

SHORT REPORT

Stakeholder role in setting curriculum priorities for expanding pharmacy scope of practice

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Abstract

Globally, pharmacy education has evolved as scope of practice expands, from four-year bachelor's programmes to extended, more clinically focused qualifications. Curriculum transformation is typically led by academics then presented to expert stakeholders for confirmation and comment. This study aimed to engage stakeholders in initial curriculum design to transform pharmacy education at one Australian university. The nominal group technique was used to identify priorities for curriculum and work integrated learning. Twenty-three diverse stakeholders proposed 153 ideas for curriculum and work integrated learning across four sessions, and these were consolidated into 10 to 11 overarching statements per group and voted on. Group discussions were recorded, then transcribed verbatim followed by thematic analysis of transcripts. Priority areas included specific skills for extended scope and role specialisation, and innovative changes to work-integrated learning to ensure alignment with evolving complexity in practice. Early stakeholder participation enriched curriculum design using a sustainable approach to industry engagement.

Introduction

Globally, extending scope of practice to more clinical roles and services including prescribing, health screening and vaccination (Austin & Ensom, 2008; Canadian Pharmacists Association, 2008; Canadian Pharmacists Association, 2011; Supapaan *et al.*, 2019; Udoh *et al.*, 2020; Australian Pharmacy Council, 2022) has highlighted pharmacist value in facilitating healthcare access and alleviating health system burden (Canadian Pharmacists Association, 2008; Udoh *et al.*, 2020). Speciality roles are becoming more common for example sports pharmacy, aged care, and general practice (Canadian Pharmacists Association, 2008; Islam *et al.*, 2016; Pharmaceutical Society of Australia, 2020; Udoh *et al.*, 2020; International Pharmaceutical Federation (FIP), 2022). Internationally, pharmacy curricula have evolved beyond traditional Bachelor of Pharmacy (B.Pharm.) plus internship to longer, more clinically focused Doctor of Pharmacy (Pharm.D.) graduating entry-level pharmacists (Basak & Sathyanarayana, 2010; Canadian Pharmacists Association, 2011; Lin, 2012; Supapaan *et al.*, 2019). Key curricula changes include scaffolded integration of

complex clinical content, clinical reasoning, communication and management skills, and extended Work Integrated Learning (WIL) (Frankel *et al.*, 2014; Chanakit *et al.*, 2015; Supapaan *et al.*, 2019; Forrester *et al.*, 2021). Reported benefits include in-depth knowledge across more disease states, specialised competencies, and enhanced interprofessional teamwork (Chanakit *et al.*, 2015; Frankel *et al.*, 2014; Forrester *et al.*, 2021). Further, American and Canadian Pharm.D. graduates report higher salaries than Australian pharmacists (Government of Canada, 2023; Labour Market Insights, n.d.; The Fair Work Commission, n.d.; U.S. Bureau of Labor Statistics, n.d.).

In Australia, the value of expanding the pharmacist scope of practice (The Pharmacy Guild of Australia, 2023) is reflected in emerging roles, trials of new services (Lau *et al.*, 2017; Haggan, 2020; Winkle, 2020), and integration into clinical teams in Aboriginal health services (Wheeler *et al.*, 2018; Couzos *et al.*, 2020), general practice and aged care facilities (Pharmaceutical Society of Australia, 2020). Stakeholder feedback requesting improvement in graduate skills has facilitated curricula alignment with

more clinical international programmes (Malone *et al.*, 2021). Although stakeholder and employer input is integral to curriculum relevance and transformation (Owen & Stupans, 2012; Gallimore *et al.*, 2016; Bajis *et al.*, 2018; Porter *et al.*, 2020) insight into degree and consistency of engagement is limited (Brandon & Fukunaga, 2014).

This study interviewed diverse stakeholders to identify areas of the curriculum, and WIL considered core to an extended, more clinical Australian pharmacy qualification, then utilised the Nominal Group Technique (NGT) (McMillan *et al.*, 2016) to ascertain priorities for these areas. This paper reports the NGT results and interview findings have been reported elsewhere.

Methods

One in-person and three online meetings (Microsoft Teams) (Microsoft, n.d.) used the NGT to systematically identify and order priorities and extend the findings of 40 exploratory interviews. A working group of 13 stakeholders provided oversight and participated in one NGT session. Purposive sampling ensured diversity in pharmacy stakeholders including domestic and international graduates and representation from multiple professional areas. Participants were asked “What should experiential learning look like?” or “What should be included in the curriculum?” in the context of

a potential Doctor of Pharmacy qualification. The focus question was emailed prior to the meeting, and researchers initially presented key interview findings followed by the four stages of the NGT. Initial ideas were recorded electronically, consolidated as a group and individuals voted for their priorities anonymously online (McMillan *et al.*, 2016). Invalid scores were removed, voting scores were summed and presented as group priorities. Group discussion was recorded, transcribed, and thematically analysed using a general inductive approach (Nowell *et al.*, 2017) in NVivo software (Release 1.2 (426)) (QSR International, 2020). The first and third authors (EB and MB) independently coded then discussed two transcripts prior to team discussions confirming coding frameworks. Data analysis was triangulated with interview findings. Ethical approval was obtained from the Griffith University Human Research Ethics Committee (GU Ref No: 2022/214).

Results

Twenty-three participants proposed 153 ideas overall in four sessions lasting on average 123 minutes (range: 109-133). Two Curriculum Groups (CG), CG1 (n=10) and CG2 (n=6), identified curriculum priorities (Table I) and two Work Integrated Learning Groups (WILG), WILG1 (n=3) and WILG2 (n=4), identified priorities for WIL (Table II).

Table I: Statements, description of statement, and ranking produced by Curriculum Groups (CG)

Statement	CG1		CG2		
	Statement description/examples	Priority number*†	Statement	Statement description/examples	Priority number*
Core Competency	Therapeutics, evidence-based practice, and research	#1	Clinical problem solving	Screening and assessment, evidence-based medicine, and basic prescribing	#1
Communication	Professional communication for health professionals and consumers (verbal, written)	#2	Experiential learning	Simulation, recognise practice hours and competence, students teaching other healthcare students, rotational placements	#2
Prescribing	Team-based and specialised prescribing skills	#3	Communication	Flexible communication skills, people management, and crisis management skills	#3
Person-centred care/advocacy	Tailored health care and working with health behaviours	#3	Pharmacotherapeutics/ pharmaceutical sciences	Core knowledge of therapeutic drug management and biotechnology	#3
Practice settings and consumer needs	Working across practice geographic settings, e.g. urban / rural and transitions of care	#5	Pharmacy practice and management	Clinical software, law, health system structure, financial/business literacy, and quality assurance	#5

Table I: Statements, description of statement, and ranking produced by Curriculum Groups (CG) (Continued)

CG1			CG2		
Statement	Statement description/examples	Priority number*†	Statement	Statement description/examples	Priority number*
Cultural safety	Cultural safety in healthcare for diverse populations		Research	Research skills, e.g. for quality use of medicine, intellectual property rights	
Self-awareness and interpersonal skills	Reflective practice, capacity to mentor and be mentored		Specialisation	For key diseases or practice areas	
Specialisation	Antimicrobial or opioid stewardship		Non-pharmacy humanities	Ethics, philosophy, and resilience	
Technology in practice	Data science, technology in practice		Innovation	Leading edge practice for adaptation to Australia	
Business development and management	Leadership, entrepreneurship, managing occupational health and safety		Multidisciplinary teams	Interprofessional collaboration and communication	
Flexibility and capacity for change	Programme flexibility to meet emerging scope of practice				

* Ordered from highest to lowest score (top five ranking prioritised), † Two invalid scores removed

Priorities for future curriculum

Eighty-five ideas proposed in CG1 (n=40) and CG2 (n=45) were consolidated into 11 and 10 over-arching statements, respectively.

Core clinical competencies, professional communication, and prescribing were prioritised. Advanced communication skills were embedded across multiple priorities including advocacy, crisis management skills (CG2), and interprofessional communication (CG1). Similarly, leadership, self-awareness and adaptability across settings and entrepreneurship were widely discussed.

“Okay, I guess further education in communication, professional collaboration in all its ways, obviously both spoken, written, through technology.” – CG1 participant

“I’m thinking of that conflict resolution. I’m sort of thinking of something like almost a crisis resolution...” – CG2 participant

Prescribing was prioritised by both groups, with emphasis on team-based or specialised prescribing curricula. Technology was discussed from different perspectives, including clinical software, data science and innovation.

Experiential or work-integrated learning

Sixty-eight ideas proposed in WILG1 (n=28) and WILG2 (n=40) were consolidated into 10 over-arching statements per group (Table II). Foundational community and hospital pharmacy WIL was prioritised, with WILG2 also prioritising rural and First Peoples’ health placements. Scaffolded placement structure was emphasised as key to consolidating skills and facilitating work readiness.

“I would like to see some development of motivational interviewing techniques and emotional IQ to be able to translate all that beautiful learning into delivery to patients.” – WILG1 participant

Proposed extension to placements included opportunities for specialisation, interprofessional and international experiences, and protected time for project and/or research skills. Opportunities for innovation and more complex WIL included remunerated placements and integrating internships throughout the programme and not at the end.

Table II: Statements, description of statement, and ranking produced by Work-Integrated Learning Groups (WILG)

WILG1			WILG2		
Statement	Statement description/examples	Priority number*	Statement	Statement description/examples	Priority number*†
Placement structure	Clear structure, guidelines and goals for students and preceptors. Start early and gradually increase length and complexity, e.g. specialty area. Student remuneration proposed later in programme	#1	Placements	Rotational placements in core areas	#1
Work readiness	Flexible communication, business skills and more autonomous practice later in the programme	#2	Interdisciplinary‡	Projects with other health disciplines and specialities within the programme	#2
Prescribing	Gradually work towards autonomous prescribing	#3	Research	Time for placement research projects	#3
Foundational training	Placements within core areas of pharmacy e.g. rural, hospital, community, aged care	#4	International experiences	In pharmacies or health organisations that count towards placement/intern hours	#4
Projects	Individual and interprofessional projects e.g. health promotion	#5	Specialisation	Placement within specialty area	#4
Digital health	Awareness and use of digital charting, telehealth		Lab or clinical practicals	Practical experience of these areas	
Mentoring	Developing peer mentoring skills		Aboriginal and rural health	Rural/regional placement and developing skills for cultural safety	
Complex case studies	In-depth case studies where students follow patients through a process, e.g. Medscheck.		Health technology/IT	Pharmacy software and health technology	
Specialisation	Placement in specialty areas e.g. primary care		Industry learning	Qualitative documentation e.g. protocols within industry	
Medication adherence	Adherence, communicating with and educating patients		Leadership and soft skills	Management skills for decision making beyond patient level, e.g. policy	

* Ordered from highest to lowest score (top five ranking prioritised), † Two invalid scorings removed, ‡ Terms interdisciplinary and interprofessional were used interchangeably in groups.

Interview findings aligned with group priorities to scaffold learning from foundational concepts through to specialisation, complex communication and leadership/management skills, and particularly prescribing, underpinned by practical application via placement sites tailored to those skills (Table III).

“... how you learn everything in general at the start and then later on, you go into specialise ... then you

go into internship in that specialised area.” - WILG2 participant

Rotation across core practice settings, simulation activities and peer-to-peer learning were considered key WIL components with emphasis on associated suitability of placement site, length, and structure.

Table III: Alignment with interview findings

NGT top five priorities	NGT group	Interview quote
Core competency ^a	CG1, CG2	So I think there should be all those lovely, wonderful things that we teach in the fundamental courses of chemistry and physics... We should never lose pharmacology, but we should have a strong emphasis on therapeutics. - P3
Communication ^b	CG1, CG2	There's this communication is the key always to better patient outcomes. That's why I just think that's important. - P25 I think that there's got to be greater integration of communication skills throughout the programme. - P4
Prescribing ^c	CG1, WILG1	...when I was overseas, a lot of pharmacists can prescribe medication, so if you are a Doctor of Pharmacy, I would think that there are certain medications you could prescribe and very knowledgeable about. - P28 Independent prescribing should be attached to that PharmD, so when they finish and then they get that final internship to practice, full registration, they should be able to have that extra bit of things that they can do... - P30
Person-centred care/advocacy	CG1	There should be a strong focus on the customer or the patient, and their outcomes – their health outcomes. - P13 Historically, pharmacy education's been a science education... it's increasingly a patient-centred health practitioner... - P37
Foundational practice settings ^d	CG1, WILG1, WILG2	So, if we didn't have an issue with being able to place students, the first thing I would say is that you need to be able to place student in a various range of settings. - P7
Clinical problem solving	CG2	The key philosophy of a PharmD has got to be problem-solving and clinical reasoning, application of knowledge and making decisions. - P37
Pharmacy practice and management	CG2	We have a subject with the name pharmaceutical jurisprudence - I don't know what do we call it here - and that's something that includes licences, how to open a pharmacy and all the forms the law licence, the schedules, all these things. - P16
Placement structure	WILG1	So, I think early parts of the degree the answer is probably two to three-week blocks and then as the degree progressed that would steadily increase. So, I think in that final, probably in the final year of the PharmD degree it could be even a six-month placement. Really immersive, really hands on, regular feedback and mentoring from high calibre or esteemed pharmacist mentors. - P14
Work readiness	WILG1	... the PharmD programme if it offered over and above clinical skills and experience, so that the graduates come out kind of more well-rounded, ready to offer additional services et cetera in that space, that to me is the attraction. - P14
Projects	WILG1	... if there was a similar degree from the same faculty or similar and those students are in the same placement environment or they're working in the same speciality, perhaps there's a way that they could collaborate on assessment, assignment, patients. - P14 ... get them to do the data collection, a bit of thematic analysis, more analysis with statistics and using excel for statistics or [de-identified], or those different applications that we use in clinical practice. - P38
Interprofessional	WILG2	You'd work together with other students and then have that practical application working with other health professionals in your placements that you do. - P38
Research	WILG2	Whether it's 12 months of that course work and research project mixed but that course work focuses on research skills and development, and then six months of conducting a project as well. Whether it's something, sort of, like that type of model. - P31 ... there needs to be a lot more emphasis on research and getting involved in research... it might be an option sort of in fourth year where they could do like maybe a quality use of medicines project... - P32
International experiences	WILG2	... so say if my area of research is on antibiotic resistance, I would love to be able to go overseas and to the country that has the most problem with it and do a placement there to see what I can do, or how I can help. - P28 ... having some allocation of time where you can spend 25 per cent of your time away overseas or doing something that isn't necessarily part of the curriculum but that is going to develop your skills in different and unique ways, whatever that might look like. - P39
Specialisation	WILG2	... I think the more specialised placements can be towards the end ... - P21 I don't know, whether the PharmD, like we're saying, if they choose specialist areas to do certain placements or things in those final years, that means that then they come out with experiencing a specialist area, potentially. - P31

^a This reflects the two statements core competency (e.g. pharmaceuticals) (CG1) and pharmacotherapeutics/pharmaceutical sciences (CG2);^b This reflects the two statements communication by CG1 and CG2; ^c This reflects the two statements prescribing by CG1 and WILG1;^d This reflects the three statements practice settings and consumer needs (CG1), foundational training (WILG1) and placements (WILG2)

Discussion

This study extended typical pharmacy stakeholder engagement in curricula and WIL design from final review to initial elicitation of priorities to better inform targeted programme development.

Key findings highlight the importance of pharmacy graduates developing more advanced skills grounded in foundational competencies and consolidated through tailored WIL experiences to enable extended scope, specialisation, and flexibility to adapt to different roles. These skills encompass clinical, communication, leadership, and reflective practice competencies.

Participant priorities align with recent international curricula changes in Canada to develop clinical skills for prescribing, screening, laboratory test interpretation, team-based patient collaboration, and patient education as the scope for Canadian pharmacists extended (Canadian Pharmacists Association, 2011; Canadian Pharmacists Association, n.d.; Supapaan *et al.*, 2019). Communication capability, self-awareness and emotional resilience were recurring themes described as cornerstones to the teamwork, leadership, mentoring, and innovation of extended scope. This may also highlight an unmet need in current curricula and WIL.

Extended WIL was considered integral to developing these skills and participants acknowledged a need for fundamental changes, including extended, potentially remunerated placements, integration of internships, and international and specialised placements. Discussions of specialised placement reflected expanding roles in Australia and internationally, curricula specialty streams more commonly include clinical pharmacy, pharmacy management, and research (Islam *et al.*, 2016; Parsons *et al.*, 2018). In Canada, benefits of remunerated placement include enhanced professional and personal development, mitigation of students' financial pressure, and employment opportunities (Jones, 2007; Ho, 2016). Perceived challenges to any change included longstanding intern structures, impact on the workforce and resource implications of increased WIL.

Strengths and limitations

The study used the NGT to systematically explore priorities amongst a diverse sample (Mullen *et al.*, 2021). Limitations include a small sample, and potential social desirability bias in researcher-led groups and direct comparison of priorities between groups.

Conclusion

Australian pharmacy stakeholders provided invaluable input into the curriculum and WIL design at a critical time point. This study elicited rich stakeholder input, identified potentially unmet needs of current graduates, and confirmed key stakeholder priorities to facilitate the targeted expansion of curricula and WIL that aligns with current and evolving practice and promotes development of graduates with critical pharmacist attributes.

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Conflict of interest

The authors all work within the School of Pharmacy and Medical Sciences in curriculum development and delivery. The authors declare that there are no conflicts of interest.

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