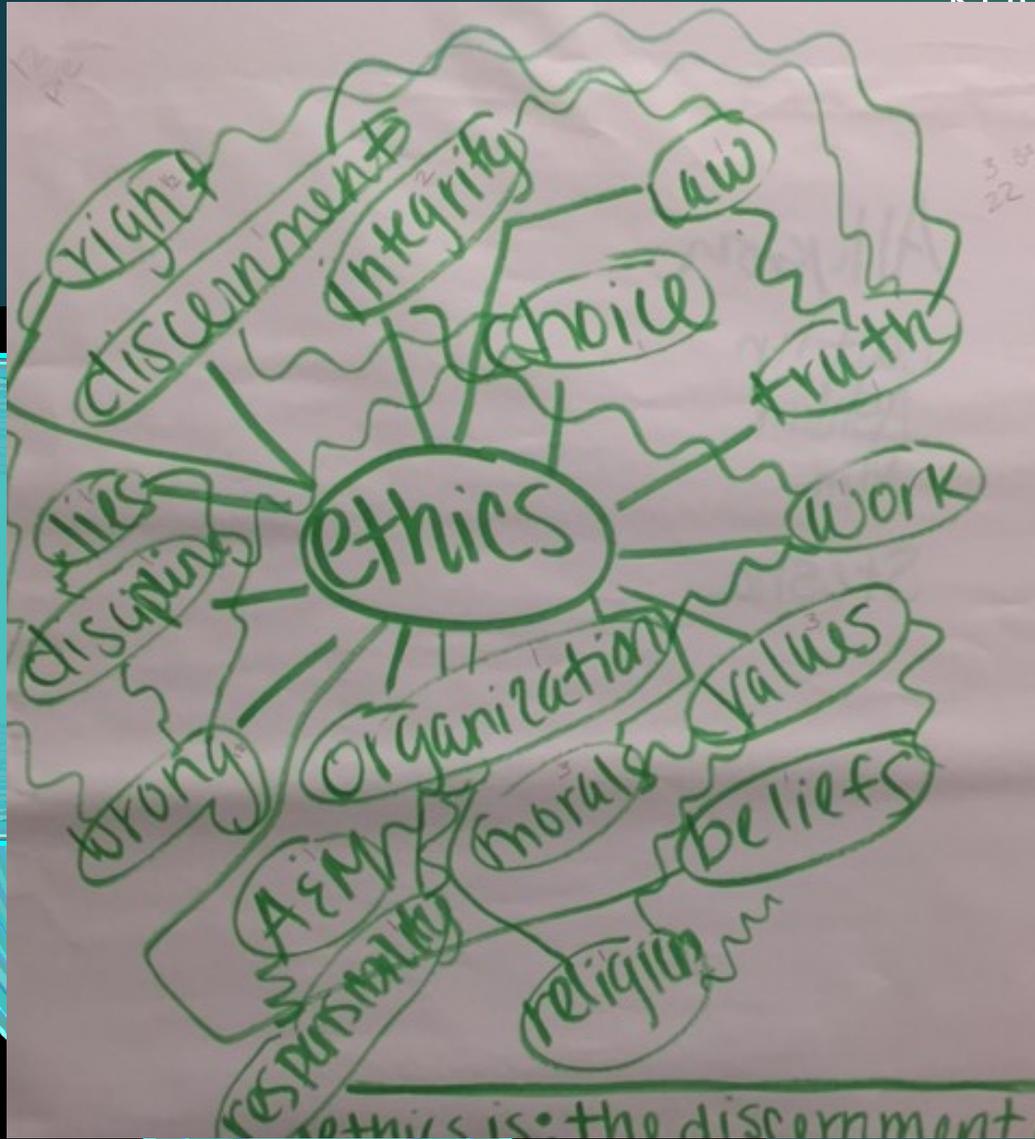
Methods

- ▶ The pre and post concept maps were analyzed using a modified scoring criteria for concept maps developed by Novak and Gowin (1984). With Novak and Gowin's criteria, each node directly linked to the original concept is a proposition, and should demonstrate a meaningful relationship between the concept and the node.



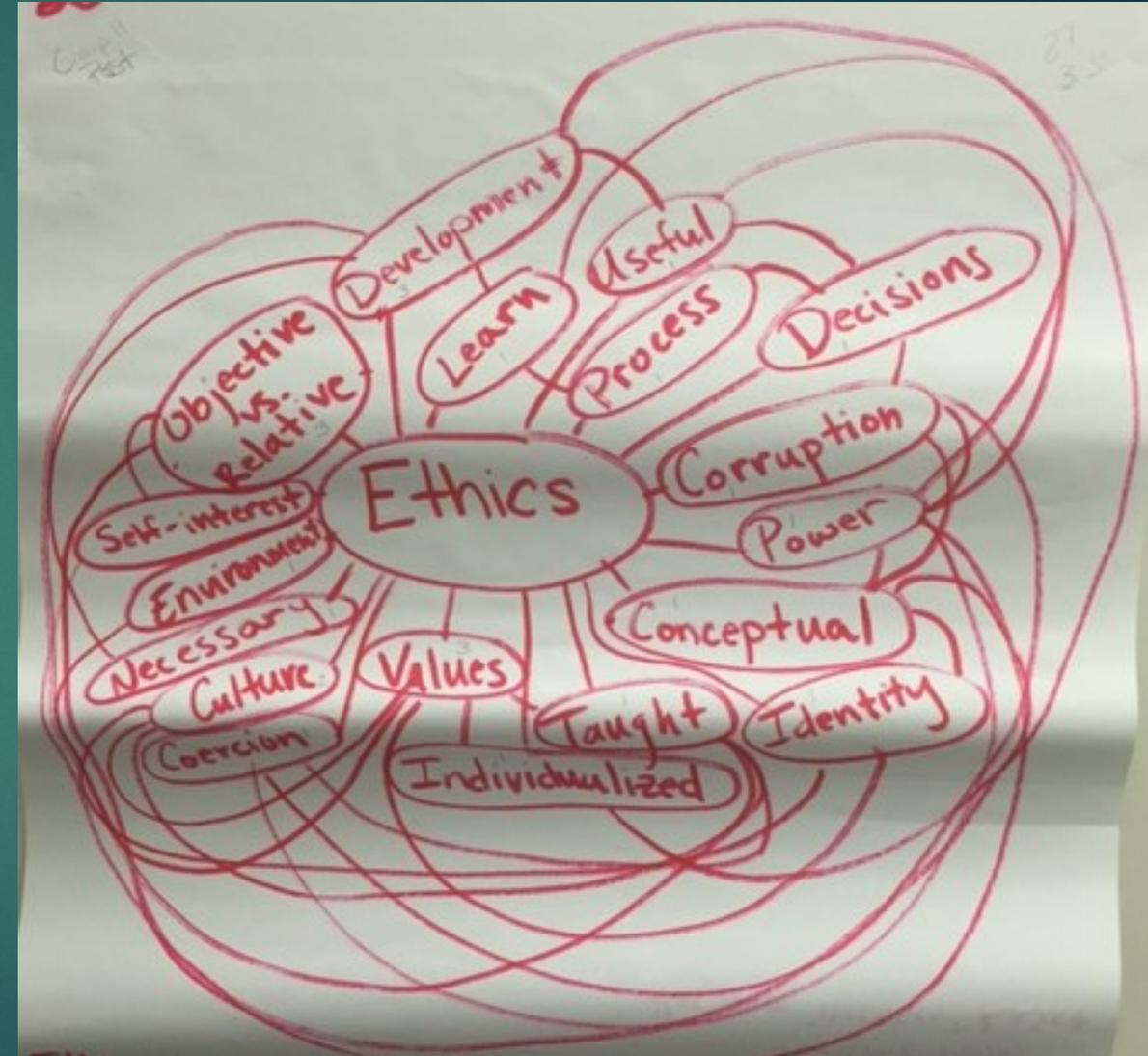
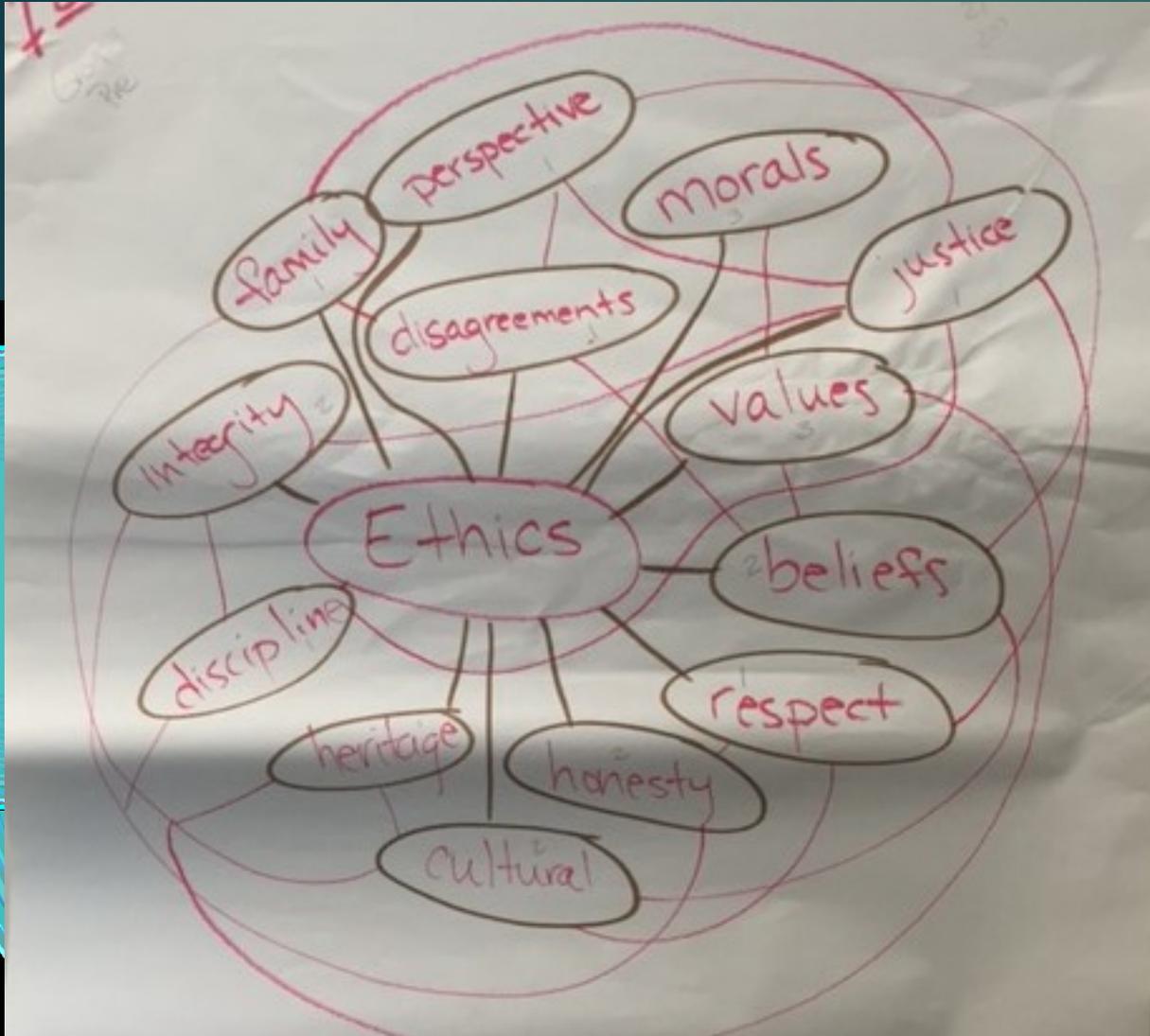
Results

- ▶ Through comparative analysis both students and instructor are able to see the progression of knowledge in relation to the topic.



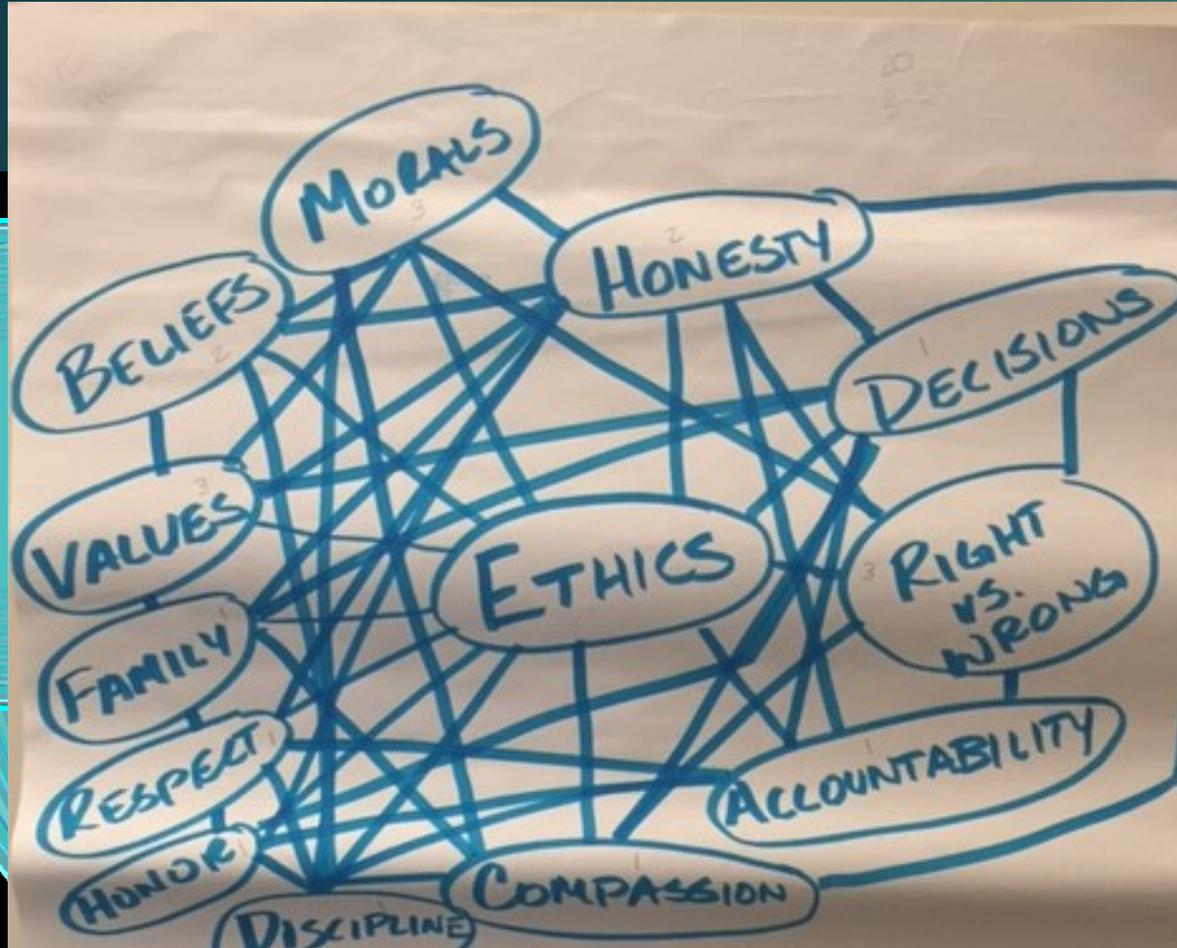
Results

- ▶ All maps demonstrated a markedly higher score (quantitative)



Results

- ▶ All maps demonstrated an increase in content knowledge (qualitatively)



Conclusions and Recommendations

- ▶ The maps offered the class as well as the instructor an excellent starting point for discussing the conceptualization and definition of ethics
- ▶ Analysis of these maps not only allowed the instructors to see which concepts were integrated and how they were integrated, they are also a useful tool in the assessment and revision of the course for subsequent semesters
- ▶ Pre-post design is not only effective assessment, it also can be utilized for research