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ENHANCING STUDENTS' LEARNING THROUGH SIMULATION: DEALING WITH DIVERSE, LARGE COHORTS

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Highlights

- As the field of healthcare simulation matures, new questions about pedagogy are emerging.
- The challenges of large and diverse student cohorts need to be accounted for when planning and delivering simulation experiences.
- Consideration of: informal learning, clinical judgement and sociomaterial pedagogies within simulations enable active participants and observers to become attuned to professional practice.
- Greater utilisation of students' noticing skills, particularly from those observing simulations, offers great potential for students' learning and professional practice.

Key points

- Learning frameworks are an essential element of planning and delivering healthcare simulations
- Specific strategies can be developed to provide 'intimate' simulation experiences for large and diverse student cohorts
- Attuning observers to become 'active' in the simulation and debrief helps with engagement in learning about practice

Introduction

The use of simulation in healthcare education has undergone rapid growth over the last two decades, driven by advances in simulator technology (Rosen, 2008), emphasis on patient safety and, in some instances, difficulties in accessing adequate or appropriate clinical placements for students (Foronda, Liu, & Bauman, 2013). Early practices and research in this field focussed on skill acquisition and refinement (e.g. surgical or procedural skills; teamwork; and, communication) (Kneebone, Nestel, Vincent, & Darzi, 2007; Sedlack, Baron, Downing, & Schwartz, 2007). Emergency resuscitation or operating room crisis situations have been a key focus, reflecting priorities in medical education (Miller, Crandall, Washington, & McLaughlin, 2012). Effective simulation pedagogy in nursing requires a broad range of clinical contexts and scenarios, to develop holistic elements of practice and professional behaviours distinctive to nursing, and expected by others in healthcare settings. The

overall aim of providing simulated learning experiences is largely understood to rehearse and enhance clinical practice and – in subsequent practice – to reduce clinical errors and improve patient outcomes (Fransen, Banga, van de Ven, Mol, & Oei, 2015).

Early frameworks and guidelines for developing and delivering healthcare simulations have provided clear direction for practice and evaluation (Gaba, 2004; Jeffries, 2007). However, as the field matures, new questions about the pedagogy of simulation emerge. These present challenges to research as well as to nurse education practices. Fidelity in simulation is now described in terms of the environment, scene and emotional impact rather than just the simulator or equipment (Tun, Alinier, Tang, & Kneebone, 2015). This has implications for how we investigate and deliver effective simulation pedagogy, how we conceive effectiveness, and how we make decisions about investment in simulation infrastructure. Norman (2014) suggests a need to explore new educational concepts, and to address the issue of cost effectiveness.

In this paper we explore two linked challenges that speak to these wider concerns: student diversity and large cohorts. We frame these within contemporary simulation practice and research, and develop an agenda that will help simulation in health care 'come of age' (Norman 2014). Simulation now serves diverse purposes and existing guidelines and protocols do not necessarily meet nurse educators' needs. We make reference to undergraduate nursing education in an Australian context as a means to illustrate how broader challenges take hold, and to provide concrete examples of how responses to them are emerging.

Diversity of learners

As nurse education becomes increasingly internationalised, and responds to changes in professional qualifications frameworks, educators must confront both the problem and potential of diverse learners. Nursing education increasingly seeks to address culturally diverse students, both as a result of globalised higher education, but also as part of a 'pipeline' that produces a diverse nursing workforce for a culturally diverse population. This is manifest in Australia, with an emphasis on particular regions as sources of international students (South East Asia particularly China, Vietnam, Taiwan, Philippines) (Jeong et al., 2011; San Miguel & Rogan, 2009). Across different cohorts, students may have differing levels of prior clinical experience. This is compounded by diversity in terms of students' country of origin, their language, education histories, and practice cultures. Additional challenges emerge relating to students' expectations of their role, that of tutors, and the nature and purpose of peer interaction, questioning and answering.

Reflecting these broader trends, the University of Technology Sydney offers its Bachelor of Nursing (BN) degree to recent school leavers or mature aged students, enrolled nurses (who have had one

year of technical college training including clinical experiences), and graduate entry students who already possess a Bachelor degree. The latter two groups undertake a 2-year accelerated program of study. International students may be enrolled in either the 3-year or 2-year program depending on their prior experiences and qualifications. For example, registered nurses from neighbouring Asian countries who seek to upgrade their qualifications are most often enrolled in the 2-year accelerated program. This often accounts for up to a third of new enrolments.

At a university level, the *International Unit* provides wide ranging support for students from course inquiry through to commencement, whilst at a Faculty level the *Director of International Activities* offers specific local support to this group of students in managing and assisting students to progress through their program of study.

The complexity and diversity of all these student cohorts presents challenges of offering appropriately structured learning activities that take account of and build on their prior work and life experiences. Because simulation acts as a bridge between the classroom and the world of practice, it must account not only for students' varying expectations but also of their educational experiences and clinical practice. Asian students generally prefer transmission of knowledge through reading textbooks and attending lectures, are reticent to ask questions of or challenge the teacher (San Miguel & Rogan, 2009) and search for the right answer rather than an appropriate response (Jeong et al., 2011). Hence participating in contemporary educational strategies such as group work and simulations challenge their traditional norms and expectations. Further, many international students prefer to observe rather than participate (Jeong et al., 2011) which poses additional challenges when facilitating simulations (Kelly, 2014).

Overall, the diversity of learners in our programs presents multifaceted challenges. They, and their particular needs, must be accounted for within curriculum design and specific learning activities, including simulation. A particular curricula strategy to support international students is the *Clinically Speaking* program (Rogan, San Miguel, Brown, & Kilstoff, 2006; San Miguel & Rogan, 2009). Students who are deemed to require development of their English language skills undertake the program run by a university language expert and a local academic. Activities incorporate small group face-to-face sessions, viewing audiovisual vignettes of clinical facilitators and previous students interacting with 'patients' (role played by actors) and rehearsing clinical conversations with their peers and teachers. The aim of the program is to enhance students' communications and interactions with staff and patients whilst on clinical placement to support students' progression through the nursing program.

Large cohorts

Many countries are witnessing growth in student nurse enrolments. This is particularly so in Australia, and is reflected in our own institution where cohorts reach 650 students, totalling nearly 1,900 across the three year BN program. Such growth puts pressure on staff (the program's staff:student ratio often approaches 1:30 for laboratory classes) and infrastructure. Simulation laboratories are costly to build and maintain, and as simulation has been embedded across the curriculum, such spaces are under high demand. Strategies have been used to reduce the student numbers during simulation learning activities in order to offer 'active' roles within scenarios (Rochester et al., 2012). For example, in first year, students are offered small group simulation experiences (during *SimWeek*) rehearsing, enacting and observing simulations supported by an academic in ratios of 1:12 (first semester) or 1:10 (second semester). However, students may not always gain an opportunity to play the role of the nurse in some scenarios and may spend considerably more time *observing* others enacting the simulation than actually acting. The challenge here is to engage all students, particularly those observing, in the learning opportunities simulation affords. This is a growing area of interest and research (O'Regan, Watterson, & Nestel, in press).

Pedagogic frameworks to address diversity and large cohorts in clinical simulation

Three frameworks which have resonated with our work and research in simulation relate to clinical judgement, sociomaterial theories and informal learning. Each framework, and it's applicability to simulation are discussed in more detail.

Tanner's research-based *Model of Clinical Judgment* (2006) represents how nurses determine and anticipate patient care requirements and frames many aspects of the university's nursing curriculum. The model comprises four key aspects: noticing, interpreting, responding and reflecting. While it is likely to be familiar to many readers, we suggest it has untapped value in relation to the challenges outlined above. At the front end of this model is acknowledgement of what students bring to a practice situation (simulated or otherwise). Their prior work and life experiences may be similar or different to that assumed in the situation at hand.

If the *noticing* aspects of clinical judgement can be triggered within simulations, then the educational potential to develop this through interpretation, response and reflection is magnified. Diversity among students may mean that there is a pool of experiences and habits that can expand what is noticed and enrich debrief discussions. It may also mean that students require specific guidance and support to hone into or attune to salient features of practice. This *attuning* and its articulation in debriefing discussions may be inflected with challenges of cross-cultural values, communication, unfamiliarity with particular educational modes, and so on. If supported effectively, appropriate responses may transpire, or if errors in judgement ensue, analysis and reflection during the

debriefing phase can promote new awareness of more relevant responses in subsequent clinical encounters.

Although many in higher education embrace healthcare simulation as the 'new order', Dieckmann (2009) questions the generic acceptance and basic assumptions of this educational approach seeking greater understanding of how and why simulations 'work'. Hopwood et al. (2014) responded by asking 'What is being simulated?'. Drawing on a novel conceptual basis for their response, they argue that while the social and cultural aspects of simulation pedagogy are reasonably well-rehearsed, contemporary *sociomaterial* theories have not been exploited fully. Sociomaterial theories frame simulation as a fluid interplay between participants (the social), bodies (including a manikin) and materialities of clinical equipment, patient charts and so on. The key point here is that what unfolds – both the simulated practice and the learning associated with it – are both unpredictable and emergent. No curriculum design can fully fix what happens, and key to exploiting the potential of simulation is for all involved to be alert to what is emerging and respond to this with agility.

Hopwood et al (2014) link this to the challenges of diversity and cohort size. They suggest that both participants in and observers of simulations experience the scenario in multiple ways, noticing and responding to each other and the objects of practice. A sociomaterial point of view expands the horizons of such noticing and responding – for example to the manikin as a piece of equipment, and a clinical body, and a human body all at the same time. By seeing learning as following multiple emerging strands, rather than a singular set path towards pre-specified outcomes, it can enable educators to transform diversity and cohort size from challenges into pedagogic opportunities. We expand on this further (and in Figure 1).

Hager and Halliday (2006) highlight the importance of *informal leaning* and its contribution to practical wisdom and judgement. This is, again, helpful in responding to diversity and cohort size, while challenging conventional understandings of simulation as a formal learning activity. Informal learning occurs naturally and concurrently with practice, often in unplanned ways. With respect to formal learning, curricula are specified and taught by designated teachers while learners are assessed or certified against pre-specified performances. Hager and Halliday (2006) show how important *indeterminate* and *opportunistic* learning is, because learners become part of the context and have to make decisions as events unfold. The fluid nature of simulation scenarios provides the setting for learners to draw on tacit knowledge, and become attuned to their values and beliefs in order to make holistic professional judgements and experience indivisualised, often unintended learning (Kelly & Hager, 2015). Such attunement varies between students whilst 'in the action' of simulation but *is* available to those in the observer role, inevitable when there are large cohorts.

Illustrating the application of pedagogic frameworks

A number of features in the universtiy's nursing program illustrate how Tanner's model, a sociomaterial perspective, and the idea of informal learning can help respond to these challenges. We share these here as a means to concretise and operationalise the ideas outlined above, and also to show how they point to areas of future development in simulation pedagogy research and practice more broadly.

Diversity in cohorts must be addressed early on so that: challenges do not fester, students have maximal opportunities to develop confidence and new attuning skills, and diversity as a positive feature of simulation classrooms is realised. To these ends, one initiative is a *SimWeek* scheduled in both semesters of the first year. These early simulations build on existing theoretical learning and focus on developing students' holistic skills for patient-centred care specifically communication and noticing skills, as strategic preparation for their first clinical practicum (6-8 weeks into their course). In other words, the pedagogy is focused on scaffolding students' ability to participate confidently and meaningfully in simulation – as active participants and observers. A 90 minute skill refresher precedes a 90 minute simulation session (see Rochester et al. (2012) for further details). Following established practices (Jeffries, 2007), pre-briefing orients students to the simulation environment and equipment, and following the simulation concludes with a facilitated debriefing. However, *additional* elements to scaffold students' learning have been incorporated to ease the anxiety often reported about performing in simulation and actively contributing to debrief discussions. The aim is to facilitate students' engagement with simulation in an agile way, so that their learning emerges with the opportunities that open up during simulation.

One of these additional elements is showing an edited video of academic staff modelling a simulation, with tutors guiding students' attention to specific professional behaviours and discourse. This also helps to reduce anxiety relating to performing in the subsequent emergent scenario, while retaining degrees of freedom for it to unfold in unique ways each time. Cue cards on lanyards worn by participants throughout the simulation provide further support without unduly scripting the event. Checklists are given to students to guide them as to what to look for when observing. In the first semester, the scenario makes fewer technological, conceptual and performative demands on students, enabling them to learn how to participate in and observe simulation, becoming accustomed to and confident in the educational intent associated with acting roles, observing peers, and contributing to debrief discussions.

In the second semester within a scenario about pre- and post-operative patient care, teamwork and greater interaction with patients and their families are introduced, feeding in more elements that help students attune and acculturate to characteristics of practice that they will experience soon afterwards in their clinical placements. By bringing clinical facilitators into *SimWeek* students are

provided with direct encounters with practising clinicians before they step into the 'real' world on placements. Their use also helps to make explicit the links between simulation and placements. What students are learning to notice here will be important for them to attune to in real wards - the questions they ask here will be important there, too.

Simulations are also embedded across the curriculum, and become progressively demanding for active participants and observers (refer to Figure 2). Detailed observer checklists are replaced with more open-ended prompts that require students to consider clinical significance, anticipate care needs, and consider what might have been done differently. This encourages students to attune not only in terms of 'seeing concepts in action', but 'seeing the action through the concepts'. The tools in these later stages require more immediate interpretation and response, and the debrief proceeds more directly to reflection. While the checklist in the first year anticipates particular features, those later on leave greater scope for emergence and require skill on the part of the debriefing tutor to harness diverse forms of attunement. The aim is to help students move from a predisposition of accepting or never questioning what they see to a position of inquiry and curiosity, through noticing what is occurring in simulation and considering alternative nursing actions and responses. To use Tanner's (2006) (Clinical Judgement) and Benner's (2014) frameworks (Novice to Expert), opportunities afforded through simulation for inquiry and reflection may advance students from a position of *novice* towards an *advanced beginner* who focuses beyond the immediate skills at hand and gains a broader perspective of their registered nurse responsibilities.

The program's benefit to diversity

Observing peers in simulation is a common consequence of large cohort sizes, and is, we argue, not fully utilised in terms of its educational potential. A pedagogy of attuning is crucial here, less occupied with fidelity, and more focused on how diverse students learn to notice and effectively share what they have noticed. Scaffolded skilfully, this augments debrief discussions in which informal and emergent opportunities to exercise professional judgement can be exposed, and collective practical wisdom drawn on to interpret, respond and reflect on what has been noticed. However, debriefing can be an intimidating space, both for active participants and for students who may not share English as a first language, or for whom what they have observed does not resonate readily with prior experience and expectations (educationally or clinically). Hence the importance of scaffolding observation. One example is to arrange observer students to work in pairs or a threesome to discuss together what each notices in the simulation then record their opinions (in words or diagrams) which may enhance insight about each other's diversity. The spokesperson can then offer the collective feedback into the debriefing conversation. The use of specific written tools or rubrics

to focus observers also helps to neutralise some of these challenges and is an area of emerging interest.

Conclusion

This paper explored responses to the interrelated challenges of simulation in contemporary nursing education, specifically the challenges presented when dealing with large and diverse student cohorts. Simulation now serves diverse purposes and existing guidelines and protocols may not necessarily meet nurse educators' needs. Approaches to address large and diverse student cohorts and consideration of the complexities that learning through simulation provides have been offered for discussion and debate. Three pedagogic approaches, clinical judgement, socio-material theories and informal learning, have been presented as relevant for contemporary simulation practices particularly for undergraduate nursing students. Illustrations of the applicability of each framework for simulation and how learning within simulation is representative of multiple emerging strands rather than constrained conceptions have been offered, highlighting the potential within each approach to develop agile learners whilst promoting students' attunement towards practice.

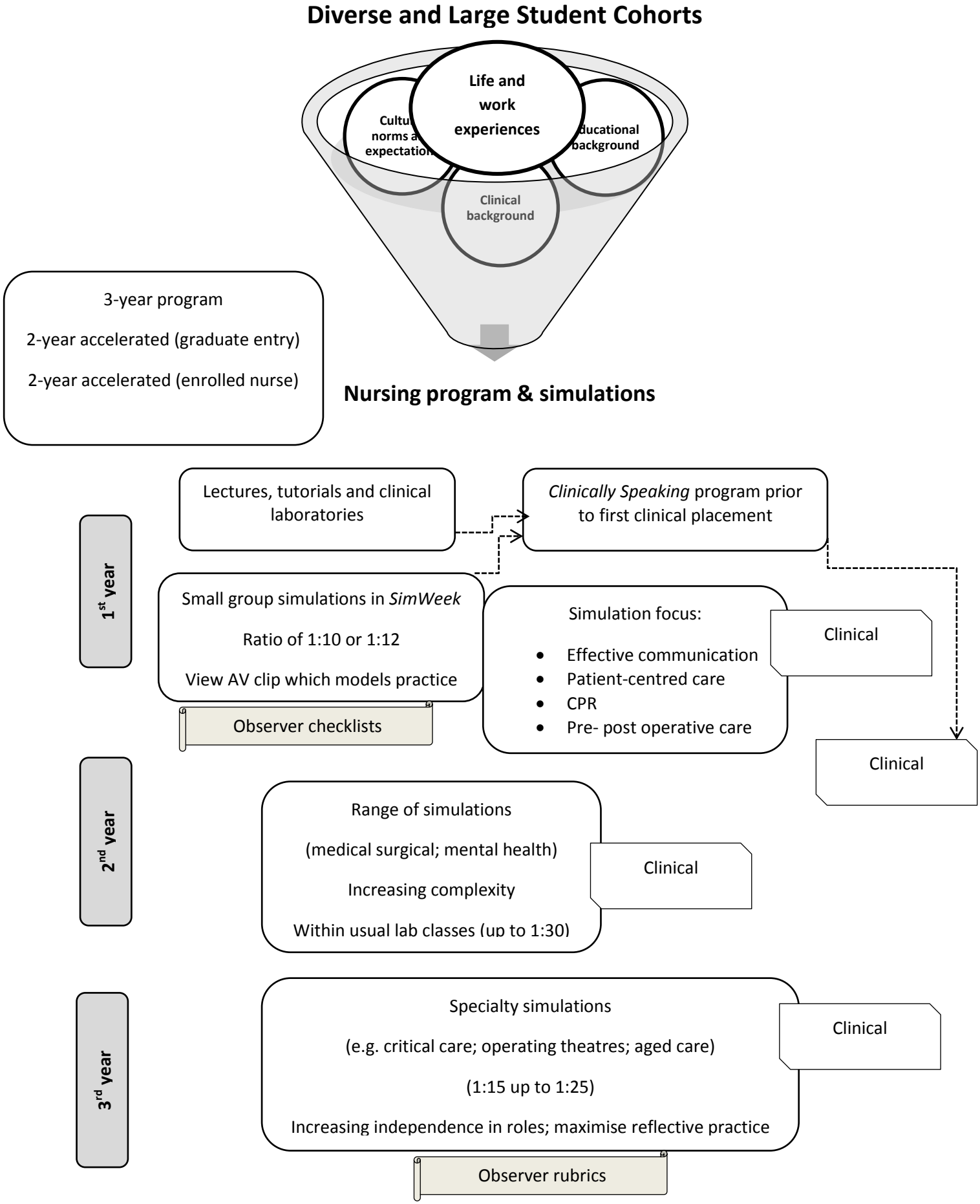

Figure 1 – Representation of the challenges and strategies to support large and diverse student cohorts

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