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Australian specialty training research curricula focus on trainees leading research, rather than using it or participating in it. Research curricula also lacked constructive alignment, and do not mandate adequate research development and project supervision.

Are college mandated research requirements for trainee doctors incentivising research waste?

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BACKGROUND. Patients do better in research-intense environments.¹ The importance of research is reflected in program requirements of specialist trainee doctors globally. We had observed trainees conducting projects of wide-ranging methodological quality, and express significant pressure to complete projects quickly to gain fellowship. Anecdotal evidence led us to believe that specialist college curricula requirements were driving trainee research behaviour and was therefore an important target for systematic study.

AIM. To systematically explore the intended research curricula of Australian trainee doctors as described by specialist colleges, their constructive alignment, and the nature of scholarly project requirements.

METHODS. Content analysis of publicly available Australian specialty training college research curricula, including websites, curricula, handbooks, and learning and assessment-related documents.

To assess **constructive alignment** (FIGURE), data were coded as learning objectives, activities, or assessments; and by:

- **Research domain** (Glasziou's triangle²): using, participating in, or leading research, and
- **Competency** (Bloom's Taxonomy³): remembering, understanding, applying, analysing, evaluating, creating.



To further explore **research requirements** (TABLE) learning and assessment activities were coded by type (formal research training, thesis, etc.), if it was linked to a scholarly project, and the project supervisor's required level of research experience. Activities were also classified as mandatory, or part of an option-based or points based system.

CONCLUSION. Colleges place emphasis on leading research and research deliverables, but not formal research training and guidance from research experienced supervisors. **This may be contributing to research wastage in medical research.**

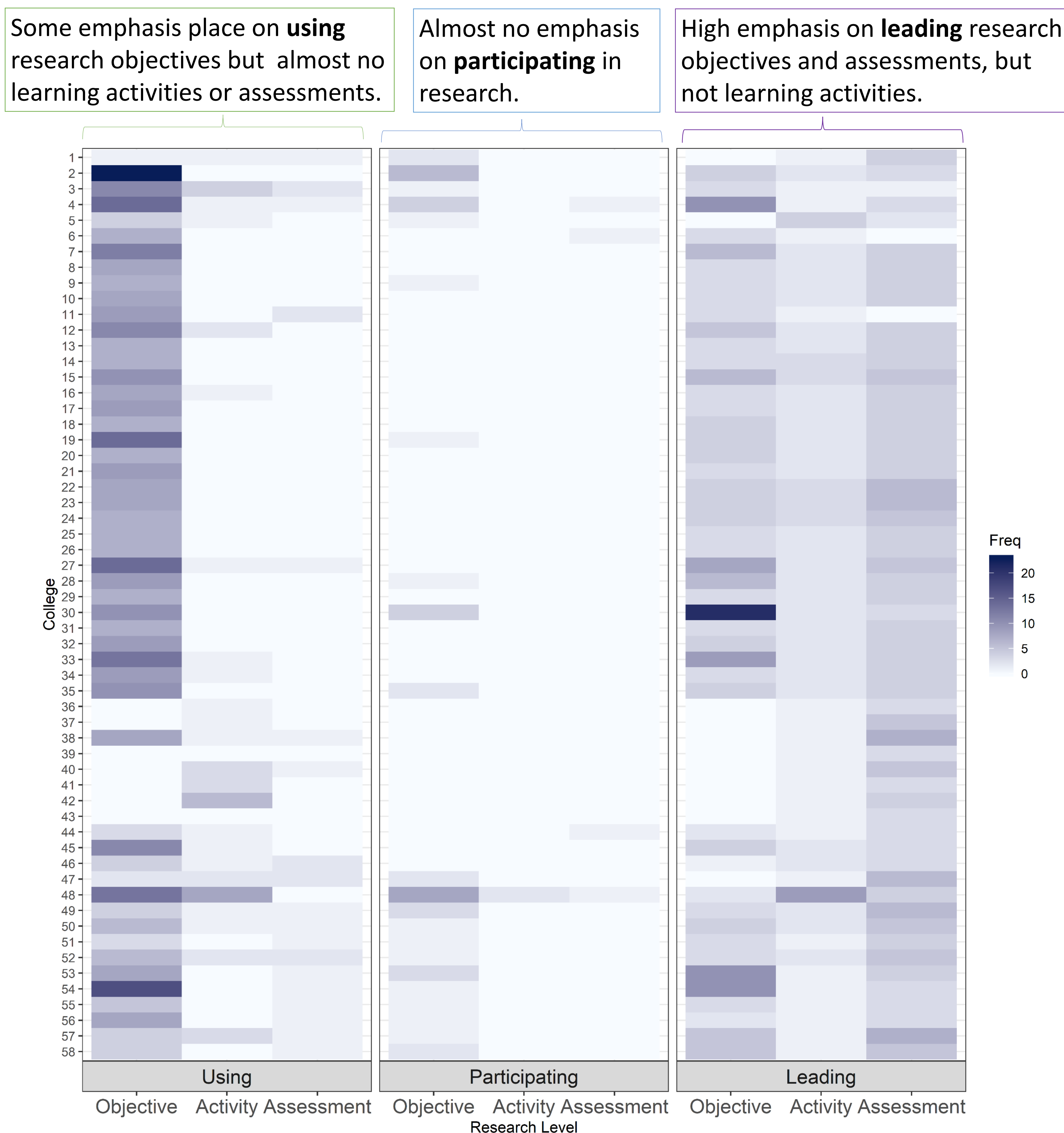
Future work will look to quantify outcomes of enacted curricula, including quality of trainee research outputs and their subjective experiences.

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 1. Jonker L, Fisher SJ. The correlation between National Health Service trusts' clinical trial activity and both mortality rates and care quality commission ratings: a retrospective cross-sectional study. *Public Health* 2018;157:1-6. doi: <https://doi.org/10.1016/j.puhe.2017.12.022>
 2. Del Mar, C. (2001). "Publishing research in Australian Family Physician." *Australian family physician* 30(11): 1094.
 3. Krathwohl, D. R. (2002). "A Revision of Bloom's Taxonomy: An Overview." *Theory Into Practice* 41(4): 212-218.

RESULTS.

FIGURE: There was a lack of **constructive alignment** across college research curricula.



Objective = learning objective; Activity = learning activity; Assessment = assessment. Colleges are enumerated but not identified by name in the vertical axis of Figure. Higher frequency counts for documents that mapped to the relevant domains are represented as darker shades in the heat map. The legend provides numeric calibration. The colleges differed in documentary detail, hence vertical (between-college) comparisons will be affected by this. Horizontal (within-college) comparisons are likely to have greater validity. For alignment across Bloom's Taxonomy see: <https://tinyurl.com/TraineeCurricula>

TABLE: Research requirements focused on outputs rather than developing researcher capabilities.

- 55 of 58 Australian colleges required trainees to complete at least one scholarly project
- 10 required formal research training
- 2 required a research-experienced project supervision.
- Most learning and assessment activities were affiliated with completing a scholarly project (see <https://tinyurl.com/TraineeCurricula>).

N = 58	Yes (a)	Yes (b)	Yes (c)	Optional	No/ NR
Scholarly Project	51	1	3	1	2
Research Training	8	1	2	31	16
Experienced Research Supervisor	2	-	-	30 (d)	24(e)
Publication as first or second author	4	10	5	2	35
Publication as any author	5	10	6	31	4
Conference presentation	8	5	7	27	9
Thesis	38	6	3	-	9

(a) Mandatory: requirement had to be fulfilled to gain fellowship; (b) Option based system: requirement is one of several mandatory options and trainee needed to fulfill at least one option; (c) Points based system: requirement carried a pre-specified number of "points" where trainees must accumulate a certain number of "points"; (d) Encouraged (rather than optional), (e) 12 stipulated project supervisor requirements (e.g. college fellow) but did not mention research experience, nine did not provide any description of the characteristics of the project supervisor, three did not mention a project supervisor anywhere in the publicly available documents.

Project Page:



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https://osf.io/a6kr5/?view_only=13cf3220cb4e4fd1bede1275c9de34d3

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