

USING CONCEPT INVENTORIES: CAN WE TELL IF ACTIVE LEARNING APPROACHES WORK?

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Background

Evaluation of active learning strategies occurs predominantly through the use of concept inventories, helping consolidate the finding that active learning strategies are far superior to 'traditional' lecturing with the recommendation that active learning approaches should be implemented more broadly (Freeman et al., 2014). The use of concept inventories has its flaws such as trivialising student understanding by the assignment of numerical marks and the fact that concept inventories cannot provide sufficient detail for perfecting the teaching environment. However, the use of these inventories persists, offering advantages such as a means of comparing across years, tracking cohort understandings and are relatively easy to implement (Sharma et al., 2010).

Aims

The aim of this presentation is to compare different concept inventories.

Design and methods

The study used 5 inventories across 12 separate courses with 8000 first year university students.

Results

The study has several findings. First, we find that instructors can readily extract information on persistent student alternative understandings that could be addressed through instruction. Second, an individual institution or several institutions could track the effect of different instructional approaches over years. Third, effect size and Hake gains are complimentary, for example Hake gains of 0.25 return effect sizes of 0.67, providing different lenses for interpretation.

Conclusions

The use of concept inventories is reasonably wide spread. Our study utilised several concept inventories as well as several analyses, finding that concerted effort is needed in the interpretation of scores on concept inventories.

References

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