



Synergies between Micro-modules and Online Discussion Forum



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Deep and meaningful learning could be facilitated by the use of asynchronous, text-based collaborative communication.⁺

Micro-modules x UGFN1000

To supplement students basic science knowledge and the related historical and technical background, 160 video clips were produced.

Research Question and Methods

2017-18 Term 1	Students were asked to participate in discussion forum after watching the micro-modules.	2016-17 & 2017-18 Term 2	Students participated in the discussion forum without any prerequisite.
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Intended Learning Outcomes (ILOs)

Category of ILOs

ILO1	Textual comprehension and discussion
ILO2	Characteristics of humans' view on nature
ILO3	Societal implication of science
ILO4	Development of science
ILO5	Application and limitation of scientific method

Quality of ILOs Attainment

Based on students' reflections, elaborations and connections with course material, we graded each ILO they achieved by:



Which setting is more beneficial to students' learning?



Content analysis

Student responses in the discussion forum in 2017-18 were analysed based on two schemes: (1) ILOs attainment and (2) Cognitive achievement.



Survey

Students in 2017-18 Term 1 were invited to respond to a survey regarding their learning experience in using micro-modules. Results were compared to the survey data in 2016-17 Term 1.

Cognitive Achievement⁺

1. Triggering

- Recognizing the problem
- Sense of puzzlement

3. Integration

- Convergence among online community or within a single message
- Connecting ideas

2. Exploration

- Divergence within online community or single message
- Leaps to conclusions

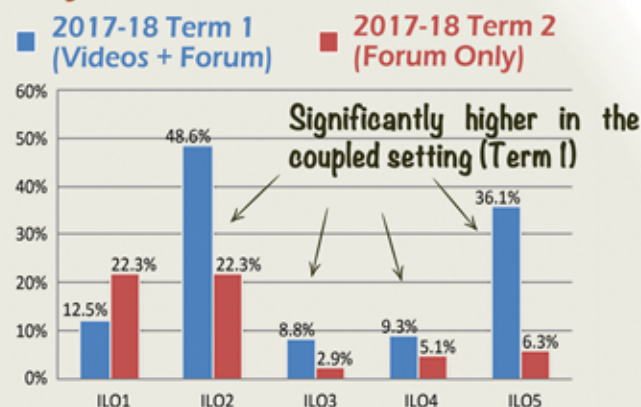
4. Solution

- Application to the real world
- Testing solutions

Results

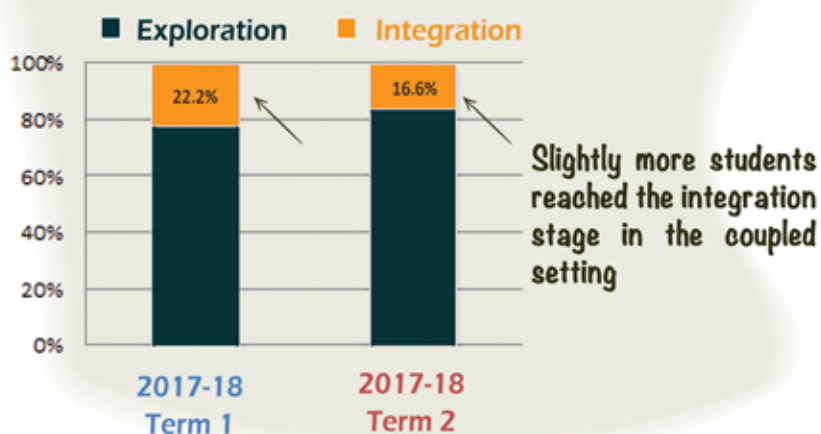
Content Analysis: ILOs

The percentage of students who attained the ILOs with quality of "Good" or above



Content Analysis: Cognitive Achievement

The recorded final cognitive stage students (in percentage) attained

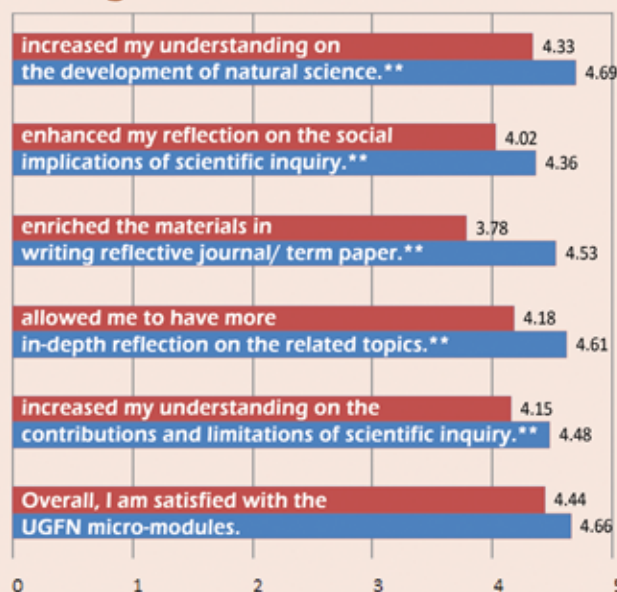


Survey

Online survey on students' perception on micro-modules

■ 2016-17 Term 1 (N=55) (Videos Only) ■ 2017-18 Term 1 (N=87) (Videos + Forum)

Watching micro-modules



(** ratings that are significantly different between the terms in an independent t-test in 95% confidence level)

Recommendation

To help students perform better, in terms of ILOs and cognitive achievement, a micro-modules coupled discussion forum is a better approach.

⁺ Garrison, D. R., Anderson, T., and Archer, W. (2000) Critical inquiry in a text-based environment: Computer conferencing in higher education. The Internet and Higher Education, 2(2-3): 87-105.