Pharmacy student professional identity formation: a scoping review

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Purpose: Transitioning from being pharmacy students to pharmacists is challenging. Students need to reconcile their professional aspirations and what they have learnt with the realities of practice. A smooth transition can be hampered when they are unable to enact the role they have envisaged or if their expectations are not met. These challenges relate to professional identity. A key challenge for pharmacy educators is how best to support the professional identity formation (PIF) of pharmacy students. To assist with this challenge, we conducted a scoping review to identify factors influencing pharmacy students' PIF and pedagogical strategies to support PIF.
Methods: In September 2018, we undertook a scoping review of all contemporary research investigating pharmacy student PIF including all relevant qualitative, quantitative, theoretical, and gray literature. We searched eight databases for the review: MEDLINE, CINAHL, PsycINFO, Embase, Australian Education Index, PubMed, Scopus, and Web of Science. Literature published between January 2008 and September 2018 was reviewed and screened using inclusion/exclusion criteria. The selected articles were charted and thematically analyzed.
Results: We included 22 articles in the review. Studies generally concurred about the importance of attending to PIF throughout the whole pharmacy curriculum. Yet, those studies reporting on pharmacy students' professional identities found that students experienced challenges forming their identities. While several curriculum interventions supporting PIF have been implemented, these tended to be one-offs and there was an absence of interventions engaging key stakeholders including placement preceptors, other health professionals, and patients/consumers.
Conclusion: Supporting the formation of pharmacy students' professional identity, while recognized as an important goal for pharmacy education, requires further empirical inquiry. Pedagogical practices focused on identity formation including adopting an integrative curricular approach are required.
Keywords: pharmacy education, curriculum, social identification, health professionals

Introduction

Pharmacy graduates need to be prepared for the realities of professional practice. However, transitioning from being a pharmacy student to a pharmacist is challenging. Students need to reconcile their curricular learnings and aspirations for professional practice with the realities of authentic practice.[1] These transitions can be complicated when students' understandings of their professional selves do not align with their practice experience.[2,3] These challenges relate to professional identity, that is, the sense of being a professional formed through interaction between self and context.[4,5] Those with strong professional identities tend to be confident, motivated, and able to cope with complex and uncertain aspects of practice.[6–8] For pharmacy graduates,

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the formation of professional identity means they need to understand the pharmacist role and the context and cultures of different practice settings, and to have begun to socialize into the profession. Thus, a key goal for university curricula is supporting the professional identity formation (PIF) of its students.[9]

There is considerable evidence within the health professions education literature confirming that participating in a vocational degree (eg, medicine, nursing) is "as much about the development of professional identity as it is about knowledge learning".[10] Within medical education, supporting PIF is considered to be its highest purpose[11] because professional identity is a "key determinant of the scope and nature of professional work", that is, how professionals enact their practice.[12] Conversely, curricular approaches that do not purposefully attend to PIF, but focus primarily on the development of knowledge and skills, can result in students lacking clarity about their future role and having fragmented understandings of their professional selves.[13] Within medical education, and in the absence of a pharmacy-specific definition, professional identity has been defined as

> "a representation of self, achieved in stages over time during which the characteristics, values, and norms of the medical profession are internalized, resulting in an individual thinking, acting, and feeling like a physician".[14]

PIF, then, is an active, developmental process where individuals integrate the knowledge, skills, values, and behaviors of a competent professional.[15] Intentional support of PIF through curricular experiences, such as mentorship and self-reflection, has been shown to assist students to become the kind of professionals they want to be, in spite of the realities of practice.[7,16] In other words, curricular experiences shape learning as well as PIF enabling students to become a "certain kind of person".[17] Relating these ideas to pharmacy education means that curriculum experiences would result in individuals who will think, act, and do things in a way that shows they are truly patient-centered pharmacists.[18]

However, facilitating PIF requires not only consideration about who individuals are becoming but also broader societal considerations about "the hallmarks of the pharmacist that society wants a student to become? What processes support and promote this transformation of identity?"[11] These questions relate to what is "known about the development of pharmacist identity in relation to features of social context".[19] Yet, the pharmacy profession lacks agreement on what it means to be a pharmacist and how to best support PIF within

higher education. For example, an opinion study examining community pharmacists' and pharmacy academics' views on pharmacy practice competencies found that academics emphasized the importance of research, pharmaceutical technology, and the regulatory aspects of quality, while community pharmacists concentrated more on patient care competences.[20]

Theoretical perspectives of professional identity

Professional identities are formed through an evolutionary and iterative process whereby individuals make choices, in response to the professional context, about who they want to be.[8] Professional identities are neither fixed nor unitary but are better conceptualized as relational, in that individuals respond to various experiences, situations, and people through an evaluative and emotional process and from this they iteratively construct (or renegotiate and reconstruct) their professional identity.[21] For educators, it can be helpful to think about our students as having, but also experimenting with, their "provisional selves" which "serve as trials for possible but not yet fully elaborated professional identities"[22] This is "an adaptive developmental process that happens simultaneously at two levels: 1) at the level of the individual, which involves the psychological development of the person, and 2) at the collective level, which involves the socialization of the person into appropriate roles and forms of participation in the community's work".[5]

In other words, the construction of identities takes place through the interplay of internal and external forces in the midst of social interaction. This process is known as identification which is a "two-way process that occurs during the simultaneous amalgamation of self-definition (who I think I am: internal) and the definitions of oneself as presented by others (who I think you think I am: external) through language and artefacts".[10]

When we turn our gaze to pharmacy education, there is less clarity regarding strategies for supporting PIF. For example, the issue of supporting pharmacy students' PIF was emphasized by the International Pharmaceutical Federation in 2000 and further illuminated by Taylor and Harding in 2007[23] who argued that pharmacy students' experiences of undergraduate curriculum form the foundation of PIF. Since then, strategies addressing PIF have been integrated into some pharmacy education policies; for example, the Taskforce on Professional Identity Formation by the American Association of Colleges of Pharmacy aimed:

1. to make recommendations for best practices in PIF;
2. to create a tool kit for educational methods to support PIF within interprofessional contexts; and
3. to generate recommendations to support faculty to develop students' professional identities.[24]

Yet in other countries, for example Australia, attending to pharmacy students' professional identity has not been integrated into accreditation standards for pharmacy degrees.[25]

No reviews currently exist that provide evidence for best supporting pharmacy student identity formation. The aim of this study is to appraise and summarize the literature, published in the past decade, related to pharmacy student PIF and to identify factors influencing pharmacy students' perception of professional identity and its formation as well as pedagogical strategies to supporting PIF.

Methods

This study employed a scoping review methodology to map the available literature on the PIF of pharmacy students.[26,27] Scoping reviews aim to summarize and disseminate research findings and identify gaps in the existing literature.[26] They differ from systematic reviews in that they take into account all relevant literature, regardless of methodology. For this review, we examined all contemporary research investigating pharmacy student PIF. To ensure the reliability and reproducibility of our methods, we followed the scoping review procedures outlined by Arksey and O'Malley:[26]

1. Identify the research question
2. Identify relevant studies
3. Select the (relevant) studies
4. Chart the data
5. Collate, summarize, and report the results

Identifying the research question

Our scoping review focused on answering the following research question: in the past decade, what is known about pharmacy student PIF and how can it best be supported through the pharmacy curriculum? This time point was selected based on previous research[1] which noted a limited literature base prior to 2008. As a literature review examining PIF within higher education, including all degrees, was conducted in 2012,[9] we selected the time frame to ensure the integration of contemporary evidence.

Identifying relevant studies

Based on the research goals and our previous literature search[1] and in consultation with our librarian, the following Boolean search strategy was used:

1. Students, Pharmacy/ (2540)
2. ((pharmacy or pharmacist*) adj5 student*).tw. (2993)
3. Pharmacists/ (14631)
4. (pharmacy or pharmacist*).tw. (53908)
5. Students/ (50207)
6. student*.tw. (244152)
7. (or/3-4) and (or/5-6) (4362)
8. 1 or 7 (5044)
9. social identification/ (8304)
10. (professional adj3 identi*).tw. (2678)
11. 9 or 10 (10732)
12. 8 and 11 (22)
13. limit 12 to yr="2008 -Current" (19)

In earlier iterations of the search strategy, the term "curriculum" constrained the search too much. To ensure comprehensive investigation, the following databases were used: MEDLINE, CINAHL, PsycINFO, Embase, Australian Education Index, PubMed, Scopus, and Web of Science. The search was conducted on February 16, 2018, and the search was re-run on September 21, 2018. The search was limited to articles between 2008 and present.

Selecting the studies

All of the articles identified from the search were imported into EndNote® software, and duplicates were deleted. Using EndNote®, CN reviewed all of the article titles and applied the screening tool (inclusion criteria are explained below) to determine their eligibility for full-text review. Then, CN reviewed the articles selected for full-text review. The reference lists of the articles were also reviewed to identify any other relevant studies, particularly in the gray literature, not found in the initial search. To be included in the study, the following inclusion criteria were applied:

1. Focus on explicitly addressing PIF
2. Involve pharmacy curricula
3. Focus on pharmacy students enrolled in pharmacy degree programs or their previous curricular experiences (and not on pharmacists)

The team reviewed all the selected articles, discussed the findings, and resolved disagreements on study selection and data extraction by consensus and through discussion.

Charting the data

We adopted a descriptive analytical approach[26] that applies a common analytical framework (ie, set of questions) to all the included articles. Based on these framework questions, the responses were charted into an Excel® spreadsheet. To answer

our research question, we applied the following analytical questions to our data/literature set:

- What is the rationale for supporting PIF in the pharmacy curriculum?
- How do articles conceptualize pharmacy student's professional identity?
- How do pharmacy curriculum and pedagogical practices influence PIF?
- What are the recommendations for future research?

Based on these analytical questions, the following information was extracted and included on the Excel® spreadsheet: demographic data (eg, year of publication, location of publication); methodology data (eg, research design, data collection); and thematic categories (eg, interventions, key findings, implications for PIF, conclusions).

Collating, summarizing, and reporting the results

Data were collated, summarized quantitatively, and analyzed thematically to identify recurrent patterns in the selected articles. First, we examined the studies quantitatively for the extent, nature, and distribution of the included articles. Separate Excel® spreadsheets and tables were produced: the geographical distribution of articles; study participants; and research methods adopted. Second, data were charted based on the key themes identified including: tools for measuring professional identity; need to examine PIF; current state of pharmacy students' professional identities; curricular factors influencing PIF; and pedagogical practices supporting PIF (Table 1). To address our final research question, that is, recommendations for future research, we again followed the strategy described by Arksey and O'Malley[26] by using the literature review to identify gaps by comparing the theoretical and methodological approaches across studies while consulting the broader health profession education and higher education literature to identify contemporary trends and issues emerging from these.

Results

Our results are presented as follows. Firstly, an overview and descriptive summary is presented. Secondly, the themes identified are presented, including: 1) PIF as a curriculum priority; 2) conceptualization of pharmacy students' professional identities; 3) curricular factors and pedagogical practices influencing pharmacy students' PIF; and 4) recommendations for further research.

Overview and descriptive summary

As shown in Figure 1, our initial search retrieved 137 articles of which 52 were duplicates. After applying the screening tool to the remaining 85 titles, 22 articles were identified and included in our final review (Table 1). Most of the articles were qualitative studies (n=8; 36%) or descriptions of curriculum development programs to promote PIF (n=7; 32%). The remaining articles were survey studies (n=4; 18%), opinion (n=2; 9%), and methodological studies (n=1; 5%). The majority of the studies were Australian (n=10; 45%) with the remainder from the USA (n=4; 18%), the UK (n=4; 18%), South Africa (n=2; 9%), Canada (n=1; 5%), and Lebanon (n=1; 5%).

The majority of studies (n=13; 60%)[28–40] were theoretically informed; however, there was considerable variation in theories chosen. In total, six different theories were used (Table 2). One group of authors noted that an agreed theoretical approach is required to inform curricular strategies in order to meaningfully address PIF.[45]

PIF as a curriculum priority

Three articles[38,39,49] including a curriculum mapping study,[37] a survey of pharmacy academics,[38] and an opinion paper[46] provided arguments for the importance of supporting pharmacy students' PIF through their curricular experiences (Table 3). Firstly, the pharmacy curriculum influences how students see themselves and their work-readiness, particularly their ability to adapt to emerging roles, for example, advanced practice and changing pharmacist roles in complex health care environments.[46] When PIF is not foregrounded in the curriculum, pharmacy curriculums tend to focus on the provision of knowledge and skills, as observed in one pharmacy curriculum concept mapping exercise.[39] The authors noted that this focus may result in limited opportunities for students to develop strong professional identities.[39]

Curricular programs of teaching, learning, and assessment have been found to contribute to PIF through student engagement with authentic learning activities, curricular alignment with work practices, and interactions with practicing pharmacists;[49] however, the current curricular focus of academe tends to be on the provision of knowledge with limited purposeful intentions to support PIF.[38] Without careful consideration of curricular and pedagogical practice contributions to PIF, there is a risk that students' professional identities will align to drug-centered understandings rather than patient-centered identities as was observed in a curriculum
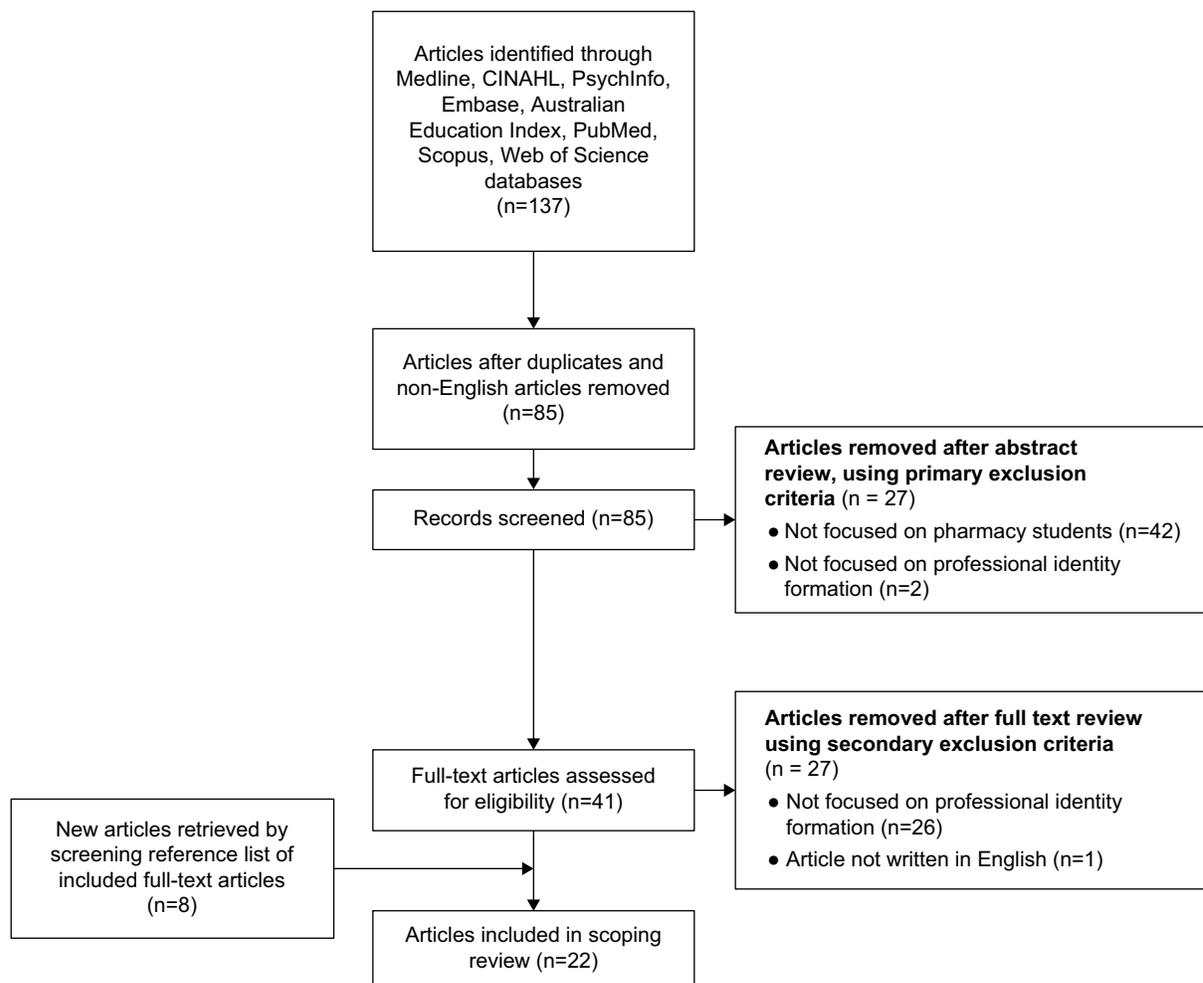
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┌─────────────────────────┐
│ Articles identified through │
│ Medline, CINAHL, PsychInfo, │
│ Embase, Australian          │
│ Education Index, PubMed,    │
│ Scopus, Web of Science      │
│ databases                   │
│ (n=137)                     │
└─────────────────────────┘
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Articles after duplicates and non-English articles removed (n=85)

Records screened (n=85)

Articles removed after abstract review, using primary exclusion criteria (n = 27)
- Not focused on pharmacy students (n=42)
- Not focused on professional identity formation (n=2)

Full-text articles assessed for eligibility (n=41)

New articles retrieved by screening reference list of included full-text articles (n=8)

Articles removed after full text review using secondary exclusion criteria (n = 27)
- Not focused on professional identity formation (n=26)
- Article not written in English (n=1)

Articles included in scoping review (n=22)

Figure 1 Flow diagram of the search and selection process used for a 2018 literature search for articles on pharmacy students' identity formation for a scoping review.

mapping study from one School of Pharmacy.[39] The study authors noted that these concerns aligned with the broader higher education and health professions' education research and emphasized that strategies and research should inform curriculum development and enactment to foster students' PIF as pharmacists.

Current state of pharmacy students' professional identities

Five articles (23%) examined the ways in which pharmacy students understood themselves as becoming pharmacists, and these related to both individualist and collective experiences of identities (Table 4). Two studies focused on final-year students,[28,50] and the remaining studies explored all pharmacy year groups[30,35] or graduates transitioning to practice.[37]

Individualist perspectives of identities

Two studies examined how pharmacy students saw themselves and despite using different methodologies, that is, survey[28] and

focus groups,[37] came to similar conclusions. That is, pharmacy students' understandings of their professional selves lacked a comprehensive understanding of what it means to be a pharmacist. Findings from the survey study[28] found that students tended to focus on traditional pharmacist roles, for example, dispensing and counseling, and this understanding was influenced by experiential and part-time work experiences. While findings from the focus group study showed that pharmacy students' aspirations were to be pharmacists who contribute to patient care, yet, based on their curricular experience, the students concluded that their futures selves were likely to be constrained and limited. The authors surmised that pharmacy students' professional identities seem to lack coherence; that is, it is challenging to integrate the knowledge, skills, and behaviors promoted by the curriculum with their own values (eg, being patient centered by integrating curriculum studies into their practice experience).[37]

Collective experience of identities

Four studies[30,35,37,50] examined how pharmacy student professional identities were constructed in relation to social context.

Table I Summary of articles included in this scoping review on pharmacy student professional identity formation

Authors (year)	Country	Study aim	Study type	Data collection	Participants	Pharmacy student year level (sample size)	Intervention	Key findings related to PIF	Theoretical framing of PIF	Conclusions
Armstrong et al (2015)[58]	Canada	Compare and contrast the experience of a group of pharmacy students with access to this coaching program with that of a control group that did not receive coaching	Survey	Questionnaire	Pharmacy students	Final (n=10)	Pharmacy coaches randomly matched to pharmacy students and conducted two identical coaching sessions: 1) one-on-one, and 2) group meeting with all ten students	WIL combined with coaching can contribute to students' career and PIF	Nil	WIL combined with coaching can contribute to students' career and PIF
Bloom et al (2017)[53]	USA	Determine the benefit of pharmacy work experience in the development of student pharmacists' professional identity	Survey	Questionnaire	Pharmacy students	All year groups (n=293)	Not applicable	Previous pharmacy experience facilitates earlier development of professional identity. Prior pharmacy experience can provide insight into the expectations as well as behavioral and cultural norms of the profession of pharmacy	Not stated	Pre-matriculation pharmacy experience may enhance development of professional identity early in the student experience but has limited influence on academic readiness
Bridges (2018)[59]	UK	Explore the potential mutual learning through group work to contribute to academic knowledge and understanding, and development of students' professional values and selves	Qualitative	Interviews	Pharmacy students	First (n=17)	Not applicable	Facilitated group discussions promoted students to compare experiences of and views on professional roles (as perceived by themselves, other health care professionals, and patients) enabling students to explore elements of their developing professional identity through their conversations and reflections	Not stated	Opportunity for collaboration and exchange can positively influence development of students' professional outlook and values

Author (Year)	Country	Aim	Design	Method	Participants	Cohort (n)	Intervention/Description	Findings	Theory	Conclusion
Burrows et al (2016)[28]	Australia	Explore how students understood pharmacy practice, nearing completion of an undergraduate program	Survey	Questionnaire	Pharmacy students	Final (n=104)	Not applicable	Lack of unified understanding of pharmacy students of what it means to be a pharmacist	Heidegger	Educators need to consider and address the variation in how students understand professional practice and influences on how practice is understood
Johnson and Chauvin (2016)[29]	USA	Examine the extent to which reflective essays written by graduating pharmacy students revealed PIF and self-authorship development	Description of curriculum development	Reflective essay	Pharmacy students	Final (n=41)	Developed a "learning partnerships model" based on self-authorship (Baxter-Magolda), and students completed a reflective essay	Analysis suggested relationships between self-authorship and PIF	Baxter-Magolda's self-authorship theory	Results suggest that purposeful structuring of learning experiences can facilitate PIF
Mantzourani and Hughes (2016)[60]	UK	Evaluate students' perceptions on the placement's contribution to their professional development	Description of curriculum development	Focus groups	Pharmacy students	First (n=12)	Pilot of REPs to understand patient care issues and see the value of an MDT	REP created an opportunity for first-year students to start exploring their professional identities, and this was challenging given the short duration of the placement	Nil	Positive experiences when engaging in REP and contributed to professional development
McCartney and Boschmans (2018)[50]	South Africa	Describe and explore the lived experiences of final-year pharmacy students participating in hospital experiential learning program	Qualitative	Focus groups	Pharmacy students	Final (n=33)	15-Week placement	Lack of understanding of how pharmacist self-relates to other health care professional; further hampered by feelings of insecurity about professional role	Nil	South African pharmacy students lack a professional identity for the clinical role of the hospital pharmacist

(Continued)

Table 1 (*Continued*)

Authors (year)	Country	Study aim	Study type	Data collection	Participants	Pharmacy student year level (sample size)	Intervention	Key findings related to PIF	Theoretical framing of PIF	Conclusions
Monrouxe et al (2014)[30]	UK	Examine dental, nursing, pharmacy, and physiotherapy students' narratives of professionalism dilemmas: the types of events they encounter ("whats") and the ways in which they narrate those events ("hows")	Qualitative	Personal incident narratives	Interprofessional students (including pharmacy students)	All year groups (n=69)	Not applicable	Pharmacy students witness patient dignity breaches by non-health care professional, and these experiences crushed ideals	Labov's structural perspective	Professionalism dilemmas experienced by health care students, including issues concerning whistle-blowing and challenging, have implications for interprofessional learning
Mylrea et al (2015)[33]	Australia	Examine implications of the decline in professionalism for health education programs and describe current approaches to professional education	Opinion	Opinion paper	Pharmacy students	Not stated	Not applicable	Pharmacy education needs to consider professionalization as it moves toward advanced practices and increasingly complex role Authentic activities; experiential learning and curriculum alignment with work practices	Merton; professional socialization	Curriculum design can exert a significant influence on student identity development
Mylrea et al (2018)[34]	Australia	Design and evaluate a PIP based on self-determination theory for commencing pharmacy students	Description of curriculum development	Questionnaire	Pharmacy students	First and second (n=44)	PIP – 10 workshops with opportunities to interact with pharmacists; group discussions; reflective writing and practice-related activities, eg, compounding and counseling	While students' perceived professional identities remained unchanged, the "underlying motivation regulators governing identity formation are transitioning to a more autonomous state, which is increasingly intrinsic in nature"[34]	Self-determination theory	Students respond positively to the introduction of the PIP into their program of study

| Mylrea et al (2018)[34] | Australia | Develop a Pharmacy Motivation Scale (Pharm-S) to determine motivation regulators in undergraduate students and explore a possible link to professional identity development | Methodological | Questionnaire | Pharmacy students | All year groups (n=10) | Not applicable | Established the face, content, and construct validity of professional identity questionnaire tool and found possible links between motivation and professional identity | Self-determination theory | This is a potential role for the Pharm-S as a valid tool to measure pharmacy student professional identity development |
| Mylrea et al (2018)[34] | Australia | Examine conceptual frameworks aligned with professional identity development and explore the role for self-determination theory in pharmacy professional education | Opinion | Opinion paper | Pharmacy students | Not stated | Not applicable | Argues for self-determination theory as a theoretical framing to inform curricular initiatives and design | Self-determination theory | Proposes a role for self-determination theory as a theoretical framework for professional identity development in pharmacy education |

(Continued)

Table 1 (*Continued*)

Authors (year)	Country	Study aim	Study type	Data collection	Participants	Pharmacy student year level (sample size)	Intervention	Key findings related to PIF	Theoretical framing of PIF	Conclusions
Noble et al (2014)[38]	Australia	Understand how the formal curriculum experience of an Australian undergraduate pharmacy program supports students' PIF	Qualitative	Participant observation	Pharmacy students	All year groups	Not applicable	Conventional curricular experience focusing on the provision of technical knowledge and enabling some opportunities for practical engagement. Limited opportunities for students to observe pharmacist role models, experiment with being a pharmacist, or evaluate their professional identities. While curricular learning activities were available for students to develop as pharmacists, eg, patient counseling, there was no contact with patients and pharmacist academic staff tended to role model as educators with little evidence of their pharmacist selves	Provisional selves and social theory of learning	Conventional approaches to pharmacy curriculum likely to make it challenging for students to develop strong professional identities
Noble et al (2014)[38]	Australia	Explore pharmacy educators' perceptions of the purpose of the pharmacy curriculum and how they contribute to students' development as pharmacists	Survey	Questionnaire	Pharmacy academics	Not applicable (n=34)	Not applicable	PIF is not a key consideration of pharmacy academics	Social theory of learning (Wenger)	Pharmacy educators may not consider how learning experiences contribute to PIF and the role they play in supporting this

Noble et al (2011)[39]	Australia	Explore a pharmacy school curriculum for opportunities for student engagement and to determine how these might shape student identity as pharmacists	Qualitative	Document analysis	Not applicable	All year groups	Not applicable	Social theory of learning (Wenger)	Curriculum emphasizes student acquisition of knowledge. The curriculum content was drug centered rather than patient centered, and the emergence of students' identity as pharmacists may be fragmented as a result
Noble et al (2014)[38]	Australia	Examine pharmacy interns' perception of transitioning from university to workplace and its influence on PIF	Qualitative	Interviews	Pharmacy interns	Intern (n=15)	Not applicable	Social theory of learning (Wenger)	The interplay between formal curricular experience and experiential placements left participants concluding that university had promoted idealist ways of being a pharmacist and students not equipped to reconcile this with the realities of practice. The realities of practice need to be acknowledged while equipping students, and then interns, to move beyond these realities so that they strengthen their professional identities as patient-centered pharmacists

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Table I (*Continued*)

Authors (year)	Country	Study aim	Study type	Data collection	Participants	Pharmacy student year level (sample size)	Intervention	Key findings related to PIF	Theoretical framing of PIF	Conclusions
Noble et al (2014)[38]	Australia	Examine how the pharmacy curriculum influences students' formation of their professional identities	Qualitative	Focus groups	Pharmacy students	All year groups (n=82)	Not applicable	Pharmacy students struggled with their PIF. Many were entering the degree with little understanding of what being a pharmacist entailed. Once in the educational context, the nature of the role became both apparent and idealistic but not enacted. Students experienced dissonance between the idealistic notion of pharmacy practice and the realities of placements, and this may have been enhanced by a lack of patient-centered care role models. This struggle left them concluding that the role of the pharmacist was constrained and limited	Social theory of learning (Wenger)	PIF needs to be foreground in pharmacy curriculum enactment
Schafheutle et al (2012)[52]	UK	Understand and clarify how professionalism is learnt, cultivated, and facilitated in pharmacy education	Qualitative	Document analysis; focus groups; observation; interviews	Students and academics	Final (n=38)	Not applicable	Role modeling of preceptors influences professionalism. Key way to develop professionalism is through experiential learning	Not described	Professionalism learning is important and highlights approaches which appeared valuable within the constraints of university environment

Author	Country	Aim	Design	Data collection	Participants	Year group	Intervention	Findings	Theory	Conclusion
van Huyssteen and Bheekie (2015)[47]	South Africa	Identify and describe first-year pharmacy students' professional identity and determine whether it changed during the first semester of the "Introduction to pharmacy" course	Description of curriculum development	Reflective essay	Pharmacy students	First (not stated)	Sequential socialization activities including reflective critical incident reports	Curricula need to be designed to enable graduates to engage with constantly shifting professional identity rather than armoring up	Social identity theory	Students' emergent professional identities were identified including an increasing sense of belonging to the professional
Welch et al (2017)[54]	USA	Design and implement a longitudinal course series focused on professional development and PIF in pharmacy students at Western New England University	Description of curriculum development	Assessment data	Pharmacy students	All year groups (not stated)	Development of a 4-year theme-based course series	4-Year program, evaluated by assessment pass rates, contributed to PIF Suggests that students take professional development seriously and achieved intended outcomes	Nil stated	Professional development course designed to enhance the PIF of students
Zaudke et al (2016)[55]	USA	Examine the impact of an interprofessional practice experience on students' attitudes toward interprofessional learning	Description of curriculum development	Questionnaire	Interprofessional students (including pharmacy)	Fourth (n=252)	Development and evaluation (using RIPLS) of interprofessional practice experience with an intentional IPE curriculum to support experiential learning	Notes the difference between professions with respect to PIF	Nil stated	Attitudes toward teamwork and patient centeredness were more favorable for all respondents after the interprofessional practice experience
Zeeni et al (2016)[56]	Lebanon	Report students' perceptions of their readiness for interprofessional learning before and after completing the IPE steps	Description of curriculum development	Questionnaire	Interprofessional students (including pharmacy)	All year groups (n=116 surveys completed)	IPE steps program – an extracurricular program (15 contact hours) and evaluated longitudinally using RIPLS	Professional identities were not different between professions at baseline or at the end. IPE does not interfere with development of distinct professional identities	Nil stated	Participants were satisfied with the learning experience, and assessment scores showed that all IPE learning outcomes were met

Abbreviations: IPE, interprofessional education; MDT, multidisciplinary team; PIF, professional identity formation; PIP, Professional Identity Program; REP, role-emerging placement; RIPLS, Readiness for Interprofessional Learning Scale; WIL, work-integrated learning.

The two key themes identified from these studies were: 1) identities lacking social recognition; and 2) identities remaining unresolved.

Identities lacking social recognition

One study noted that pharmacy students' professional identities were contingent on their interactions with others (including patients, health care professionals, and pharmacy staff) and the tasks in which they were expected to engage. These experiences commonly occurred while on experiential placements.[37]

Interactions with others

Two studies found that pharmacy students mostly reported lacking social recognition when experimenting with their professional selves during placement. For example, students found it challenging to relate their pharmacist selves to other health care professionals[50] and this was particularly challenging when their advice was not accepted as this was something they had not experienced in the university setting.[35] Similarly, when engaging with patients/clients, students found it challenging when their attempts to enact their pharmacist selves were met with disinterest or, in some instances, anger. In both studies,[35,50] these experiences were unexpected, and students were not equipped to navigate these challenges.

Engaging in pharmacy tasks

Another factor, identified by two studies,[30,37] influencing students' collective experience of identity formation was the tasks students were expected to engage in while on placements. For example, in one study,[37] students reported that they did not believe that engaging in tasks, such as unpacking medications, or observing pharmacy assistants engaging in tasks they believed were pharmacist unique (eg, counseling) contributed to their professional selves.[30] These conundrums were noted to be important considerations,[30] in terms of student PIF, because students lack power (eg, just a student and being directed by pharmacist and/or assistants), knowledge, and confidence to influence the outcome of these experiences and at the same time these types of experiences invariably lead to crushed ideals of what it means to be a pharmacist.[30]

Unresolved identity dissonance

Two studies found that the experiences of the pharmacy curriculum often contributed to unresolved identity dissonance in that the pharmacist role tended to be presented as idealized, yet students' practice experiences often did not align with these ideals.[35,37] The authors emphasized that a lack of opportunities to resolve this dissonance made it challenging for students to form cohesive professional identities.[35,37] Creating opportunities for students to share their placement experiences in the classroom with pharmacist tutors, the authors suggested, would help students to make sense of these identity dissonances in a supported environment.[35,37] While Monrouxe et al[30] suggested that pedagogical practices, such as role-play activities, should be undertaken to encourage students to share experiences through narratives and then

Table 2 Theories informing pharmacy student professional identity formation research

Theories informing pharmacy student professional identity formation	Studies using theory	Description of theory as described by study author(s)
Baxter-Magolda's self-authorship theory[41]	29	"Self-authorship theory describes combined cognitive and affective development"[29]
Heidegger's concept of being-in-the-world[42]	28	"This phenomenological approach involves explicating, interpreting, and describing the meaning of lived experience of a phenomenon"[28]
Provisional selves[22]	43	"The key factors influencing students' professional identity formation include opportunities for imagination, observation, experiment and evaluation"[36]
Self-determination theory[44]	31–34	"Self-determination theory (SDT) … defined the role of motivation regulators in the formation and maintenance of identity"[45]
Social identity theory[46]	47	"According to the social identity theory, a person usually has a number of social identities (e.g. gender, age, language, culture, socioeconomic class, personality type, occupation) that contribute to the construction of an all-encompassing self-identity"[47]
Wenger's theory of social learning[48]	35–39	"Learning, itself is a social and contextual experience, and results from an integration of meaning, practice, community and identity"[36]

Table 3 Professional identity formation as a curriculum priority

Rationale for professional identity formation as a curriculum priority	No. of articles (%)
Pharmacy curriculum influences students' professional identity formation	2 (9)
Curriculum design and pharmacy academics tend to focus on knowledge and skills development	2 (9)
Risk of students' professional identities being drug centered	1 (5)

Table 4 Current state of pharmacy students' professional identities

Current state of pharmacy students' professional identities	No. of articles (%)
Individualist perspectives	2 (9)
• Focus on traditional pharmacist roles • Aspirations to be patient centered, yet conclude role constrained and limited	
Collective experience of identities	4 (18)
• Identities remain unresolved • Identities lack social recognition	

act out idealized actions, that is, how students wish they had acted, they argued that this approach could facilitate synergy between personal moral values and moral action enabling students to commit and recommit to their professional identities.[30]

Curricular factors influencing PIF

Six studies (27%) found that pharmacy curricular experiences influence PIF and described the key curriculum factors influencing PIF (Table 5).[36,37,39,43,51–53] The key factors identified from curriculum mapping,[39] qualitative focus groups,[37] ethnographic research,[36] interviews,[35] and qualitative mixed methods[52] studies are as follows. Firstly, a curriculum mapping study examining the intentions of a pharmacy curriculum found it was structured in content silos.[39] The authors noted a strong emphasis on the acquisition of drug-centered knowledge and less emphasis on patient-centered ways of being a pharmacist.[39] The authors also found that the assessment processes were dominated by theory examinations using multiple-choice and short-answer questions and suggested that these assessment practices promoted content siloing and a focus on knowledge acquisition. These processes made it challenging for students to construct patient-centered professional identities.[39]

Secondly, two studies found that student engagement with pharmacist role models who enact their pharmacist selves contributes to PIF.[37,52] However, both studies noted that this engagement needs to be meaningful whereby students can integrate observed behaviors, feedback, and reflective accounts into their becoming pharmacist selves.[37,52] An ethnographic study found that, while pharmacists are often employed by universities to teach pharmacy students, they often enact their educator selves, for example, deliver lectures, and often do not role model their pharmacy capabilities, for example, thinking out loud or role model counseling.[36]

Opportunities to enact their professional selves through experiences such as practical classes and/or tutorial were valued by pharmacy students, in terms of contributing to their professional identities.[52] However, the authors noted

Table 5 Curricular factors influencing professional identity formation

Curricular factors influencing professional identity formation
• Content silos with emphasis on acquisition of drug-centered knowledge   • Pharmacists modeling professional capabilities   • Opportunities to enact professional identities   • Absence of patients and other health care professionals   • Limited opportunities for feedback   • Need to reconcile placement experiences

there was variation in the extent of student engagement in these experiences with some students reporting that they had limited engagement[35] or the experiences lacked authenticity, for example, absence of patients and other health care professionals or pedagogical activities that promoted information provision-focused counseling/knowledge provision rather than collaborative dialog.[36] One study found that there were few opportunities for students to engage in feedback on their performance during these tutorial classes.[36]

Finally, several studies noted that experiential learning through placements was highly valued by pharmacy students as an opportunity to try out their professional identities,[36,37] and indeed, early work experiences, that is, before commencing a pharmacy degree, can contribute to improved pharmacist PIF, especially for students in the early years (first and second years) of their degree.[53] It has been noted that because there is considerable variation in how pharmacy practice is enacted, students often reported that the realities of practice were not aligned to how they imagined themselves as pharmacists.[37] For example, students would practice counseling while on placement, yet they reported that clients did not respond in the way they expected; in other instances, the usual counseling practices of the pharmacy did not align with taught practice models. The authors found that these experiences created a sense of dissonance for students as their identities were often unresolved as they moved from placements back to the university.[37] With the current trend toward university expansion of work-integrated learning and

experiential placements, further research is needed to address this dissonance when students return to their campus classes.

Pedagogical practices supporting PIF

Several studies (n=9; 40%) focused on implementing and/or evaluating pedagogical strategies to support pharmacy student PIF. There was some homogeneity in the goals and objectives of the programs, and two main themes were identified: 1) developing professional identities; and 2) understanding how pedagogical practices contributed to identity. First, some programs focused on developing students' pharmacist identities[34,54] with some having a specific focus on supporting interprofessional understandings of identity formation.[55,56] These programs used a range of learning activities, including workshops, reflective writing, interactions with practicing pharmacists, attending professional meetings, and so on,[34,54] to support identity formation. The effectiveness of these programs was evaluated in heterogeneous ways. For example, some used assessment data as a measure of student engagement[54] or surveys were used to measure students' satisfaction[34] and professional identities using a validated tool informed by self-determination theory.[34] On the other hand, the interprofessional programs[55,56] used the Readiness for Interprofessional Learning Scale to evaluate their programs and included factors on sense of professional identity.[57]

Second, several programs sought to understand how particular pedagogical practices contributed to PIF, for example, reflective essays,[29] coaching,[58] socialization activities including placements,[47] and facilitated discussions with academics.[59] The contributions of these programs to the students' formation of professional identities were examined through questionnaires,[58] evaluation of reflective essays,[29] or interviews (group and individual).[59] Some of these evaluations were informed by professional identity theory, for example, social identity theory[47] and Baxter-Magolda's self-authorship theory.[29] All studies reported that the programs positively contributed to the students' PIF. However, most programs were one-offs (seven out of nine studies), that is, a single course or module added to the curriculum.[55] It was not clear how the students' identities changed over time or whether their identities were sustained. Most studies focused on early years, that is, first/second (n=4; 44%),[47] with a few involving final-year students (33%).[55] Only two studies adopted a longitudinal approach to supporting PIF; that is, pedagogical strategies were integrated across the curriculum (n=2; 22%), but the outcomes tended to be evaluated based on student impressions and assessment results rather than validated measures of professional identities.[54,56]

Recommendations for further research

Most studies reviewed suggested further research to investigate in depth the construction of pharmacy students' professional identities with suggestions tending to be study replication in other Schools of Pharmacy or countries to address the lack of generalizability. This was because, with the exception of Schafheutle et al,[52] most studies were conducted in single site. Of the 22 articles, 6 did not offer future research recommendations. The recommendations from the remaining articles related to longitudinal exploration of students' PIF,[29,47,53] implementation and evaluation of increasingly diverse placement experiences to support PIF,[55,60] in-depth exploration of pharmacy academics' understandings of supporting PIF,[38,52] and in-depth exploration of pharmacy students' experience of curriculum;[36] however, this was addressed in subsequent work.[35,37]

Few articles fully integrated identity theory into their enquiries, and this was noted by Mylrea et al[32] who argued for the application of self-determination theory[44] to assist with understanding how student identities are formed and to inform curriculum reform. The same authors also generated a validated tool to understand links between motivation and professional identity (requires further testing).[61]

Given the strong influence of the social experience on professional identity and the challenges experienced by pharmacy students (explained above), curiously, there were no research recommendations related to exploring the placement preceptors', other health care professionals' or consumers' perspectives of and/or contributions to pharmacy students' PIF. Thus, further research is required to address these gaps.

Discussion

Our scoping review identified 22 articles, published in the past decade, examining pharmacy student PIF and focused on factors influencing pharmacy students' perception of professional identity and its formation and explored pedagogical strategies to supporting PIF. Our findings suggest that supporting pharmacy students' PIF is an important goal for pharmacy education yet there is a paucity of research examining students' PIF and the differing theoretical perspectives suggest this is an underdeveloped field of research and offers opportunities for synthesizing these differing perspectives.[9] Without curricular interventions supporting PIF, we found that pharmacy students can form professional identities that lack cohesion with their values and experiences of practice. There were few examples of integrative curriculum programs supporting PIF. Rather, we found curriculum interventions which tended to be one-off programs and the evaluations

of outcomes were limited to existing assessment processes and lacked validated measures for PIF, and thus only partly contributed to understanding the outcomes of professional identity programs. Overall, our findings suggest that further opportunities exist to comprehensively support the successful formation of pharmacy students' identities.

Pharmacy curriculum considerations

Pharmacy students find it challenging to integrate the knowledge, skills, and behaviors promoted by the curriculum with their own values (eg, being patient centered). Strong professional identities form when there is alignment between how students see themselves and how others see them.[10] While our findings agree with findings from other professions, in that both the formal curriculum and informal curriculum experiences were influencing how they saw themselves as they moved through these different contexts, for example, university to placement,[62] pharmacy students often lacked opportunities to resolve any discrepancies. These findings provide insights into the kinds of curricular programs and pedagogical program that can support the formation of strong professional identities. When considering how to best support pharmacy students' progressive formation of strong professional identities, this review has identified two key curriculum considerations: 1) establishing the curriculum intention; and 2) fostering a longitudinal and integrative approach to PIF.

First, our findings indicate that it was generally agreed that supporting pharmacy students' PIF is an important intention for pharmacy curriculum. Yet, the evidence suggests that without purposeful support of PIF pharmacy students struggled to develop strong professional identities especially as they moved between different contexts. These findings intimate that the ordering of learning experiences was not directly supporting or enabling access to experiences where students can reconcile and make sense of differing ways of being a pharmacist. To address this, curricular programs need to enable pharmacy students to "recognize, explore, articulate, prioritize, and share their authentic values and values conflicts within a supportive professional community"[62] Pharmacy educators will play a pivotal role in fostering these intentions through curriculum program development, yet our findings suggest that PIF may not yet be a core goal for pharmacy academics.[38] To best support pharmacy academics in this goal, there would be value in offering professional development in educational theory and pedagogical practice, as this has been noted by Blouin et al[63] to be lacking. Ensuring pharmacy academics recognize and understand the importance of PIF is important as students view them as key role models.[37,52] Thus, consideration should be given to how to best sequence learning especially during transition (eg, from placement back to university) so that experiences of identity dissonance are discussed and resolved.

Second, no studies reported on PIF programs comprehensively integrated across the curriculum with alignment between learning outcomes, pedagogies, and assessment practices; rather, one-off approaches tend to be adopted. It is known that professional identities are formed through an evolutionary and iterative process where individuals make choices in response to the professional context about who they want to be.[8] Given this dynamic nature of PIF, supporting PIF in longitudinal and integrative curricular design is likely required.[64] To address this shortfall, strategies described by Holden et al,[64] who developed a longitudinal curriculum framework to help medical students develop their professional identities, could be applied. For example, this team of academics established a task force including academics, practitioners, and other professionals who generated agreement on the definition of PIF, explicated its key aspects, and identified strategies for promotion and assessment through the curriculum. Moreover, using this task force approach also aligns to broader pharmacy curriculum reform recommendations for collaboration between pharmacy practitioners and universities.[65–67] For example, in the UK, the General Pharmaceutical Council recommended that entry-to-practice pharmacy education should be jointly owned, planned, and delivered by the practice community and universities.[67] Yet, implementing curricular changes and innovation takes time and money and the profession has been slow to implement these changes.[63] Indeed, Blouin et al[63] note that within pharmacy education "innovation, in education or other venues, rarely waits on evidence of worth, and demonstrating worth does not guarantee adoption of the innovation". Thus, a productive way forward may be to acknowledge the evidence, find ways to overcome resistance to curricular reform, and embrace innovation.[68]

The value in this type of approach is that curriculum intentions are revised through collaborative engagement between pharmacy academics, professionals, and practitioners. Also, given our review found that the patient/consumer voice was missing there would be value including consumers in this task force. Finally, the process of longitudinal curriculum framework development will offer opportunities to consider meaningful PIF assessment process.[11,69]

Practice pedagogies for PIF

This review identified several learning activities and interactions contributing to PIF, for example, reflective essays,[29,40,47]

group discussions,[59] and coaching,[58] yet further opportunities to augment PIF exist. For example, Rabow et al[62] in their review of medical PIF identified key pedagogical practices to support learners' PIF through exploration and integration of student values with curricular learnings. Our review found that the following strategies could provide further opportunities for pharmacy student PIF: personal narratives, positive role modeling, and evaluation and feedback about values.[62]

Firstly, because the formation of professional identity is both an internal and external process, both cognitive and social pedagogical opportunities are required for students to make sense of their experiences. Using personal narratives or storytelling pedagogies brings together these opportunities and is a key way to effectively support PIF.[10,11] However, our review suggests there is an absence of storytelling pedagogies within pharmacy curricula and consideration should be given to integrating narratives pedagogies. Narrative approaches support students to derive personal meaning, learn from their experiences, and make PIF explicit. One approach is to use parallel charts, where students not only write up clinical case reports but also write narratives about their personal experiences with patients in separate charts.[70–72] Through this process, students learn to generate their own meaning from experiences and this meaning shapes their identity.[71]

Secondly, positive role modeling is essential for the development of strong professional identities.[62] Yet, only two studies examined the perspectives of pharmacy academics[52] and no studies explored the pharmacy preceptors' perspectives of their role in supporting PIF of pharmacy students. This points to an important gap in the literature and suggests that, as noted by Rabow et al,[62] development programs to support faculty and preceptors in mentoring and serving as a positive role model are likely to make important contributions to student PIF.

Thirdly, an important finding from this review was students often reported lacking social recognition (eg, from patients, other health care professionals) when attempting to enact their pharmacist roles. These experiences made it challenging for them to develop strong professional identities. Moreover, the feedback and assessment processes were not providing students with guidance on how to best engage in their pharmacist roles. These types of experiences and reactions shape identity in two ways: 1) validates (or fails to validate) new behaviors; and 2) provides feedback about how to improve.[22] Experiences of lacking validation from others contribute to identity dissonance.[22] Curiously, there were few examples, except for socialization activities,[73] where students were encouraged to explore and make sense of how others

(eg, patients and other health care professionals) saw them as becoming professionals. As Goldie[74] argues, these interactions need to foster meaningful student participation so that the students can find ways to appreciate and synthesize multiple perspectives. However, there can be few opportunities for students to engage in feedback processes.[36] A key driver of PIF is feedback,[69] while the absence of regular feedback with guidance on how to improve hampers PIF.[22,75] Thus, further efforts are required to enhance feedback practices in the curriculum and will likely include faculty development for pharmacy educators and preceptors to engage in feedback practices. Also, strategies, such as feedback literacy programs, to support student feedback engagement could be incorporated into curriculum,[76] while consideration should be given to how the patient/consumer voice can be enabled to contribute to students' feedback and subsequent PIF.

The limitation of this study, as with all scoping reviews, is that the research outcomes were not examined. Also, despite systematically following the methodological guidance of Arksey and O'Malley, the articles were not quality appraised. We used a comprehensive search strategy generated in collaboration with librarians; however, we may have missed some relevant studies. For example, there may have been value in purposefully searching for pedagogical practices such as experiential learning. Nonetheless, our review presents the extent, range, and nature of research activities which has not been conducted before and identified research gaps and noted where no research has been conducted.

Conclusion

Our scoping review found that supporting the formation of pharmacy students' professional identity, while recognized as an important goal for pharmacy education, would benefit from further research (eg, multisite studies and careful investigation with all stakeholders) and additional pedagogical practices focused on identity formation including adopting an integrative curricular approach. These suggestions are likely to contribute to strong professional identities as graduates transition to professional practice.

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