Scaffolded Formative Assessment: Fit for Purpose?

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Outline

- Background & Rationale
- Initial Intervention
- Results & Feedback
- Further Improvements
- Overall Evaluation
- Conclusion

Context

- Challenging quantitative skills in Y2 Dubai cohort
- 50% failed Y1 Statistics final exam, 30% failed Maths
- Intensive block teaching style for Y2 Econometrics
- Hybrid teaching style under COVID-19 regulations
- Students are overwhelmed and do not feel supported
- Very low engagement with computer workshops

Context

Table 1: Summary of students' performance in the quantitative modules

Module	Assessment	Weight	Average Mark	Pass/Fail
Intro to Mathematics	Problem Set	0.25	40.5	> 30% fail
	Problem Set	0.25	60.1	> 10% fail
	Final Exam	0.50	67.5	> 20% fail
Applied Economics & Statistics	MCQ Test	0.25	44.08	> 40% fail
	Excel Problem Set	0.25	43.73	> 30% fail
	Final Exam	0.50	32.01	> 50% fail
Econometrics	MCQ Test	0.25	37.51	> 60% fail
	STATA Coursework	0.25	?	?
	Final Exam	0.50	?	?

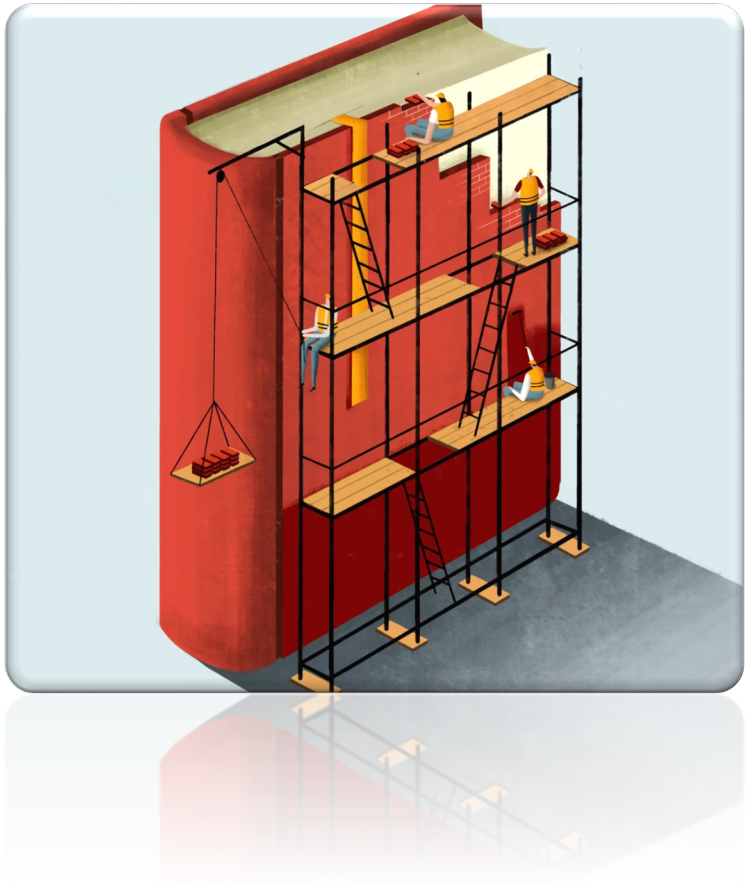
Scope

- BBS Y2 Dubai students
- LI Econometrics in S1
- Summative assessments:
  - MCQ class test (25%) - practice quizzes
  - Stata coursework (25%) - no formative
  - Final exam (50%) - seminar exercises

Rationale

- Hypothesis: introducing a scaffolded formative assessment with peer feedback will improve students':
  - ✓ performance (Rajaram, 2011; Faulk, 2007)
  - ✓ engagement (Neustadt, 2012)
  - ✓ knowledge and understanding (Tien et al, 2021)
  - ✓ sense of support (Jacoby et al, 2014)
  - ✓ assessment literacy (Chen et al, 2022)

Scaffolding



"Scaffolding is the process of breaking tasks down into smaller steps. It may also involve creating more detailed assessment instructions or rubrics, or splitting a large assignment or exam into smaller assessments."

(University of Melbourne, 2021)

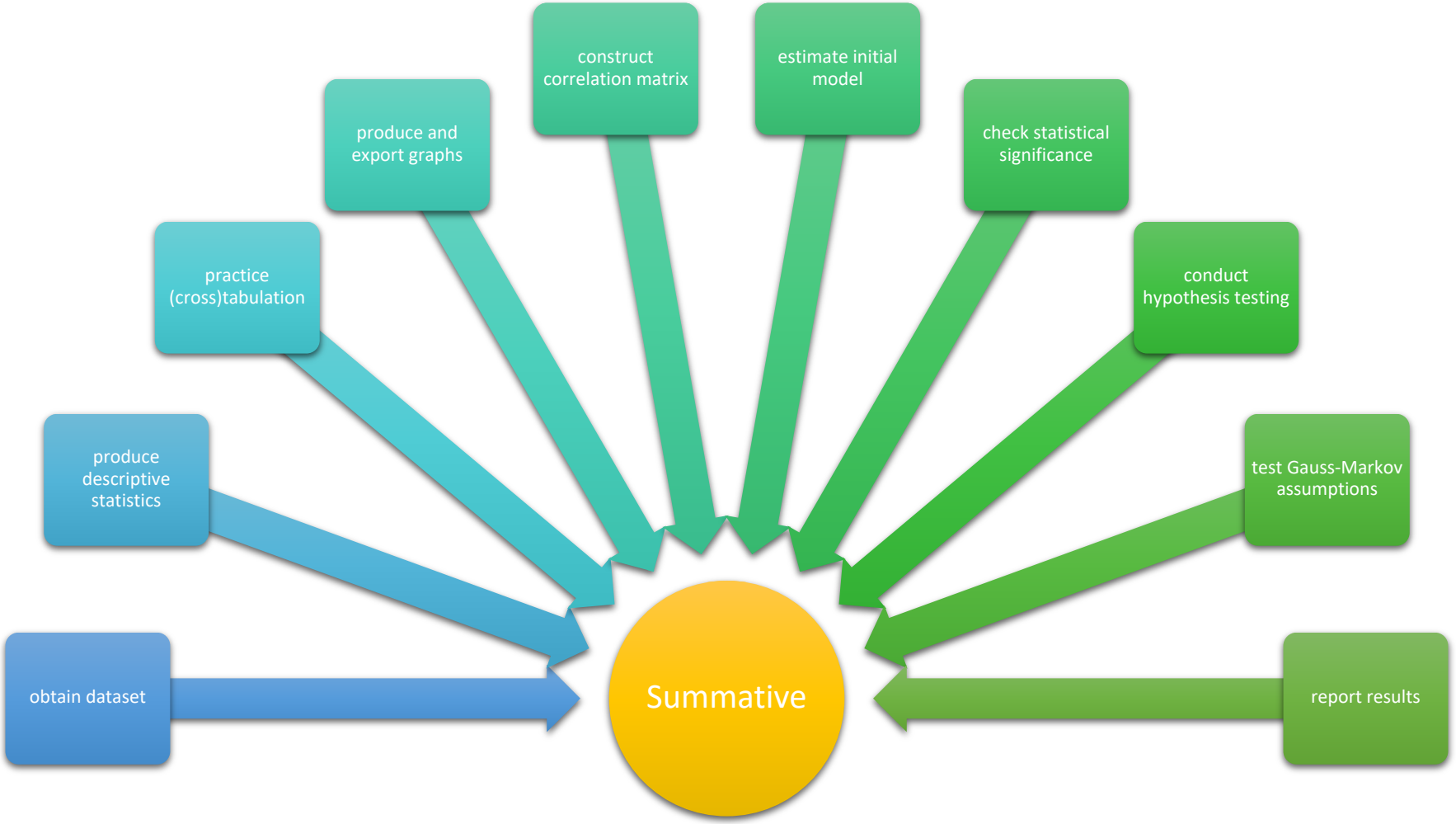
Summative

- **Stata coursework** (1000-word limit):
  a) Retrieve country-level data from online sources
  b) Use Stata to build and estimate an econometric model on a specific economic problem
  c) Report and discuss the estimation results

Initial Intervention

- Design component tasks (patches) that train students on the process of econometric analysis.
- Explain the different structure of the formative assignment.
- Map the relationship of scaffolded patches to the summative coursework.
- Allow students time to practice these tasks independently.
- Provide students feedback ahead of summative coursework.

Scaffolded Formative



Feedback

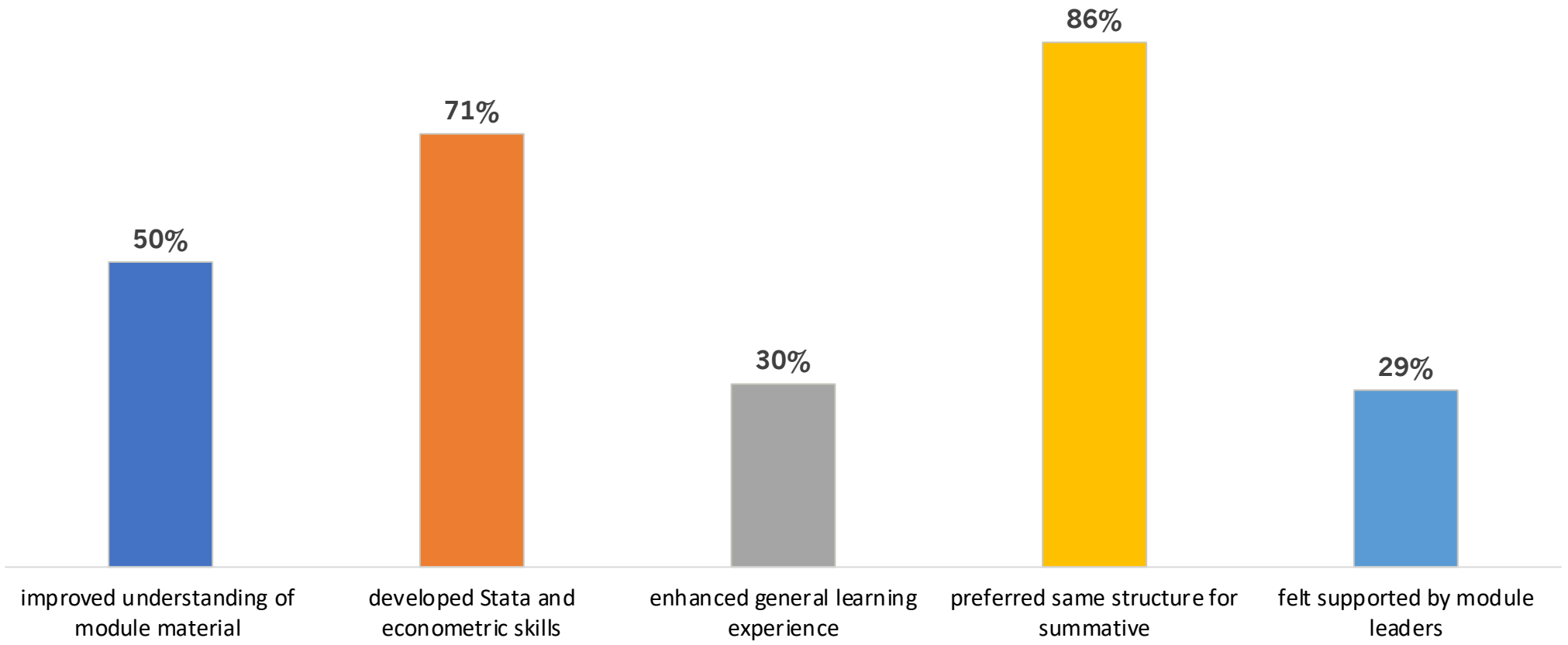
- Self-assessment: provide students with formative answers

- Peer feedback: structured/guided peer support session via Padlet

- Online questionnaire: on engagement, sense of support, learning outcome

- Follow-up focus group: deep dive into students' perception & experience

Preliminary Results



Missing Link

- Hypothesis: guided structure is fit-for-purpose (engagement, support, learning)
- Instructor: it does not look like it did!
- Students: preferred same structure
- ***Missed the point?***
- Discuss in focus group
- Improve and rerun the experiment

Focus Group Feedback

- Three Themes:

  1) Did not understand the purpose of the different structures
  2) More support on how to download and import data into Stata
  3) Preferred formative environment: work individually; follow up with peer support session; instructor-led feedback

Filling the Gap

- Record a video to guide data collection and import into Stata
- Canvas announcement highlighting the structure of both assessments
- Run instructor-led feedback session to walk through formative step by step
- Map each task to summative coursework so that students can associate each component to the larger coursework
- Better explain the procedure of econometric analysis expected to be followed in summative (assessment literacy)

Updated Results

Table 2: Summary of students' performance and perceptions

Student Perception	First Run (S1)	Second Run (S2)
Performance on STATA coursework	57.6 (all pass)	57.5 (all pass)
Enhanced understanding of material	57%	100%
Improved general learning experience	29%	83%
Improved use of STATA and econometric skills	71%	100%
Sense of support	29%	83%
Preferred same structure	86%	33%

Final Words

- Scaffolding the formative assessment is a novel in Economics
- Students do not use feedback to inform their next assessment
- Further steps are needed to raise **assessment literacy**
- Limitation: scalability from small to larger cohorts
  - *easily scalable:* tutorial videos, mapping patches, explaining the link
  - *scalable-ish:* instructor-led feedback session
  - *limited scalability:* group-specific comments, marking of each formative

Thank you!

Scholarship

- Chen G., Wang X. and Wang, L. (2022). Developing assessment literacy among trainee translators: scaffolding self and peer assessment as an intervention. *Assessment & Evaluation in Higher Education*, pp. 1-15.
- Jacoby J., Heugh S., Bax C. and Brandord-White C. (2014). Enhancing learning through formative assessment. *Innovations in Education and Teaching International*, 51(1), pp. 72–83.
- Faulk D. (2007). Formative and summative assessment in economics principles courses: are applied exercises effective. *Indiana University Southeast New Albany*, Indiana, USA, 6, 13.
- Neustadt I. (2012). Adaptive Formative Assessment in Econometrics for Undergraduate Students. *Investigations into University Teaching and Learning*, 8, pp. 81-86.
- Rajaram G. (2011). Teaching Econometrics using Formative Assessment. *Journal for Economic Educators*, 11(1), pp. 1-12.
- Tien N., Trang T. and Ngoc P. (2021). The Role of Formative Assessment in Business Education in Vietnam. *Palarch's Journal of Archaeology of Egypt/Egyptology*, 18(6), pp. 85-99.
- University of Melbourne (2021). Scaffolding Assignments: how and why? https://le.unimelb.edu.au/news/articles/scaffolding-assignments-how-and-why