

# Online teaching materials and medical student impressions of general practice: Lots of rules and guidelines?

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## Background and objective

Little is known about how didactic online learning materials curated by general practice faculty influence medical student impressions of general practice.

## Methods

Individual interviews and focus group discussions with third- and fourth-year University of Queensland medical students, who had completed their general practice placements, explored student engagement with course materials, and impressions of general practice. Overarching themes were determined by constantly comparing theoretical memos with original data and descriptive codes.

## Results

Student decisions whether to use materials were based on perceptions of examinability, efficiency, relevance to their placement and teaching from other specialities. Guidelines (although useful for learning) conveyed the impression that general practice was more algorithm-driven, 'prescriptive' and defensive than other specialities, reducing its intellectual challenge and attractiveness.

## Discussion

Online learning materials contribute to student impressions of general practice. Faculty should signpost the value-add of general practice knowledge, anticipate apparent misalignment between observed practice and formal guidelines and include other learning materials that better convey the clinical acumen of general practice work.

**IF AUSTRALIA'S MEDICAL PRIMARY CARE WORKFORCE** is to meet population demands into the future, more medical students must come to see general practice as an attractive career choice.<sup>1,2</sup> Student experiences of high-quality general practice placements, and of inspiring general practitioner (GP) and GP trainee clinical role models, have an important positive influence on their choice of general practice as a career.<sup>3</sup> General practice faculty (henceforth referred to as 'faculty') in Australian medical schools can also showcase the discipline of general practice through learning activities and teaching materials that complement the students' placement-based learning. These teaching materials include online resources curated by faculty to guide students' personal self-directed learning.

In a recent review of faculty curational behaviour in higher education,<sup>4</sup> curation was defined as the collection, evaluation, selection, arrangement and presentation of didactic learning materials, either created by faculty or recycled (and often adapted) from open educational resources.<sup>5</sup> Faculty typically aim to provide reliable, high-quality materials that are a good fit with student learning needs and intended learning outcomes,<sup>4</sup> guided, in part, by assumed student preferences about format and presentation.<sup>5</sup> Curation is known to be time consuming for faculty.<sup>4</sup> Recent theories of open educational practice view materials curated by faculty as jumping-off points for student learning, rather than as prescribed materials, recognise that students are best placed to determine their own optimal personalised mix of learning resources.<sup>5</sup>

Recent literature has highlighted the limited empirical research and insight available into faculty curational behaviour and intentions, including how faculty add value and meaning as they arrange, refine and structure the selected materials.<sup>4</sup> There is also limited understanding of student preferences for these materials, or how students draw meaning from them.

Our aim was to build on this literature, with the goal of curating online materials that engage students and are useful for their learning, and that showcase the scope, meaning and value of general practice. We also sought to understand any influence of these materials on student perceptions of the attractiveness of general practice as a career choice.

- The research questions were as follows:
- How and why do students on general practice placements engage with online learning materials curated by general practice faculty?
  - How does this engagement influence student impressions of general practice and their career intentions?

## Methods

### Setting

The University of Queensland places all third-year medical students in individual six-week general practice placements. The general practice course also includes weekly small group tutorials facilitated by faculty, a summary of the key learning issues for each week and a suite of online learning materials presented in folders on the Learning Management System for students' personal asynchronous study. Materials are regularly revised and updated, and include clinical articles from the *Australian Journal of General Practice*, online lectures developed by general practice faculty, evidence-based guidelines and summaries, quizzes and some interactive clinical cases. Table 1 provides a summary of the folder topics. The investigators are general practitioners and share the responsibility for curating these online materials.

### Participants

Third- and fourth-year medical students who had completed the general practice course were invited to participate in the

study through fliers distributed in student common rooms and study areas. All students expressing interest were emailed participant information and written consent forms. Care was taken to manage potential power dynamics between investigators and students by delaying recruitment until all course assessment had been completed (except for end-of-semester multiple-choice written examinations).

### Data collection and analysis

The authors conducted one-on-one face-to-face interviews at a desktop or laptop screen with access to the online course site. Students drove the mouse or touchpad to demonstrate and talk through how they had engaged with online course folders and learning materials. Interviews were videorecorded as Zoom meetings with a shared screen function. Mini focus group discussions<sup>6,7</sup> with all participating students were also held either immediately before or after the interviews. The focus group guide included prompts about the perceived utility of materials and student learning strategies, with increased focus on impressions of general practice in later groups. This paper focuses on the perceived utility and impressions of general practice. Students were given explicit encouragement to be constructively critical of course materials. Focus group and interview recordings were transcribed professionally and anonymised.

All authors read a minimum of five transcripts in full. One author (NS)

completed line-by-line descriptive coding of all transcripts, generating coding categories inductively, using Atlas.ti. The authors discussed provisional findings and overarching concepts over six face-to-face meetings, capturing theoretical memos on whiteboards and constantly comparing provisional themes with original data.

Ethics approval for the study was obtained through The University of Queensland (2021/HE002195), with written consent obtained from all participants.

## Results

Four focus groups (mean duration 38 minutes; range 33–45 minutes) and 13 individual interviews (mean duration 23 minutes; range 11–42 minutes) were held face-to-face with a total of 13 students between November 2021 and November 2022. Saturation was approached.<sup>8</sup> Findings are discussed below under two headings: student engagement with general practice materials; and student impressions of general practice. Illustrative quotations are presented as either 'I' (interview participant) or 'FG' (focus group) with each participant (P) deidentified with an individual numerical code.

### Student engagement with general practice materials

Student approaches differed between individuals, but all made purposeful decisions about whether to engage with faculty materials, to avoid 'getting completely swamped with the resources' (I10). Material that students did not consider to be 'high yield' or 'need to know' was typically skimmed briefly or not read at all. In evaluating whether to engage with material, there were three key considerations: the efficiency of extracting material that was likely to be examined; relevance to learning on their general practice placement; and whether the content was taught in other parts of the medical program. Many students were reluctant to engage with resources written several years earlier, and several commented that quoting out-of-date information exposed them to losing face in front of peers, patients and general practitioner teachers.

Students described various features that suggested materials were likely to be assessed, including the perceived effort that

**Table 1. Summary of online learning materials curated by the general practice faculty at The University of Queensland for 2022**

Week	Learning folder topics
1	Cardiovascular and respiratory health; The Australian healthcare system
2	Women's, men's and sexual health
3	Aboriginal and Torres Strait Islander health; Social determinants of health; Mental health; Fatigue; Endocrinology
4	Paediatrics and skin medicine
5	Aged and palliative care; Pain management; Musculoskeletal medicine
6	Refugee health; Gastrointestinal health; Headache; Emergencies in general practice
Additional folders	Ethics materials; General Practice Faculty original research; Radiology

faculty had made to provide the resources, and how easily multiple-choice questions based on the material could be written. Students frequently described skimming over materials to extract important information for exam revision. Examinability and efficiency were major drivers of student engagement, but are not discussed further here.

Students also engaged with materials in order to learn more effectively on their placements:

*I need to know what to study for the exam. But I think I also want to know what will be clinically relevant for my placement so that I can get the most out of (the) placement. (I10)*

However, the unpredictability and broad scope of general practice consultations made study difficult to align with their placement:

*You can't always see the pathology that you read about, so it's harder to, like, consolidate it. (FG1, P1)*

Students were aware that different general practices had different patient demographics, and that they also needed to know about conditions that they had not encountered on placement.

Students also engaged with materials in order to maintain impressions of competence and avoid 'being exposed, having massive gaps' (I13) in their knowledge in front of general practice teachers and patients:

*If I got asked about the topic by my GP or a patient, knowing the big topics more made me feel a bit more confident as well. Yeah, so I think that's a big thing for students. (I18)*

Students engaged only cursorily when they believed they already had sufficient knowledge of topics due to previous teaching in the medical program; one student, for example, described 'not really go(ing) into the mental health resources for GP' because they felt that it was 'all covered in psych(iatry)' (P2). Other topics on which some students described sufficient teaching previously included general cardiovascular and respiratory medical topics (described by one student as 'covered to death' [I13]), ethical issues, Aboriginal and Torres Strait Islander health and social determinants of health.

Students also described engaging relatively superficially with topics when they assumed that they would need to learn more detail and depth in other specialist placements. One student commented that:

*But I guess knowing that it's also general practice, you're not meant to like kind of drill down into the nitty gritty and like the specialist kind of level, um, management. But you kind of want to know guidelines and what a GP would do when they see something coming through the door... (FG4, P1)*

However, another student was atypical for participants in noting that general practice offered a different lens on clinical conditions previously encountered in other placements:

*I think it was interesting learning about, like, just a different aspect to some of the things that I'd seen before, like more the long-term aspects ... Coming from mental health and, like, all the acute patients, now also my GP managed a lot of them long term, and you would see different aspects of that which I thought was very interesting. (FG1, P2)*

Students generally commented that the materials with which they had engaged were useful for their learning, and appreciated the efforts of faculty in curating these. Students liked the weekly folder structure, and largely followed this in their engagement with the materials. Many students reported not opening materials placed outside the weekly structure, such as folders containing ethics materials, general practice research and radiology, except for the key learning issues document.

Students appreciated pragmatic materials with explicit implications for practice. Several students commented that clinical flow charts and summaries were useful, including algorithms for diagnosis and management, and guidelines for screening and other preventive activities.

Students were sometimes informed by other specialities that topics would be covered in general practice:

*'The GP will follow up and investigate (insomnia), so don't worry about it.' That's the kind of hospital chat around it. So pretty important I think, to have in GP. (I13)*

### Student impressions of general practice

Students emphasised that their experience in general practice placements and the attitudes of their GP supervisors had a much greater influence on their career intentions than the online materials provided:

*I know everyone is trying to figure out why students don't want to do GP, and I think nothing you guys do with this course is going to make that difference, unfortunately ... this course is great, it is not a course issue ... it is very different to other aspects of medicine where your team is really enthusiastic, and your registrar is trying to convince you to do what they do, and then you come to GP and the GP is like, 'Don't ever do this.' (FG3, P2)*

However, students commented that faculty materials highlighted the diversity and breadth of general practice, increasing its appeal:

*The resources are good and it makes, it does make (general practice) seem more appealing, I think, because you see all these different things ... and you're like, oh, this would actually be really interesting, um, and I guess you do need to know it all, it's just you won't see it all necessarily on your rotation. (FG3, P1)*

One student commented that the broad scope of materials was misleading, and several students noted a misalignment between the practice of their GPs and the materials they were studying to pass examinations:

*I think the resources make it seem more interesting than it was ... in practice there was nowhere near the scope that you get in the resources, and often the management of what you should do isn't quite what happens in real life. (FG3, P3)*

This student also commented that the materials gave the misleading impression that general practice care was often lifesaving, which contrasted with her experiences on placement:

*The resources make me feel like GPs save lives on the daily ... but when I was speaking to my GP, he was like, 'Oh, yeah, lots of the time we don't really do anything for our patients, they*

*just get better on their own, and you have to just accept that.’ (FG3, P3)*

Several students commented that the prevalence of guidelines in the materials gave the impression that general practice was more algorithm-driven, ‘prescriptive’ and defensive than other specialities, which reduced its intellectual challenge and interest. This was despite seeing GPs departing from guidelines on their clinical placements:

*Q: What kind of an impression do our resources give you, if any?*

*P1: Rules. (Laughs) Lots of rules and guidelines ... more formulaic I suppose. ... It feels like there’s not as much room for clinical judgement – it feels more, I suppose, defensive compared to other specialities. I dunno. That’s just my impression of it.*

*P2: It seemed, like, almost every decision you’re making there is a guideline you could find and follow ... like, if I was a GP, I’m not necessarily making decisions, I’m just, like, knowing where to find the resource that tells me how to make my decision. ... I do understand there is, you know, a lot of your own judgement because, like, definitely my GP didn’t always follow the guidelines. Like, most of the time he would, but if he ever deviated it (sic), he’d explain to me and, like, it would make sense where his judgement is coming in. (FG1)*

Students commented on the emphasis on communication and relational skills in general practice, noting that ‘GPs are in a really critical place’ to have difficult conversations, and valued ‘genuine practical advice around how to go about those really difficult consults’ (FG1, P1). They appreciated learning tips for talking with patients, including patients who were distressed:

*Like how to be emotionally safe, even like phrases and stuff to use ... some of the patients I would see on my own, and they would tell me these horrific life stories. ... I didn’t really know what to do with all of that information ... I was quite overwhelmed ... Nowhere in med school did they talk to you about how to deal with those situations, and how to be, you know, supportive to*

*a patient, but without taking it on board yourself. (FG2, P2)*

Students commented that general practice teaching tended to be patient-facing rather than disease-oriented, and found this useful to build on previous learning:

*The GP curriculum is built around presenting complaints and ending with a diagnosis and management, and follow up, whereas every other subject so far is talking about it starting with the disease. (I3)*

This student also noted a much greater emphasis on prevention and screening (‘such a big thing in general practice’ [I3]) and ongoing patient care that reflected ‘the long-term relationship between the GP and the patient’ (I3) compared with other specialities.

## Discussion

In this research, we explored Australian medical student engagement with online materials curated by general practice faculty, and how these influenced student perceptions of the discipline of general practice, as well as the attractiveness of general practice careers. Strengths of this study include the onscreen capture of students actively retracing their engagement with materials. This active retracing was used to stimulate more accurate student recall and authentic reflection than simply relying on their unprompted memory, somewhat akin to video elicitation interviews used in clinical and educational research.<sup>9</sup> Although any technique using self-reporting does not preclude participants reconstructing or misremembering their behaviours, thoughts or emotions,<sup>9</sup> video capture (with or without think-aloud protocols) is a widely used method in industry and academic research to explore online user experience and engagement.<sup>10,11</sup> Our study was focused on general practice teaching in a single Australian institution at particular points in time. We continued to modify materials over the course of this study in response to student feedback, and other offerings across the medical program were also constantly evolving. These factors limit the transferability of specific findings about particular materials, although we believe that

findings reported here are relevant for general practice teaching more broadly.

Students must first engage with learning materials for them to be useful in showcasing the scope, meaning and value of general practice. We found that students (and, indeed, curriculum developers) might not recognise that general practice materials often afford distinctive and valuable perspectives, regardless of whether topics appear to be ‘covered’ elsewhere in a medical program. General practice faculty therefore need to be explicit about the value-add of general practice knowledge and skills. Interestingly, students are aware that recruitment into general practice is falling, and might even suspect faculty of exaggerating the scope and acuity of general practice in an effort to make it seem more attractive. Student perceptions that actual practice might depart from formal recommendations should be anticipated and explicitly discussed; indeed, a misalignment between practice-based and ‘textbook’ learning is a well-known phenomenon in vocational learning.<sup>12</sup> We were surprised that some students perceived general practice to be driven defensively by algorithms and rules to a greater extent than other specialities, so that it had almost become devoid of clinical judgement and intellectual challenge, and perhaps a rather risky business medico-legally. We had deliberately included evidence-based guideline summaries and flow charts in response to previous positive student feedback about the value of concise, well-structured materials; however, our findings show that general practice faculty need to articulate the role of guidelines in guiding rather than determining management for individual patients, and balance evidence-based guidelines with other materials that better convey the challenges and rewards of skilfully diagnosing, managing and responding to patients in our context. Faculty might also consider reminding students that materials written some years ago are not necessarily out of date, and that materials are jumping-off points for further study rather than information to be learned by rote.

These findings prompted us to reflect on the value of our investment in curating these materials, particularly given advances in generative artificial intelligence and an already crowded online open education space.

We agreed that faculty curation has a pastoral aspect, showing care and respect for students by helping them learn efficiently and manage information overload. We also reflected that careful faculty curation does, indeed, signal value and meaning, and remains an opportunity to present the craft of general practice and the generalist skillset in a positive light, or at least temper negative perceptions and foster respect, even if it is not the major determinant of career choice. It will be important to continue to explore the objectives and impacts of general practice faculty online didactic materials as artificial intelligence changes both clinical and university learning environments across all areas of medical education.<sup>13</sup>

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