

Does timing matter? The impact of compact versus paced learning in a specialised tertiary hospital pre-registration pharmacist training course

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Introduction

KK Women's and Children's Hospital primarily manages obstetrics, gynaecology and paediatric related cases. For the NUS pharmacy graduates, caring for these specialised population may be novel to them.

With a shortened 6-month pre-registration training duration due to a new university curriculum, coupled with the increased healthcare strain during COVID-19 pandemic, it was imperative to optimise the training program's effectiveness and efficiency.

Traditional training method:

- Pre-Registration pharmacists were rotated in pairs to ambulatory care, paediatric acute care, and obstetrics and gynaecology (O&G) acute care.
- Small group introductory discussions were conducted by pharmacists in respective sections.
- This reduced the time for learners to undergo active on-the-job training, and skills application at higher levels as defined in Anderson and Krathwohl's taxonomy¹ (Figure 1).
- Trainers also had to repeat the same discussion up to 6 times throughout each cohort of trainees.

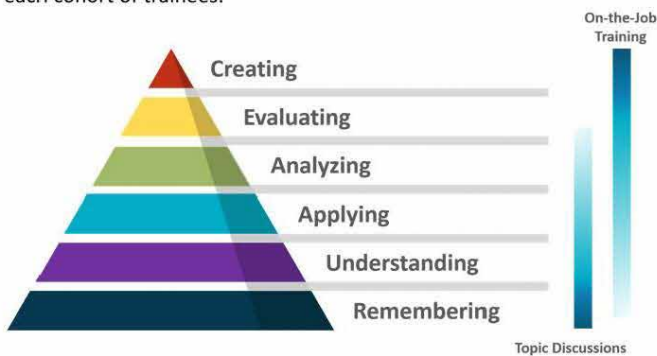


Figure 1. Levels of educational objectives proposed by Anderson and Krathwohl.

Hypothesis: Compacting these discussions into a 2-week duration at the start of the pre-registration training will increase training efficiency without impacting performance outcomes.

Methods

The training programme was revised for the June 2020 cohort of pre-registration pharmacists, to include a consolidated 2-week introductory discussion series prior to sectional rotations (Figure 2).

Effective study techniques were also incorporated. These include:

- Retrieval practice and spaced repetition²
- Priming effect to augment retrieval
- Collaborative learning to reflect the real-world multidisciplinary healthcare setting³



Figure 2a. Introductory topic discussions done at respective section for every new pair

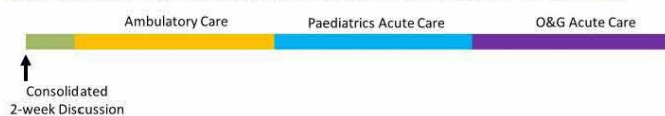
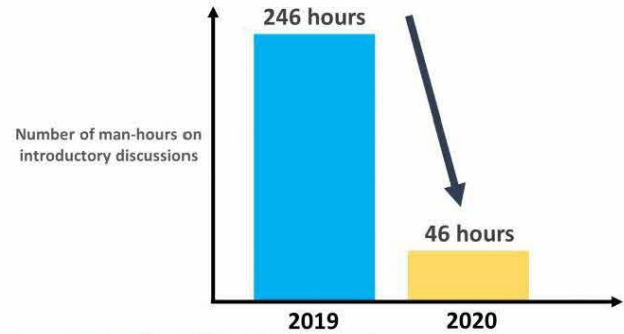


Figure 2b. Consolidated 2-week introductory topic discussions done at the start of pre-registration training

Results

1. Compact training increased efficiency in training.

- Decrease in man-hours on introductory discussions, allowing more time for active learning and application during on-the-job training.



2. Compact training did not increase burnout.

- All trainees agreed that the cognitive load was manageable and had sufficient rest.
- 75% of the trainers agreed that learners were adequately prepared for their sessions.

3. Compact training was not observed to affect mean topic assessment scores.

- No statistically significant difference between mean topic assessment scores of learners from 2019 vs 2020.

Epilepsy



Asthma



Pneumonia



Gastroenteritis



■ 2019
■ 2020

*Mean topical scores were compared using unpaired t-test.

Conclusion and Limitations

The 2-week consolidated introductory discussion series optimised trainers' manhours involved, and allowed higher level learning amongst learners, without increasing learners' burn-out nor impacting performance outcomes.

In future runs, we plan to equip pharmacists with skills on incorporation of effective study techniques when conducting sectional trainings. More components of active learning, rather than passive transfer of information, will also be encouraged during the discussions.

This project does not address confounders such as inter-trainer variability and trainees' individual baseline competence.

References

- 1 Anderson, L.W. and Krathwohl, D.R. *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman; 2011
- 2 Phillips JL, Heneka N, Bhattarai P, Fraser C, Shaw T. Effectiveness of the spaced education pedagogy for clinicians' continuing professional development: a systematic review. *Med Educ*. 2019;53(9):886-902.
- 3 Carstensen SS, Kjaer C, Möller S, Bloksgaard M. Implementing collaborative, active learning using peer instructions in pharmacology teaching increases students' learning and thereby exam performance. *Eur J Pharmacol*. 2020;867:172792.

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