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A reciprocal relationship: informing a profession’s competency standards.

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More than ever, pharmacy graduates require broad-ranging knowledge, skills and attitudes (competency) to enable them to be responsive and adaptable professionals in a rapidly changing Australian healthcare system - a system reliant on individuals working in interdisciplinary teams managing an increasing chronic health burden. These workplace competencies are declared through pharmacists’ registration requirements and the National Competency Standards Framework for Pharmacists in Australia (NCS). To ensure practice readiness, learning must be grounded in the essential competencies defined by the profession. The Tertiary Education Quality Standards Agency and Australian Pharmacy Council mandate that Australian pharmacy courses evidence that the NCS inform their curricula. Literature suggests international pharmacy curricula are also informed by competency standards. Interviews with key stakeholders were analysed using thematic analysis to offer an insight into Australian pharmacy educators’ perspectives on the current use, enablers of and barriers to use of the NCS. The authors’ resulting recommendations may prove useful in informing the renewal of the NCS and improve their usability for all members of the pharmacy ecosystem, including educators.

Keywords: Pharmacy Education, Competency Standards, Thematic Analysis
Background

The Australian healthcare system and pharmacy services are continually evolving and are influenced by many internal and external factors (Australian Pharmacy Liaison Forum, 2014; Chaar, 2015). Changes to the profession, health reforms and the opportunities and uncertainty that comes with a maturing profession (Coombes, Bates, Duggan, & Galbraith, 2011) have a continuous backwash effect on the education requirements of its future professionals. Challenges to pharmacy educators in the higher education sector include a disjuncture in the professional and higher education regulatory requirements (Stupans et al., 2014), an international push towards the Pharm D (registration at the point of graduation), sandwich or integrated experiential models (Brailsford, 2014) and market pressures due to the increased number of pharmacy schools across Australia from 6 in 2001 to 19 in 2014 (Martini, 2014).

Education of pharmacy graduates in Australia differs to that of many of our health colleagues and increasingly our pharmacy peers from other regions of the world (Brailsford, 2014). Currently, Australian pharmacy graduates do not register to practice at the time of graduation. Australian graduates must complete a one year remunerated internship in a practice site (mostly community or hospital) under the guidance of a preceptor (practicing pharmacist) whilst enrolled in an intern training program. Within this context, the National Competency Standards Framework for Pharmacists in Australia (NCS) clearly outlines the requisite competency standards for entry level pharmacy practitioners; “the skills, attitudes and other attributes (including values and beliefs) attained by an individual based on knowledge (gained through study at university) and experience (gained through subsequent practice) which together enable the individual to practice effectively as a pharmacist” (Pharmaceutical Society of Australia, 2010, p. 3).

The Global Competency Framework (GbCFv1) advocated by the International Pharmaceutical Federation Council promotes use of competency standards to “facilitate education development and capacity to meet the needs of healthcare globally” (International Pharmaceutical Federation Pharmacy Education Taskforce, 2012, p. 16). Frenk et al. (2010) promote such an approach for all health professionals. Stated professional competencies can catalyse and communicate for practice change (Canadian Pharmacists Association., 2013), provide a foundation for improved patient care, support workforce transformations to meet requirements locally and globally, provide transnational and global evidence of harmonisation of practitioner competencies and provide a profession with vision and guidance from student through to advanced practice (International Pharmaceutical Federation Pharmacy Education Taskforce, 2012). Importantly to education, competency standards offer students a mechanism to relate their studies to their workplace experiences (Eriksson, Höglund, Thomé, & Edgren, 2012).

More than ever, pharmacy graduates require broad-ranging competencies to enable them to be responsive and adaptable professionals. We believe it is imperative that pharmacy educators are engaged with the NCS and are capable of activating the NCS set by the profession within their curriculum. This must be coupled with a forward facing acuity of the external influences. A competency and evidence based educational program (International Pharmaceutical Federation, 2009) is more likely to lead to optimal alignment in product (graduates) and the workforce (health system), where increasingly “quality of higher education is the quality and relevance of its purposes” (Stephenson & Weil, 1992).

A review of the international pharmacy education literature (Nash, Chalmers, Brown, Jackson, & Peterson, 2015) revealed that competency standards such as the NCS have been
used for a number of purposes, including curriculum design, mapping and review, assessment in the form of self-assessments and experiential placements, annual tests, observed structured clinical examinations (OSCE), acceptance tests and portfolios. The review identified that the United States (US), which subscribes to the Pharm D, widely documents their use of the competency standards in the pharmacy education setting. In contrast Australia and Europe’s current use was not well documented.

There is currently worldwide endorsement of competencies across the United Kingdom, US, Canada, Singapore, Australia, Europe and other nations (International Pharmaceutical Federation Pharmacy Education Taskforce, 2012). This international acceptance, alongside mandated Australian TEQSA and APC course accreditation requirements (Australian Pharmacy Council, 2012) to evidence alignment with the NCS prompted the authors to determine if Australian pharmacy educators are utilising the NCS in their pharmacy curriculum, how they are used and the key enablers of and barriers to their use. The findings outlined here are timely providing an educator’s perspective alongside the consultation paper for the renewal of Competency Standards released in Dec 2014. The renewed competency standards are due for release in 2015 (Australian Hospitals and Healthcare Association., 2014).

**Methodology**

This paper will focus on the current role, enablers and barriers to the use of the NCS in pharmacy education raised by 14 tertiary educators (5 Heads of School [HoS], 9 Pharmacy Educators [PE]) in semi-structured interviews conducted between December 2013 and May 2014. The researcher utilised the questions (Attachment 1) which were informed by the literature as a guide, however encouraged the participants to offer insights outside of the questions.

Minimal risk ethics approval was obtained from the Tasmanian Social Sciences Human Research Ethics Committee (H13591). The researcher (RN) voice recorded and took notes throughout the interviews and wrote reflective memos at their conclusion.

The researchers explored the participant data utilising a constructivist paradigm (Creswell, 2013) and semantic thematic analysis as described by Braun and Clarke (2006). The methodological literature describes a number of approaches to ensuring consistency, validity and reliability of data (Bazeley, 2010; Birks & Mills, 2011). The researchers employed member checking, coding consistency checks as well as a second researcher for face validity checks of node structure, coding and coding rules. Reliability measures included a project log, field notes, memos and coding stripes.

All 14 interviews were thematically coded using NVivo10 software. The interview questions were informed by the literature review (Nash, et al., 2015) and led to a deductive/theoretical coding approach. An inductive approach to coding new themes naturally resulted, leading to a hybrid coding process (Fereday & Muir-Cochrane, 2006). The final themes were developed using a four step process, displayed in Figure 1;

A. Influenced by the interview questions, participants’ perceived enablers and barriers (parent themes) were arranged deductively.

B. Open coding (RN) led to inductive development of new nodes (sub themes) within each of the original parent themes.
C. Sub themes were manually grouped using ‘axial coding’ (Charmaz, 2014) into three broad themes applying a technique described by Gorra (2007).
D. Themes were summarised and the researchers applied a “usability” lens to distill and reorder the responses into the final themes.

Figure 1. Description of coding method and results.

Results

Table 1 reports the demographics of the respondents. Interviews were carried out in person (n=7) or over the phone (n=7) with Australian PE and HoS. Interviews ranged from 31 minutes to 66 minutes in duration. The participants represented NSW 5, Vic, 3, WA 3, QLD 1, NT 1, ACT 1.

<table>
<thead>
<tr>
<th>Characteristic</th>
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<tbody>
<tr>
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<tr>
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<td>WA</td>
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<tr>
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</tr>
</tbody>
</table>
The participating educators (Table 1.) were asked to define in their own words the role or purpose of the NCS. All 14 participants self-reported they knew what the NCS were. The definitions provided were consistent with that provided in the official NCS document.

To explore the current use of NCS in Australian pharmacy education the researcher then asked participants if they utilised the NCS in the areas of curriculum design and review, accreditation and assessment and the subgroups within each (Table 2.).

Table 2. Summary of current use of NCS in Australian pharmacy education.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Curriculum</th>
<th>Accreditation</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Design</td>
<td>Review</td>
<td>Self-Assessment</td>
</tr>
<tr>
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<tr>
<td>PE9</td>
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</tbody>
</table>

Key: □ NCS not used, □ NCS used/explicit, □ Unsure, □ Assessment type not utilised.
The participants also commonly utilised the NCS with their students as a reference document and within learning materials to highlight relevance of learning activities (NCS listed on the front page of assignments, unit outlines, lectures and workshops). Educators used NCS to justify the relevance of course content to students and university management and as a mechanism to reinforce an expected standard. This is exemplified in the following quote:

“We have a social worker come in and do a lot of the stuff around patients…the students have resented that over the years but we now refer everything he or she talks about to competencies so they can see that it’s relevant.” (PE1)

The barriers and enablers to the use of the NCS in pharmacy education perceived by participants were classified (using thematic analysis) into three broad themes; Quality Assurance (QA), Usability, and Intern and Profession’s Requirements (Figure 1.). With specific focus on “usability” the distilled themes provided two enablers and three barriers to the current use of NCS in pharmacy education. These are described below with example statements.

The researchers observed that comments on the current use of NCS made by HoS seemed to indicate an outwards focus on accreditation and standards, whereas PE statements were more inward facing, focused on the NCS to justify and inform their curriculum.

**Enabler 1. External mandate**
HoS participants expressed a strong awareness of the external factors that promoted the use of the NCS in their curriculum.

“(NCS provide)… a consensual framework which we can measure against....I can see where my gaps are....for external validation of defining what a pharmacy is, what a pharmacist is, it's very good.” (HoS4)

They also made reference to the current APC and TEQSA requirements to map or evidence the curriculum against the NCS to fulfil their accreditation requirements and ensure relevance and alignment with intern requirements.

“Well the enablers are that the students are required to be able to (sit the) intern exam if they're competent after one year (of practice). So there is a real professional imperative, and in terms of AQF and all of that, we are meant to reference our professional (competency) standards.” (HoS1)

“...it’s a requirement for us in our curriculum review to map our curriculum against standards.” (HoS3)

Interestingly, a few participants (PEs) highlighted the need to use the NCS to justify the curriculum to the university management, touching on the current tension between the profession’s needs and the higher education agenda.

“because it’s a professional degree, the NCS allow us to say these are non-negotiable intended outcomes, so we can justify course design” (PE5)

**Enabler 2. Common language**
HoS and PE participants also acknowledged the NCS inform curriculum through providing a benchmark for QA, gap analysis and assurance of the currency and relevance of courses and development of individual unit intended learning outcomes, content and assessment.
“We...ensure that our learning outcomes are all aligned to those competency standards...to ensure the relevance of my degree and for the students to understand that and for external stakeholders.” (HoS5)

As reported earlier the NCS are utilised by educators to justify the curriculum and communicate an expected standard (profession’s expectations) to students as well as engage students in their learning. The common language provided by the NCS throughout the pharmacy profession was seen by educators as a significant enabler to their use. In addition to providing a reference point for what pharmacy and a pharmacist should look like, a few participants felt they helped to streamline and ensure the consistency in standards of students and interns.

“One way to get the students' attention is...“Well, when you graduate and when you sit your board exams, this is where we want you to be. So we're working backwards and starting right back here...to give you a foundation”” (PE4)

**Barrier 1. NCS describe competent practitioners, not graduates**

A significant barrier from the HoS and PE participants’ point of view was that the NCS are written for use once a pharmacist is registered rather than with students, and the purpose of the degree in Australia is to produce graduates ready for the internship, not to enter practice. Some competencies were deemed unrealistic for undergraduates.

“...by the end of their degree they then go on to an intern year.... it's not appropriate for us to teach specifically to those competency standards, because the students aren't there yet.....they're not registered when they graduate.....Whereas with other degrees like physiotherapy and nursing, they're registered when they graduate” (PE4)

“The whole purpose of the degree is to generate a graduate that is fit to enter internship not to generate a graduate to enter practice.” (PE6)

A customised tool of entry-level competencies incorporating guidance on Pharmacy School and Intern Training Provider contributions exists (Advanced Pharmacy Practice Framework Steering Committee, 2011). Some participants felt it was useful for clarifying the responsibility of the SoP and that of the ITP, however this view was not held by all. To further enable the use of NCS in the education setting one PE suggested a NCS sliding scale; another envisioned guidelines to scaffold assessment (with reference to NCS) which articulate progression from introductory to final integrative assessment within the degrees.

The mismatch between the NCS (profession’s needs) and graduate attributes (university needs- which tend to be broader) also affected their usability. Participants (HoS and PE) felt alignment of accreditation requirements could be improved to reduce unnecessary duplication of workload and paperwork.

“it's not just a vocational training course..... I mean we are producing someone who has a Bachelor's degree.....as opposed to an apprenticeship....it's too restrictive just to think in terms of the pharmacy competencies in thinking about how you educate someone in a university.” (PE7)

Some participants (HoS and PE) felt the current NCS may be restricting innovation in courses and the profession more broadly as they were too conservative.

“if you're not careful that you're restricting your innovation to competencies...I might
think pharmacists could be doing x, y, z and they're not in the competencies...To me, you can see as a conservative tool on the bad side, see it as a tick box tool on the bad side.” (HoS4)

The participants (particularly PEs) felt short placements in their university courses rendered it difficult to utilise the NCS for assessment purposes (which lent themselves better to the practice setting).

“not all existing pharmacists are aware of the competency standards or understand how they are used to assess where students are…the length of placement or the situation of placement doesn’t necessarily allow them as undergraduates to be assessed against the standards.” (PE5)

**Barrier 2. Format, volume and complexity**

Volume and complexity were highlighted by some higher education participants as barriers.

“probably a hundred pages long, the length. I'm curious to know if other professions have such a lengthy document?” (HoS5)

One educator highlighted the importance of presenting the NCS in a way that makes them relevant to the user in their current context, particularly through self-assessment.

“So we've asked them to assess them with respect to standard 7.1 and 7.2, in detail though and showing evidence for each one of the elements...they hated doing that task, but afterwards they said...the medication management competencies related specifically to skills that they were finding they were being asked about in interviews for jobs. So they came back and they said I'm so glad I did that...No, apply it to their real needs, which is getting a job, their own practical needs.” (PE9)

**Barrier 3. Lack of engagement with NCS among educators and perhaps the profession**

Another common barrier cited by the participants (HoS and PE) was poor familiarity with the profession’s NCS amongst preceptors, educators and pharmacists. They suggested this, in turn, impacted on student familiarity. Participants felt increased familiarity would lead to increased and more effective use.

“there are a number of staff who are not pharmacists and they tend to be more bench scientists...I suspect that they probably don't use competency standards.” (PE4)

“...assumes that the academics have an appropriate level of knowledge about the documentation...the competency standards...but they don't know the document well enough.” (PE9)

Despite their students being taught about the NCS, this did not assure one HoS that they were likely to be upheld in practice:

“...how am I assured as an educator that when I see somebody out they're going to use it (NCS) in their practice?....the competency standards are very weak in that area......The biggest issue about competencies is not about stating them, it's about having competencies that are behaviourally focused.” (HoS4)

Other suggested enablers to the use of the NCS included improvements in individual accountability of pharmacists to their NCS, a NCS “Champion” in the education setting and
improved familiarity of all stakeholders through greater exposure. One PE felt the NCS could be utilised to encourage pharmacists to ‘give back’ to the profession in the form of service teaching and student mentorship roles.

“Well you need someone who is passionate about it. Yeah a champion of the competency standards. And a team teaching that’s passionate about pharmacy.” (PE3)

“Well an enabler would be a later commitment of the profession, attracting pharmacists to the education role. I mean we have a pool of people we use...Wouldn’t it be good if we developed the idea of service to the profession across the board, so we all did a little bit of something?” (PE6)

Discussion

The participants in this study described widespread use of the NCS in Australian pharmacy education in curriculum design, accreditation and review. NCS use was enabled by their enforced mandate, their ability to provide a common language, communicate the professions’ expectations and their usefulness as a justification instrument. These enablers also led to their utilisation within a number of learning activities, which were similar to those cited by Nash et al. (2015) in their review dominated by US literature.

The participants felt the current format, volume and complexity of NCS were a major barrier to their use, deeming them too prescriptive and restrictive and at risk of becoming quickly outdated. Other health practitioner frameworks face similar challenges (Australian Hospitals and Healthcare Association, 2014; Brownie, 2011). Revision of the NCS needs to be future-focused, flexible and adaptable for uncertain future health workforce requirements. This concern is supported in the Australian pharmacy literature (Coombes et al., 2012; Mak, March, Clark, & Gilbert, 2013) and GbCFv1 (International Pharmaceutical Federation Pharmacy Education Taskforce, 2012) with specific emphasis to positioning our future pharmacists as medication experts within patient-centred healthcare teams.

Many authors have identified the need to enhance alignment between education and the needs of industry for all health professionals (Brownie, 2011; Frenk, et al., 2010; International Pharmaceutical Federation Pharmacy Education Taskforce, 2012). The NCS renewal provides a perfect opportunity for pharmacy to ensure the NCS are harmonised with Australia’s future healthcare requirements, frameworks of other healthcare team members, global frameworks (International Pharmaceutical Federation Pharmacy Education Taskforce, 2012) and with higher education requirements. It is essential the NCS are in a format that represents the profession on a continuum (starting with undergraduates) and allows for multiple scaled applications.

Participants highlighted poor familiarity with the NCS amongst the pharmacy community as a further barrier to their effective integration within the curriculum. Rectifying this situation may best start early with students in the higher education setting. Some participants felt that the NCS must be provided to students, interns and practitioners in a format that ensures relevance to their current setting and situation. In addition an understanding of student priorities and exploring ways of bringing the NCS to life in curriculum were seen as potential strategies to increase familiarity and effective use. Student understanding of their profession’s NCS and commitment to lifelong learning must be introduced and nurtured as undergraduates (Coombes, et al., 2011; McKauge, Stupans, Owen, Ryan, & Woulfe, 2011) to ensure our advanced practitioner visions can be realised.
Participants raised the need for greater emphasis and enforcement of the behavioural component of the NCS through practice champions. Good and bad behavioural markers employed by other health professionals may also help to address this issue (Australian Hospitals and Healthcare Association., 2014). The FIP Pharmacy Oath (Char, 2015) released in 2014 and Enabler 8. Culture and Professionalism from Building upon pharmacists practice in Australia- A vision for the profession (Australian Pharmacy Liaison Forum, 2014) help to encourage a more altruistic attitude within the pharmacy profession.

Issues derived from the participant data, considered against the backdrop of Australian and International pharmacy literature, indicates four key recommendations for NCS renewal. The future NCS should:

1. Be flexible in scope,
2. Harmonise with local and global needs and higher education requirements,
3. Describe a professional continuum, and
4. Be relevant to the individual in their context.

Consideration of these recommendations could lead to improvements in the use of NCS, specifically in higher education.

Ultimately, no matter how well the NCS are re-written and utilised, the greatest barrier remains - the disjunction between the education requirements (curriculum with limited experiential placement and learning) and the profession’s future requirements. Registration at the point of graduation, endorsed by many other countries (International Pharmaceutical Federation Pharmacy Education Taskforce, 2012) has the potential to overcome many of the barriers raised by the participants. As the participants correctly identified, it is difficult to prepare graduates against the NCS (written for point of registration) when they still have a full internship year ahead. Equally, it is challenging to offer adequate opportunities for practice-based assessment against the NCS with limited placement time in the current curriculum design. Other researchers have suggested that students and interns themselves feel the current model requires a rethink (Mak, et al., 2013; Shen, Fois, Nissen, & Saini, 2014). A closer working relationship with the practice setting and the universities achieved through registration at the point of graduation could improve curriculum and practice site standards through a bi-directional influence. The literature suggests current experiential placement quality is inconsistent, does not maximise student learning and may not optimise graduates for the complex health system (McKauge, et al., 2011; Shen, et al., 2014); this perception was supported by our participant statements. Mak et al (2013) suggested a rotational scheme, providing pharmacy students with greater variety of practice sites, which is desirable to broaden their experiences and capabilities (Coombes, et al., 2011). In addition, the workforce imbalance in rural and metropolitan Australia (Health Workforce Australia., 2014; O'Reilly, 2010) could be addressed using a permanency agreement similar to that of teachers. The impact of this recommendation is likely to be much broader than its educational benefits. It may help to address current pharmacist retention issues, wasteful underutilisation of over-skilled graduates in practice (Mak, et al., 2013), as well as oversupply concerns coupled with rural and international shortages. It may provide clearer articulation pathways into structured postgraduate workplace education, capable of moving more practitioners towards advanced practice to enhance the profession’s global workforce fluidity.

The GbCFv1 was articulated to address global consistency, however inconsistency in global education of pharmacists still provides a barrier to their migration (Zeitoun, 2011).
Limitations
There is the potential for a researcher to bias their research (Creswell, 2013); sources in this paper may include the interviewer influencing participant responses and researcher’s interpretations of the data. There is potential that more coding seen at the enabler node is a result of researcher seeking positives of NCS more so than negatives or barriers in the data.

Future Work or Research
Research to practice aspirations of the authors is to ensure the voice of the pharmacy educators are taken into consideration in the re-write of the new professional competency standards. The findings add an educators’ perspective and insight to the consultation paper for the new competency standards (Australian Hospitals and Healthcare Association., 2014).

Other professional degrees may benefit from adopting a similar approach to ensure there is a reciprocal relationship between their profession, their standards and its educators.

Conclusion
There is a need to make explicit the important hinge the profession’s competency standards provide between its educators and the profession itself. This is especially important if the aim is to increase student competency, capability, adaptability and employability into the future. The 2015 renewal of the NCS offers an opportunity for refreshment and the potential to ensure their usability for all within the pharmacy ecosystem. Concurrent optimisation of pharmacy education and practice settings will ensure pharmacy graduates capable of navigating the complex health system of the future.

Acknowledgements
The dedicated pharmacy educators who participated in my research.

References
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Attachment 1. Phone Interview guide (HoS /PE /ITP Providers)

Demographics
1. Role: Hos/Pharmacy Educator/Academic Designer/Dean Learning & Teaching/ ITP Provider
2. Single Professional Organisation you most closely identify with…………………..
3. University/ITP (optional):
4. Other Roles/Qualifications:
5. Registered Pharmacist: YES/NO (* If NO go to Q 10)
6. Years of Practice:
7. Currently practising: YES/NO (*If NO go the Q10)
8. Area of Practice  Academia □  Hospital □  Community□  Other□ ………
9. Hours/week (paid)………………………Hours/week (actual)
10. Courses Offering: Bachelor/Masters/Both
11. Staff and Student numbers;

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<thead>
<tr>
<th>Position</th>
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<th>Number of Students</th>
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<tbody>
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<td>ITP</td>
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Interview Questions For the purpose of this interview I will refer to the Australian Competency Standards Framework for Pharmacists (2010) as the Competency Standards.

12. Can you tell me briefly what you understand these to be? YES/NO (* If NO go to Q15)
12a)Description………………………………………………………………………………………………………………………………………………
13. Do you use the Australian Competency Standards Framework for Pharmacists to inform to design of your pharmacy curriculum? YES/NO
If NO;
   a) Do you wish to? Yes/No
   b) No: Why not? Yes: Why?
If YES;
   a) Can you describe the use?
14. The literature describes the most common use of the Competency Standards in Pharmacy Education to include curriculum design. Of the following which do you feel you use in your course currently?
   a) Design/Review Curriculum
   b) Students Self-Assessment (e.g. Experiential placement tool)
   c) Accreditation Requirement
   d) Assessment (OSCEs)
   e) Assessment (Oral Exam)
   f) Portfolio/ e-Portfolio
   g) Other?
h) Unsure
14a) Can you describe any Barriers?

.........................................................................................................................................................

14b) Can you think of any Enablers?

.........................................................................................................................................................

15. I am familiar with the following documents/resources

<table>
<thead>
<tr>
<th>Standards/Framework</th>
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<th>Agree</th>
<th>? Unsure</th>
<th>Disagree</th>
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<td>Professional Practice Profile for Initial Registration as a Pharmacist</td>
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<td>Australian Qualifications Framework</td>
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<td>Science, Vet, Health Threshold Learning Outcomes</td>
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<td>OLT Pharmacy Threshold Learning Outcomes</td>
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<td>Pharmacy Learning Resource database</td>
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16. Have you in the past or do you currently map the curriculum to the following Standards or Frameworks?

<table>
<thead>
<tr>
<th>Standards/Framework</th>
<th>Past</th>
<th>Present</th>
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<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
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<td>Yes</td>
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<td>Competency Standards</td>
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<td>University Graduate Attributes</td>
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<td>OLT Health, Vet Science TLOs</td>
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<td>OLT Pharmacy TLOs</td>
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<td>Australian Qualifications Framework</td>
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<td>Indicative Curriculum</td>
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<td>Other</td>
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<tr>
<td>Unsure</td>
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</table>

(*If answers to Q16 all NO go to Q17)

a) What, if any software was used in the process?

b) Do you consider data stored in the software/database to be live (explanation: current and continuously updated)? YES/NO

c) Who is responsible for updating the data? Role

d) Can staff/students search database/tool? YES/NO

e) If YES, Do they:

i. Use keywords
ii. Have varying levels of access
iii. Other- describe

17. Would you have an interest in using mapping database/tool for curriculum/staff/students in future? **YES/NO**

17a) Can you describe any Barriers?

........................................................................................................................................

17b) Can you think of any Enablers?

........................................................................................................................................

(* If NO to Q17 go to Q19)

18. What do you consider to be the ideal properties of such a tool?
   a) Searchable database- keyword search
   b) Real time/live data
   c) User friendly interface
   d) Web based interface
   e) Secured database
   f) Linkage/prefill qualities= unit outlines/other docs
   g) Accessible to staff (+/- various levels of access)
   h) Accessible to students (+/- various levels of access)
   i) Reporting functionality eg. progress against standards
   j) Other
   k) Unsure

19. Would you be happy to disseminate a survey link via email to you staff & students **OR** preceptors & interns regarding their use, knowledge and acceptance of the CS and other pharmacy education outcomes? **YES/NO**

Confirm email address: