

Flow chart and rubric we used to score students' concept maps
Score the holistic value of the concept map

From 1 to 3, with 3 being the most accurate and comprehensive and 1 being the least so. Our rubric is shown below.

One point for each correct arrow or link

For example, linking environmental microbiology to bioremediation or bacterial infections with antibiotics is valid, but linking viral replication to 16S rDNA analysis is not.

One point for each valid entry

For example, horizontal gene transfer or pathogenesis or bacterial source tracking is considered valid, but endocrinology or embryology is not.

Score Description

3

All the entries and links are valid and correct. There are multiple levels in the correct hierarchical order. For example, a specific research interest such as "horizontal gene transfer" is placed below the broader subdiscipline such as "microbial genetics." Cross-links are also present. For example, "antibiotics" is under "soil microorganisms" but is also cross-linked to industrial microbiology and/or biotechnology. This is an example of a 3-point map.

2

All the entries and links are valid and correct. There are limited layers present in the correct hierarchical order, but the links represent superficial relationships. For example, placing "DNA polymerase" under "DNA replication" is not wrong, but it does not demonstrate in-depth understanding. Some 2-point maps do have multiple levels but they are too narrowly focused. Often a 2-point map does not have cross-links. Here are two examples of 2-point maps.

A B C D

1 2 3 4 5 6

Microbiology

a b c d e

A

B C D E

1 2 3 4 5

Microbiology

I

II

A 1 i a

Microbiology

1

All the entries and links are valid and correct. However, there is only one layer. Here is an example of a 1-point map.

0

Unrelated information. Here is an example of a 0-point map.

A

B

C

E

D

G

F

Microbiology

H

I

Microbiology

@ #

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* &

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2

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3

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4