

## Redesigning Assessment with Generative AI:

### Concept Maps in the Era of Generative AI



## BENEFITS & CHALLENGES

### Benefits

- **Promotes critical thinking:** Students consider and analyze relationships between ideas, promoting deeper understanding. AI tools cannot currently emulate the human critical thinking process.
- **Enhances creativity:** Creating maps sparks creativity and innovation, which cannot currently be replicated by AI.
- **Encourages originality:** Student use their own unique understanding and perspectives for creating concept maps.
- **Strengthens understanding:** Maps help visualize complex information. While AI can provide data, humans have the ability to make sense of data in unique ways.

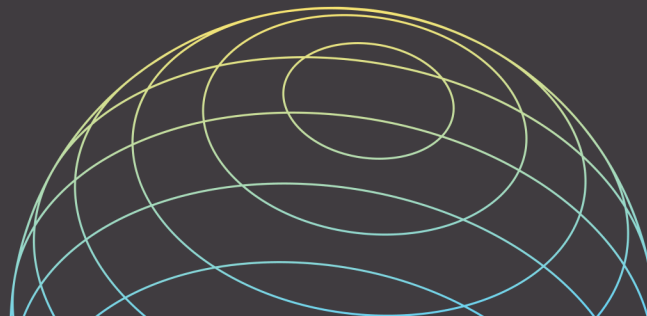
### Challenges

- **Technological dependency:** Students may not have equal access to or skills to effectively use digital tools for creating concept maps.
- **Subjectivity in evaluation:** The uniqueness of each student's map can be challenging to grade objectively. Clear rubrics are needed.
- **Need for guidance:** Students often need significant guidance and practice to create effective concept maps.

## CASE SCENARIO

In a course on climate change, students are given terms like greenhouse gases, global warming, deforestation, renewable energy, and carbon footprint. They are then asked to create a concept map showing how these terms are related.

This map would demonstrate their understanding of the causes and effects of climate change, as well as potential solutions.



## INTRODUCTION

Concept maps are graphical tools for organizing and representing knowledge. Concepts are usually written in circles or boxes, and connecting lines represent the relationships between them.

The assessment revolves around the ability of the student to accurately and effectively map the course concepts and their connections.

## RATIONALE

Concept maps have students synthesize and integrate information, and requires them to comprehend the complexity of the given concepts and their relationships which cannot be done by simply using AI tools.

By using concept maps, students can demonstrate a deeper understanding of the subject.

## HOW DOES IT WORK?

Students are given a list of terms, concepts, or questions from a course topic and asked to create a visual map illustrating the relationships between these items. Assessment is based on the comprehensiveness, accuracy, and clarity of the map.

### **Assessment criteria can include:**

- Relevance and accuracy – Concepts chosen are relevant to the subject matter, and descriptions or explanations are accurate.
- Link labels – The use of clear and informative linking words/phrases to describe relationships between concepts.
- Hierarchy and structure – The map has a clear hierarchy or flow. Connections and cross-links demonstrate complex relationships and systematic thinking.
- Comprehensiveness – The map covers all key aspects of the topic and demonstrates an understanding of the big picture.
- Visual appeal and creativity – The map is visually appealing and creatively thought out (which can aid in understanding and retention).

## SOME CONCEPT MAP TOOLS

The logo for Coggle, featuring the word "coggle" in a white, lowercase, sans-serif font on a green rectangular background.

An online tool for creating and sharing mind maps and flowcharts. It allows real-time collaboration, which can be useful for group projects.  
<https://coggle.it/?lang=en-US>



This tool offers extensive customization options. It also allows for collaborative editing and can be integrated with other platforms like Microsoft Teams, and Canvas.  
<https://www.mindomo.com/>

The logo for Popplet, featuring the word "popplet" in a white, lowercase, sans-serif font with a blue outline, set against a dark blue background.

This tool allows users to visually map complex concepts.  
<https://www.popplet.com/>