



Concept Mapping Analysis

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In developing **assessment items**

- **Conceptual mapping**
- Key concepts in a structure
- Important mathematical concepts to be **SELECTED AND TESTED** by using different activities
- **Generally important concepts** rather than specifically important ones

In developing **assessment items**

- **Conceptual mapping** can provide mathematical **structure** as well as **key concepts** under its structure.
- **It** can give an insight into **connections** between or among mathematical ideas.
- **It** can generate ideas about different levels of assessment **difficulties**.

Each group and its topic

- Group 1: Differentiation
- Group 2: Matrix and a system of linear equations
- Group 3: Sequence
- Group 4: Quadratic curve
- Group 5: Differentiation
- Group 6: Definite integral
- Group 7: Quadratic curve
- Group 8: Limits of functions
- Group 9: Logarithm
- Group 10: Differentiation

What is a **concept map**?

- A graphic model to help students understand and organize mathematical knowledge of a topic.

Why a **concept map**?

- Allowing students to understand key ideas and their connections
- Helping students integrate new concepts with older concepts
- Encouraging students to generate both new ideas and connections, and expand their understandings

How to build a **concept map**

- Start with a main idea
- Determine key concepts
- Finish it with a structure by connecting concepts with relationships and developing levels of hierarchy

How to evaluate **concept maps**

- Coherent use of levels of **hierarchy**
- **Connections** between mathematical concepts
- Clear center **ideas**
- How to group ideas and their interaction

Evaluating **concept maps**

- Key ideas
- Levels of hierarchy
- Connections
- Group ideas



Differentiation (Groups 1, 5, and 10)



Quadratic curve (Groups 4 and 7)



Logarithm (Group 9)

Holistic View

- Content rigorousness vs. content appropriacy (balancing degree?)
- Structural simplicity (less key concepts) vs. structural appropriacy (appropriate key concepts)
- Approachability vs. detailed content (structural visuality)
- Interest vs. content complexity (visualization)
- Grouping



Sequence (Group 3)



Definite integral (Group 6)



Matrix and a system of linear equations (Group 2)



Limits of functions (Group 8)