Educational Knowledge Domain Visualizations

Four Kinds of Maps

1. **Thematic Maps**
   - Purpose: To show the distribution of a phenomenon across a geographic space.
   - Example: A map showing the population of each state with red states won by George W. Bush and blue states won by John Kerry.

2. **Concept Maps**
   - Purpose: To represent the relationships between concepts within a domain.
   - Example: A node-link diagram of keywords in the field of knowledge visualization.

3. **Knowledge Domain Visualizations (KDs)**
   - Purpose: To show the structure of a domain as a network of concepts and relationships.
   - Example: A network map showing the connections between different fields of study.

4. **Main Map Information Space**
   - Purpose: To provide an overview of the entire information space.
   - Example: A map showing the distribution of journals and authors across different fields of study.

Benefits of Big Picture Visualizations

1. They provide a platform for collaborating students to navigate, understand, and internalize the structure of scholarly knowledge and expertise.
2. They allow students to internalize the framework presented by the instructor.
3. They help to signal to the student which concepts are most important.
4. They help the student to visualize the intellectual landscape of the domain.

Six Phases in the Use, Adoption, and Implementation of KDVs

1. **Pre-Bibliometric History**
   - Description: Maps created before bibliometric data were available.
   - Example: A map created in 1939, 1948, and 1981, showing the evolution of knowledge domains over time.

2. **Topic Co-occurrence**
   - Description: Maps showing the relationships between topics based on co-occurrence in bibliographic records.
   - Example: A map showing the relationship between health and dentistry based on the occurrence of keywords in bibliographic records.

3. **Coauthor Networks**
   - Description: Maps showing the network of authors who have co-authored papers in a particular field.
   - Example: A map showing the co-author network for a particular field of study.

4. **Citation Networks**
   - Description: Maps showing the network of citations between papers in a particular field.
   - Example: A map showing the citation network for a particular field of study.

5. **Phases of Knowledge Domain Visualization**
   - Description: The implementation of KDVs in different phases.
   - Example: Phase one involves the creation of KDVs based on content integrated knowledge, while phase two involves the use of KDVs in learning environments.

6. **Phase Four**
   - Description: The widespread use of KDVs in different fields of study.
   - Example: KDVs are used in the field of educational sciences to provide maps of larger disciplines.

Educational Benefits of KDVs

- They help students to navigate and understand the structure of scholarly knowledge and expertise.
- They provide a platform for students to internalize the framework presented by the instructor.
- They help students to signal the most important concepts to them.
- They help to visualize the intellectual landscape of the domain.