Note on small sample size

Is the learning gain larger?

- Indication of higher flashmap score on knowledge questions (not significant)
- Indication of higher flaschard score on comprehension section within ctt (not significant)
- Indication of higher flashmap score on comprehension section within irt (low validity, significant)
- Hypotheses:
  - Random outcome
  - If indeed larger flashcard comprehension score than flashmap:
    - Phrasing of question having an effect
    - Explicit relations inhibit constructing meaning within the user (generative vs supplantive)

Is the learning gain larger controlled for the time spent on the system?

- Less material covered by flashmap users (non-significant)
  - Random outcome because of two outliers within flashmap (based on histogram)
- More time spent by flashmap users (significant)
  - Retrieval is easier with flashmap, therefore smaller time per flashmap
- Less time spent per flashmap presentation than per flashcard presentation (significant)
  - More edges, therefore more navigation time and overall time spent

Do they perceive the system to be more useful?

- Higher perceived usefulness by flashmap users (low validity and non significant)
- General:
  - Structure provided by instances
  - Distribution of learning over period of time
  - Repetition of questions
  - Instances repeated too often
  - Specifics of the content covered (not relevant)

Do they perceive the system to be easier to use?

- Higher perceived usefulness by flashmap users (non significant)
- General:
  - Better instructions needed
  - Navigation sometimes tedious for flashmap users
  - Rigid

How did the students use the flashmap or flashcard system?

- Flashmap significantly less responses per instance
- No difference in mean instance progress
- Correct retrieval rate around 0.87
- Flashmap significantly higher correct retrievals per instance
  - Maybe because unclear instructions on marking as correct/incorrect