Identification of Misconceptions via Concept Inventories

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Using the Microbiology Concept inventory, we can identify the misconceptions held by microbiology students and inform curricula reform.

Context

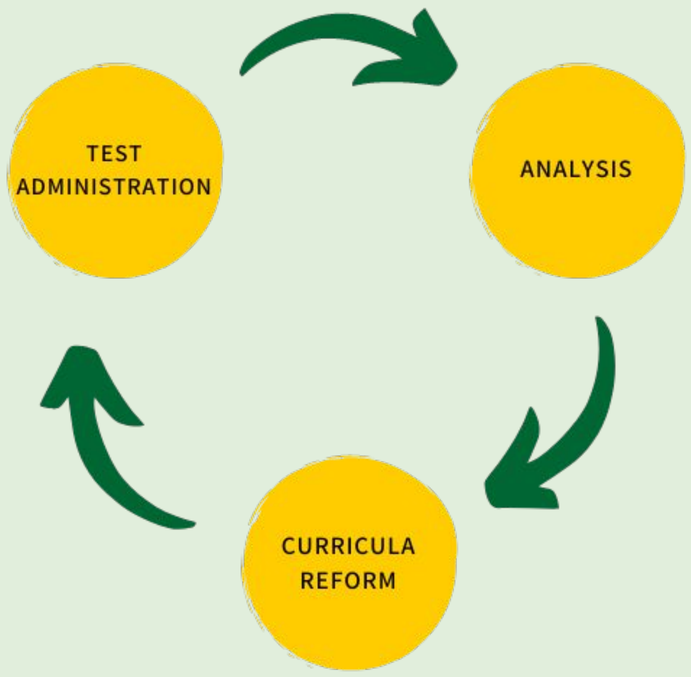

FIGURE 1. The cyclical process of the use of concept inventories to improve education.

Methodology

1. Coded for misconceptions with 2022 MP and FP data
2. Calculated item difficulty of both answers and explanations
3. Found frequency of most common student misconceptions
4. Traced those misconceptions to core concept categories

Results

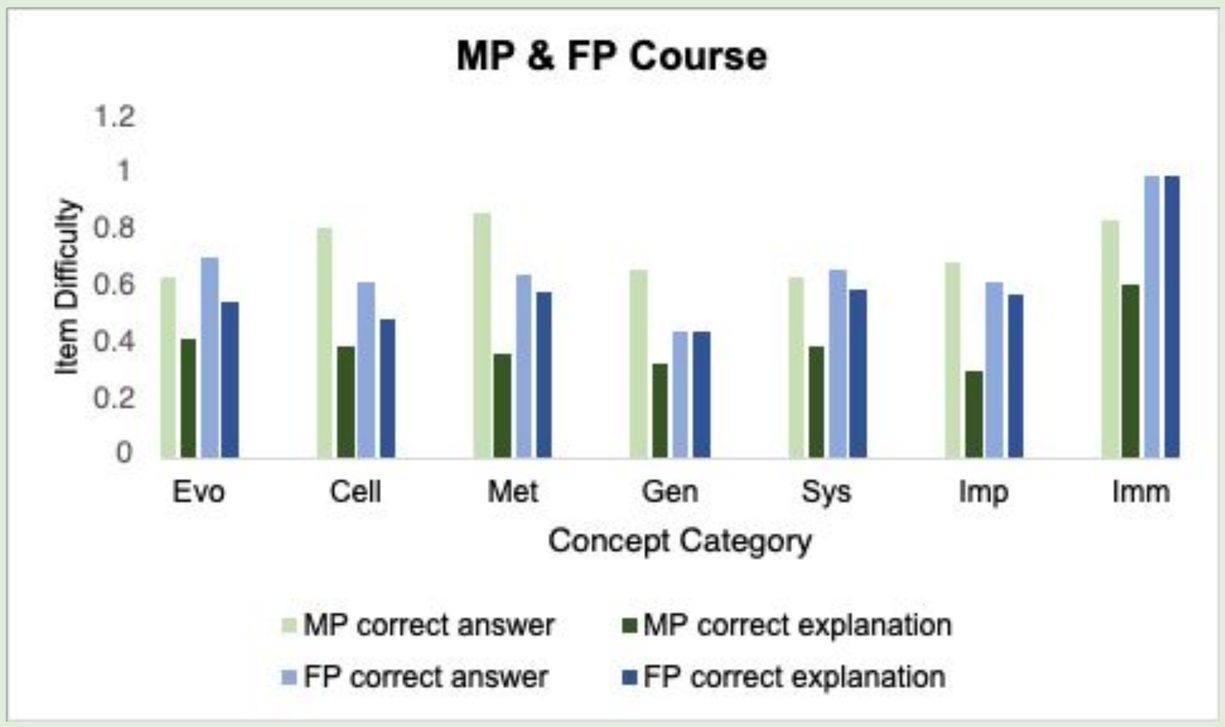

FIGURE 2. Item difficulty of each question on the MCI based on correct answers and correct explanations of FP students in 2022.

Course	Core Concept Category	Top Misconception
MP & FP	Metabolic Pathways	**Lower bacterium growth rate indicates death of the bacterium**
MP & FP	Metabolic Pathways	**Fermentation is exclusively an anaerobic process**
MP	Evolution	**Common metabolic pathways in prokaryotes and eukaryotes develop independently**
FP	Cell Structure & Function, Information Flow & Genetics	**A negative strand RNA virus will be dependent on the host cell to replicate its genome**

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Full Methodology SCAN ME

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