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Identifying the academic literacy needs of international higher degree by research (HDR) students in Australian universities: A comprehensive scoping review

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With the number of international students completing their higher degree by research (HDR) studies in Australian universities steadily rising, how best to support their academic literacy needs remains unclear. Although research exists on undergraduate and postgraduate international students and their needs when studying in their host countries, there appears to be limited literature that focuses on the needs of international students completing HDR or doctoral studies. As the first phase of a qualitative research project aimed at addressing this gap, this paper presents findings from a comprehensive scoping review on the academic literacy needs of international HDR students at Australian universities. In this holistic approach, academic literacies have been defined to not only include the acquisition of academic skills but also ways of knowing and being in a host institution. As for methodology, the review utilised Arksey and O'Malley's framework and the PRISMA extension framework for scoping reviews with findings analysed and interpreted thematically through conceptual models of academic literacy. In-depth analysis of 11 articles revealed two overarching themes of 'Acculturation' and 'Identity', which included the sub-themes of 'academic acculturation' and 'social acculturation; and 'agency' and 'competing identities', respectively. This review highlights the need for a culturally informed approach to understanding and meeting the academic literacy needs of international HDR students. Such an approach will involve applying a non-deficit framework that acknowledges and celebrates international students' diverse ways of knowing and being.

Key Words: academic literacy needs; higher degree by research; international students; acculturation; identity.

1. Introduction

The proportion of international students choosing to complete higher education by research (HDR) studies in Australia has been increasing steadily (Australian Government, Department of Education 2022), representing 40% of all PhD enrolments in 2023 (Universities Australia, 2024).

These students, who make a significant financial and cultural contribution to the Australian economy, expect and deserve a high-quality university experience (Australian Government, 2023). For international students, who are often viewed within the literature from a deficit lens (Ávila Reyes et al., 2023; Barber, 2025), the underpinning academic, cultural and political factors that influence their individual academic literacy skills can differ markedly from those that are expected in their host country (Ryan, 2011; Smith, 2021; Jatrana & Gasson, 2023). As such, students who have been educated in academic, cultural and social systems with notably different requirements and expectations to those of Australia (Wu et al., 2015; Joseph & Hartwig, 2020; Jatrana & Gasson, 2023) face additional challenges that may not be experienced by domestic HDR students. Further, universities have struggled to support the development of academic literacies among international students (Ince et al., 2018), whereby their literacies may not align with those expected of them by institutions. The resultant misalignment of academic literacies can disadvantage international HDR students within the Australian higher education environment (Cao & Tran, 2015).

The term "academic literacy" has multiple definitions, informed by a variety of conceptual lenses. Lillis and Scott (2008, p. 5) define academic literacy as, "a field of enquiry with a specific epistemological and ideological stance towards the study of academic communication and particularly to date, writing". More recent definitions of academic literacy have added elements of reading (Miller & Meridan, 2020) and oral communication (Heron et al., 2023). In the current higher education environment, where the use of generative artificial intelligence is increasing (O'Dea, 2024), a comprehensive definition of academic literacy should also include aspects related to digital and research literacies**.** Further to this, Ince et al. (2018) have identified four key skill sets for research literacy: information literacy, information management, knowledge management and scholarly communication. For HDR students, additional academic literacies include finding and critically evaluating the literature, using online technologies, understanding the research process, and communicating research.

Various theories, frameworks, concepts and analytical tools have informed the research, teaching, critique and assessment of academic literacy (Coffin & Donohue, 2012). These include Lillis and Scott's (2008) framework, and Halliday and Webster's (2009) systemic functional linguistics (Coffin & Donohue, 2012). The framework chosen to guide our scoping review is that of Lea and Street (2006), who identify three inter-related models of academic literacy that facilitate a broader understanding of the term. Their first model – study skills – refers to the individual cognitive skills associated with academic writing and communicating; the second model – academic socialization – describes a student's acculturation with their chosen discipline, its language, rules and implicit expectations; while the third model – academic literacies – considers epistemological practices or "ways of knowing", as well as social processes (Lea & Street, 2006).

For Lea and Street (2006), student writing and learning are viewed as more than the acquisition of skills: issues of epistemology, identity and academic socialisation are also important aspects of learning. Although the models have been criticised for being overly restricted to written texts rather than visual, conversational, and other modes of communication (Hildson et al., 2019), we believe that Lea and Street's (2006) framework offers a broad understanding of academic literacies, useful for interpreting the findings from our scoping review as the academic literacy needs of international HDR students may involve social and cultural needs in addition to the acquisition of academic, digital and research literacies. This framing of academic literacies challenges dominant institutional norms, encouraging institutions to move beyond "skills-based, deficit" models (Coffin & Donohue, 2012, p. 71) to include academic socialisation and ways of knowing when examining current practices (Lea & Street, 2006).

The concept of "academic literacy" is thus complex and includes not only linguistic capacity and expectations but also varied sociocultural determinants such as education systems, social relationships, agency and identity (Baker et al., 2019). This more holistic paradigm aligns well with the purpose of our scoping review in that it considers literacy as a holistic, socially situated practice

rather than a neutral transfer of skills. As such, the research question, which aims for an understanding of the academic literacy needs of international HDR students in the contemporary Australian higher education context, is best addressed using Lea and Street's (2006) framework as it requires consideration of the structural and cultural factors that influence individual experiences, expectations and requirements of research degrees. This latter aspect is particularly fraught for research students negotiating issues of authority, authorship and scholarly identity (Inouye & McAlpine, 2019).

Thus, guided by Lea and Street's (2006) academic literacies framework as outlined above, the objective of this review is to explore, through a scoping review, currently available literature on the academic literacy needs of international HDR students in Australia. It is the first phase of a qualitative case study exploring the academic literacy needs of international HDR students in an Australian public university.

2. Methodology

A scoping review methodology was used because of the lack of recent published evidence on the topic in Australia (Peters et al., 2020). The five-step framework outlined by Arksey and O'Malley (2005) was used for this scoping review as follows: (1) Identification of research question/s; (2)Identification of search strategy and databases to find relevant studies; (3) Selection of studies from the databases using inclusion/exclusion criteria; (4) Data extraction and analysis; and (5) Collation, summarising and reporting of data. In this fifth stage, the findings were thematically analysed to offer an answer to the review question, and to be interpreted against Lea and Street's conceptual understanding of academic literacy (2006), with particular attention to the importance of aspects of culture, politics and power. This methodology helped address the following research question:

> *What are the academic literacy needs of international HDR students completing their doctoral studies in Australian universities?*

2.1. Database searching

The six databases chosen for the scoping review were: Education Source, ERIC, Informit, Proquest, Scopus, Web of Science and Google Scholar. Four of these (Informit, Proquest, Scopus and Google Scholar) are multidisciplinary and are not subject-specific, so they were broad enough to cover the area of research. Two databases (ERIC and Education Source) specifically relate to education, including higher education, while two (Web of Science, Scopus) are citation databases from which additional sources can be found. Searches across the chosen databases were conducted between December 2023 and December 2025.

The inclusion criteria were that sources must be scholarly peer-reviewed articles from databases, published in the English language, current (published between 2013 and 2025), and involve primary research studies of international students completing their postgraduate studies by research in Australian higher education institutions. The search was limited to Australian studies to enable application of the findings to the next phase of our project (interviews with international HDR students studying at our institution) and because of differences in the education systems of higher education institutions in other countries. Conversely, the exclusion criteria were review articles; non-peer reviewed journal articles; studies involving only undergraduate, coursework or domestic students; abstract-only articles; and grey literature.

2.2. Search terms

The review question used to guide the search was:

> What are the academic literacy needs of international HDR students completing their doctoral studies in Australian universities?

Search terms were organised against the Population-Context-Concept (PCC) framework (Aromtaris & Munn, 2020) (Table 1), with synonyms decided after a preliminary search of the literature.

Table 1. PCC Framework (based on Aromataris & Munn, 2020).

Population 1	Population 2	Context	Concept
International students	Doctoral students	Australian higher education	Academic literacy

The search string used for each database was: ("international students" OR "overseas students" OR "foreign students" OR "English as an additional language (EAL) students" OR "English as a second language (ESL) students" OR "CALD students" NOT "domestic students") **AND** ("higher degree by research (HDR) students" OR "doctoral students" OR "PhD students" NOT "coursework" NOT "undergraduate") **AND** ("Australian higher education" OR "Australian tertiary education" OR "Australian university") **AND** ("academic literacy" OR "research literacy" OR "digital literacy").

2.3. Selection process

Following scoping review guidelines, no studies were evaluated for methodological quality (Arksey and O'Malley, 2005). Prior to article selection, a series of research team meetings were held to agree on and clarify the search and selection process to ensure consistency. The authors collaborated on the article search and selection process, with any disagreements regarding article selection being resolved by two of the authors.

The initial search resulted in 118 studies selected from the six databases and a further 18 articles found from the reference lists of these studies. An initial abstract screening of these 136 articles resulted in the removal of six duplicates, and a further 95 articles that did not meet the inclusion criteria. A full and in-depth reading of the resultant 35 articles led to the removal of a further 24 studies that did not meet the inclusion criteria. This process resulted in 11 studies being selected for analysis (see Figure 1).

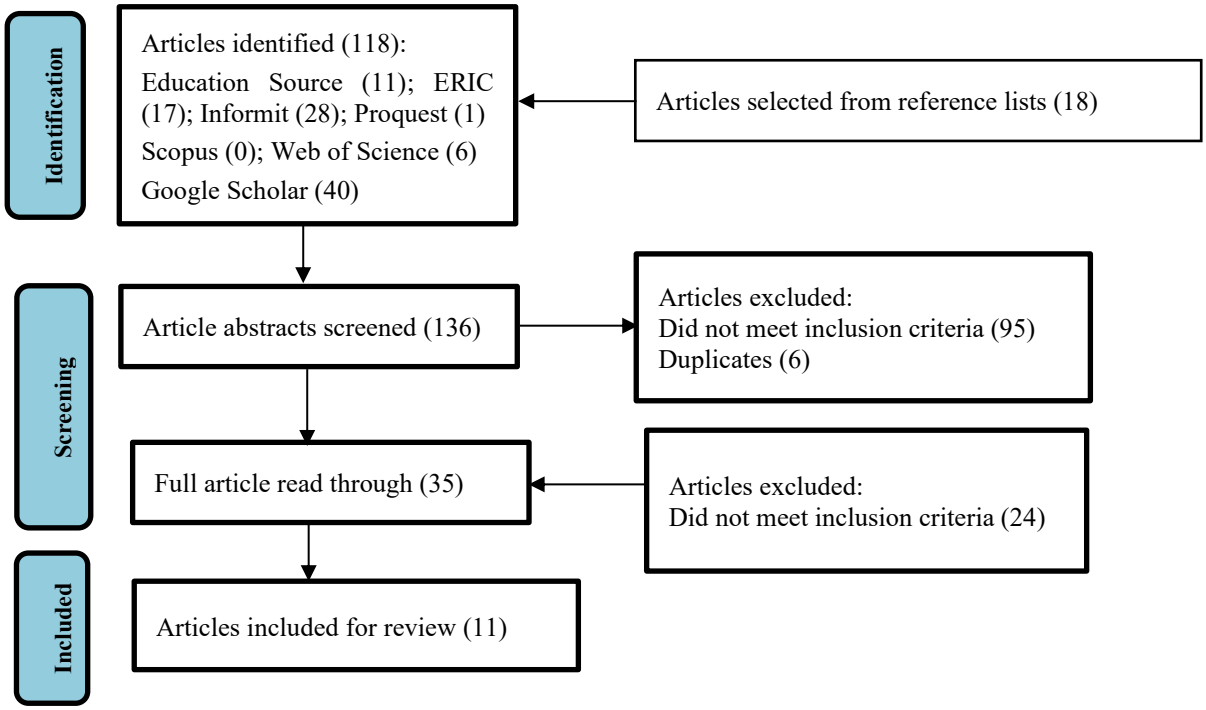

Figure 1. PRISMA flowchart of selection process (based on Tricco et al., 2018).

2.4. Analysis

All articles were re-read by two of the authors with information recorded as a table using headings as proposed by Arksey and O'Malley (2005). Guided by the conceptual understanding of academic literacy outlined by Lea and Street (2006), text was initially coded and then organised as sub-themes and themes.

3. Findings

Findings from each of the articles analysed in this scoping review can be found in Appendix A.

3.1. General findings

The articles selected in the review were empirical studies, each undertaken at a single university, with the exceptions of Winchester-Seeto et al. (2014), which involved data collection across three Australian universities; and Soong et al. (2015), where the setting was not provided. Studies were carried out with international students from a wide range of home nations spanning Asia, Africa, the Middle East, America and Europe. Almost all studies applied a qualitative approach to data collection, except for Aspland et al. (2021) who used survey design, and Zeivots (2021) who used mixed methods. Three studies (Due et al., 2015; Creely et al., 2021; Zeivots, 2021) did not specify whether their participants were restricted to doctoral students and may have included other students completing a Master by Research course. These were not excluded as their results contained valuable information to help address the research question. Eight studies limited participants to HDR students (O'Mahony et al., 2013; Yeoh & Terry, 2013; Son & Park, 2014; Soong et al., 2015; Yu & Wright, 2016; Aspland et al., 2021; Robertson & Nguyen, 2021; Zeivots, 2021), while two studies included academics and supervisors (Winchester-Seeto et al., 2014; Due et al., 2015), with Creely et al. (2021) having only academics as participants. The objectives of the studies included exploring the perceptions, experiences and understandings of international HDR students, as well as the strategies used to empower and shape their academic identities.

3.2. Specific findings

From an in-depth analysis of the studies, two major themes of 'Acculturation' and 'Identity' emerged as being relevant to answer the research question: *What are the academic literacy needs of international HDR students completing their doctoral studies in Australian universities?* These themes were divided further into sub-themes of 'Academic Acculturation' and 'Social Acculturation', and 'Agency' and 'Competing Identities', respectively.

3.3. Theme 1: Acculturation

A broad definition of acculturation is that it is the process by which a person, over time, comes to adopt certain values and practices from a culture that is not their own (Berry, 2005). For international students undertaking HDR studies, this process involves, among other things, the development and practice of required academic literacy (Yeoh & Terry, 2013), and an understanding of the academic and social expectations of the institutions in which they are studying (Jatrana & Glasson, 2023). The theme of acculturation was evident in nine of the studies (Yeoh & Terry, 2013; Son & Park, 2014; Winchester-Seeto et al., 2014; Due et al., 2015; Soong et al., 2015; Yu & Wright, 2016; Aspland et al., 2021; Creely et al., 2021; Zeivots, 2021).

3.3.1. Sub-theme: Academic Acculturation

The development of academic values and practices includes the written, oral and digital literacies expected of students by the higher education institution that hosts them. In their qualitative study involving interviews with 46 students and 38 supervisors in a cross-cultural context, Winchester-Seeto et al. (2014) found that poor English language proficiency impacted a range of HDR students' written and oral communication, while Creely et al. (2021) also identified English language proficiency of international HDR students to be problematic, including differences in grammar

and language styles. For some supervisors, the responsibility to address these 'problems' lay solely with the student (Winchester-Seeto et al., 2014); however, others described scaffolding and role modelling of English academic literacies as an intrinsic part of their supervisor role (Creely et al., 2021).

Other difficulties experienced by international HDR students included the fact that the research approach in Australian institutions was more robust than in their home countries, including: an emphasis on critical thinking (Son & Park, 2014; Aspland et al., 2021); researching and referencing to find credible sources and a gap in the literature (Yeoh & Terry, 2013; Son & Park, 2014); as well as a lack of awareness regarding the need to apply for ethics approval prior to data collection (Yeoh & Terry, 2013). One 'deficit' noted by supervisors was a lack of digital literacy among international students (Creely et al., 2021).

Recommendations proposed by the studies to facilitate the academic acculturation of international HDR students included engaging with students before they began their HDR journey to prepare them for the academic expectations of their future host university (Yeoh & Terry, 2013). This prior engagement was in addition to providing more support for students, such as embedded and scaffolded workshops by specialist writing experts (O'Mahoney et al., 2013; Winchester-Seeto et al., 2014; Aspland et al., 2021) while students were engaged in their studies. In particular, support was recommended in relation to digital literacy and critical thinking to facilitate the sourcing, critiquing and acknowledging of research evidence (Aspland et al., 2021; Creely et al., 2021).

3.3.2. Sub-theme: Social Acculturation

The adoption of specific social values, skills and practices expected by the host country can be facilitated by meaningful social interaction with supervisors and peers (Baker et al., 2019). Findings from most articles in the scoping review propound that international HDR students highly value their relationships with their supervisors and wish for these to be successful (Yeoh & Terry, 2013; Son & Park, 2014; Winchester-Seeto et al., 2014; Due et al., 2015; Yu & Wright, 2016; Aspland et al., 2021; Zeivots, 2021). However, their expectations about these relationships frequently differed from those of their host country's supervisors (Due et al., 2015; Yu & Wright, 2016; Aspland et al., 2021; Zeivots, 2021). Often students described how their expectation of a nurturing and emotionally involved and available supervisor contrasted with the reality where the supervisor took a more distant and objective stance. For example, Robertson and Nguyen (2021) have described how the expectation of Vietnamese students of a 'paternalistic' supervisor, who was both caring and hierarchical, was not realised. Instead, these students noted that supervisors took a 'businesslike approach', lacking the level of care and social interaction that they expected. Further, Zeviots (2021, p. 385) has reported how the reality of this relationship prompted feelings of "outsiderness" for international HDR students. In addition, on occasions where the supervisor left the relationship during the PhD journey, this had a profound impact on student confidence, perhaps due in part to its contrast to this expected caring, parental relationship. Soong et al. (2015) noted how students described feelings of 'abandonment' when their primary supervisor resigned from the university and left in the early stages of their PhD journey. From a supervisor's perspective, having variable or little knowledge about international HDR students had meant they did not always develop strong relationships with them (Due at al., 2015).

In theory, domestic HDR students offer an ideal opportunity for social interaction and engagement for international HDR students. However, the studies in this scoping review posit that domestic students are largely uninterested in forming meaningful relationships with their international peers, partly because of cultural or language barriers (Due et al., 2015; Yu & Wright, 2016). International students also reported a lack of a strong student community in their host universities, with campuses described as 'quiet', and offering 'limited opportunities' to engage socially (Due et al., 2015; Yu & Wright, 2016). These students also reported feelings of isolation, loneliness and homesickness, as well as reduced resilience and wellbeing (Son & Park, 2014; Winchester-Seeto et al., 2014; Due et al., 2015; Soong et al., 2015; Aspland et al., 2021). These emotions may

also explain why international HDR students may not feel a sense of belonging to their host country's university.

3.4. Theme 2: Identity

The studies in this scoping review have revealed the importance of this second theme of identity, which encompasses the sub-themes of agency and competing identities. Identity can be described as a certain type of person in any given time and place who can be influenced and changed according to experiences, interactions and contexts. In contrast to Theme 1 (Acculturation), Theme 2 (Identity) describes internalised perceptions and attributes that influence student experiences (Bernstein, 2000 cited in Robertson & Nguyen, 2021).

3.4.1. Sub-theme: Student agency

An analysis of supervisor perspectives from these studies indicates that there are several stereotypical perceptions of international HDR students' agency. These perceptions included the idea of the 'passive international student', noted as being less capable than their domestic counterparts (Winchester-Seeto et al., 2014; Creely et al., 2021). This contrasted with academics' expectations of students of independence rather than dependence (Creely et al., 2021). Findings from student perspectives revealed internalised expectations of hierarchy, which influenced their initial agency in their research journey, as well as their relationship with their supervisors. International HDR students described how on commencement of their studies in Australia, they anticipated a steeply hierarchical relationship with their supervisors, viewing the latter as "demi-gods in a sense" or "like a very big boss" (Winchester-Seeto et al., 2014, p. 618) with themselves at the lower end of this continuum, with no agency to voice their ideas or opinions (Yeoh & Terry, 2013; Son & Park, 2014; Winchester Seeto et al., 2014; Soong et al., 2015; Zeivots, 2021). This perception initially impacted the students' capacity to approach or question their supervisors, where confusion could occur when students encountered collegial and guiding supervisory approaches (Yeoh & Terry, 2013; Son & Park, 2014; Winchester Seeto et al., 2014; Soong et al., 2015). This lack of congruence in internalised perceptions and expectations between students and supervisors, along with feelings of being unable to challenge misleading university expectations and practices (Zeivots, 2021), was noted to result in frustration, miscommunication and an unsatisfactory experience for both supervisors and students (Robertson & Nguyen, 2021).

For the international HDR students in these studies, the issue and impact of agency was not necessarily static, with some studies reporting a growing realisation among students of their own need to exercise agency in the Australian higher education environment, identifying independent learning, self-motivation, time management and self-promotion as key attributes to their success (Yeoh & Terry, 2013; Son & Park, 2014; Soong et al., 2015).

3.4.2. Sub-theme: Competing identities

A successful international doctoral student needs to not only acquire new skills and knowledge but also undergo a "mediation of multiple identities" (Soong et al., 2015, p. 435), from which a new identity as a doctoral student in the Australian higher education context may emerge. Soong et al. (2015) have reported how students do not simply abandon their home country's cultural identity but rather develop a more nuanced and multilayered identity that embraces Australian expectations and norms whilst celebrating and accommodating their own. A similar identity development was noted regarding female Vietnamese students' increased persistence and 'polite' resistance in situations where they felt their supervisor was being unhelpful or unclear (Robertson & Nguyen, 2021). These students increasingly shared their own cultural expectations with their supervisors, which supported the direction and effectiveness of the relationship (Robertson & Nguyen, 2021). Interestingly, the development of new and supporting identities described by female participants was not evident in male students, with the researchers attributing this gender difference to past experiences of disenfranchised Vietnamese women and the learnt ability to meet these experiences with resilience and adaptability (Robertson & Nguyen, 2021).

The female HDR students who were mothers in Soong et al.'s (2015) study described the importance of making their supervisors aware of their additional and somewhat competing maternal role. Unlike their female counterparts, male HDR student participants did not discuss identity change or development when describing their relationship with their supervisors. but rather reported how underlying cultural identity differences created a continued feeling of personal disempowerment (Robertson & Nguyen, 2021).

4. Discussion

This review is the first to explore and interpret published literature from 2013 to 2025 on the academic literacy needs of international HDR students in Australia, guided by the models of academic literacy articulated by Lea and Street (2006). The two themes (Acculturation and Identity) and their associated sub-themes (Academic Acculturation and Social Acculturation; and Agency and Competing Identities, respectively), elicited from 11 selected articles, provide responses to the research question: *What are the academic literacy needs of international HDR students completing their doctoral studies in Australian universities?* Further, the identified themes echo Lea and Street's (2006) notion of academic literacies as issues of "epistemology and identities rather than of skill acquisition or academic socialisation alone" (p. 227). In this context, the academic literacy needs of international HDR students completing their studies in Australia involve much more than just academic, digital and research literacies, they include social and cultural needs, as well as the need to develop a sense of identity as a higher degree by research student and agency. In a sense, this scoping review has added to the model proposed by Lea and Street (2006) by considering the unique perspectives of international HDR student experiences.

As an investigation of human social interactions, behaviours and perceptions, the findings of this scoping review are strongly entwined. Connectivity and belonging, for example, described in the social acculturation sub-theme of Theme 1, have an influence on the development of agency and conflicting identities described in Theme 2. Similarly, an emerging sense of agency (Theme 2) supports expressions of needs and expectations around developing academic literacies (sub-theme of academic acculturation in Theme 1). As Lea and Street (2006, p. 227) argue, "[these factors] are not mutually exclusive, and individuals may move between them according to context and purpose".

This scoping review reveals that international HDR students require support for the development of higher order thinking; academic, research and digital literacies; as well as a sense of agency and identity as a higher degree by research student to enable them to succeed in their studies. However, these studies also suggest that efforts to improve the academic literacy of international HDR students to date have been limited. This situation may be influenced to some extent by an assumption that all international students who qualify for HDR studies bring with them a congruent set of literacies required for success, or that their needs are the same as domestic HDR students previously educated in Australia.

There is also a strong focus on the student/supervisor relationship in this review. The importance of this relationship on the international student HDR journey is emphasised across a range of parameters, including language. Additionally, this scoping review indicates how the use of English language as the sole medium of communication with supervisors can lead to reports of a deficit narrative about students. For example, terms used to describe international HDR students' English language skills included 'less nuanced', 'limited' and 'problematic' (Winchester-Seeto et al., 2014; Creely et al., 2021). These negative stereotypes may extend to perceptions of student behaviours, including 'passiveness' (Creely et al., 2021). These findings align with the prevailing deficit narrative associated with international students in Western higher education. Recommendations are made in some studies for additional support for international HDR students, taking into consideration their socio-cultural differences in learning approaches and ways of knowing.

Although international HDR students are primarily responsible for their own literacy development, this scoping review identifies the role of others in this process. Supervisors, research and learning and teaching academics, student peers and wider university administrators have all been shown to play an important part in facilitating the development of international HDR students' academic literacies through academic workshops, social activities and other avenues for developing agency (O'Mahoney et al., 2013; Yeoh & Terry, 2013; Due et al., 2015; Yu & Wright, 2016; Zeivots, 2021). Some universities also include specialist academic language and literacy (ALL) advisors in developing academic literacies for these students (Johnson et al., 2025).

In her report of the experiences of 11 international HDR students at a Portuguese university, Pinto (2023) highlights that a 'good supervisor' has an established knowledge of the student's cultural traditions, educational backgrounds and research traditions. Our review extends this finding, demonstrating that these qualities support the international student's academic literacy development. As well as developing an awareness of cultural influences related to academic literacies, supervisors require awareness of international HDR students' expectations of the supervision relationship, including relationship dynamics. Discussions with students at the start of the relationship are important in order to understand, share and agree on relationship dynamics, such as expectations of hierarchy and independent learning. Supervisors also need to understand how experiences and agency can influence help-seeking behaviours as well as the willingness of students to critically engage with and question knowledge. Jatrana and Gasson (2023) advise that a tool such as Paltridge and Starfield's Role Perception Scale (2020) can help with this process, engendering trust within the student/supervisor relationship.

Explicit and shared understandings provide groundwork for international HDR students to feel safe and to normalise open discussion and opinion. The review findings reveal that not all supervisors currently see this as part of their role (Creely et al., 2021) and instead perceive this as an extracurricular responsibility of the student: to engage in voluntary add-on activities delivered separately to their supervised research work by learning and teaching experts.

Opportunities to develop the academic literacies and ways of knowing and being that support international HDR student success rely in part on social acculturation activities. The reluctance among domestic students to develop meaningful connections with international students, and the limited provision for socialisation and networking opportunities offered by the host university, as described in the reviewed studies, limits this process. Thus, teaching and supervision approaches that aim to enhance the academic literacy of international HDR students require an awareness of the ways that cultural, social and educational backgrounds influence skills, expectations and relationships.

In practical terms, this may include the use of explicit discussions at the start of the student research journey around both parties' cultural norms and expectations. To facilitate these discussions, educational packages may be required to support the cultural awareness and competency of academics, as relevant to the students they supervise and teach. Opportunities to celebrate differences through on-campus and online curricula and extracurricular activities also enhance social acculturation, in addition to actively listening and encouraging the sharing of international HDR students' own personal experiences with others. These types of opportunities can help support the development of international students' agency and identity as higher degree by research students in Australian higher education.

There are some limitations to this scoping review. Two articles included in the review (Due et al., 2015; Zeivots, 2021) did not specify whether their participants were restricted to doctoral students and may have included students completing their Masters degrees by research. The lack of studies focussed on the international HDR student literacy informed the decision to include these studies. Thus, it is reasonable to assume that the experiences of these students align well with doctoral students. The reviewed studies were mainly single site studies using qualitative approaches. While this limits generalisability, it offers a deep and nuanced understanding of the international HDR

student experience relevant to the objective of the scoping review. The focus on Australia could also be considered a limitation of this review. However, the use of Lea and Street's (2006) conceptual models of academic literacy offers a rigorous way to transfer these findings to global educational and cultural higher education contexts. The findings are particularly pertinent to countries where Western cultural norms and practices dominate higher education processes.

Finally, despite the recent interest in the use of generative artificial intelligence (GenAI) by students in higher education, this scoping review did not reveal any scholarly, peer-reviewed articles on the use of GenAI or the AI literacy of international HDR students studying in Australia. This is an emerging area which should be addressed in future research.

5. Conclusion

This scoping review has summarised and interpreted the holistic and nuanced factors that influence the academic literacies of international HDR students in Australia. The review demonstrates that for these students, academic literacy is influenced by a range of cultural and social factors, as well as the students' identity and agency within the Australian higher education environment.

The findings have highlighted the need to move away from a narrow, generic and ethnocentric approach to academic literacy, limited only to the acquisition of academic, digital and research literacies. To ensure an equitable HDR experience for international students, the social and cultural influences on a student's commencing academic literacy and its development across the HDR journey within the Australian higher education context should be acknowledged and accommodated across all academic literacy support interventions.

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Declarations

1. **Ethics approval**: Ethics approval was granted for a wider research project which the scoping review forms part of.
2. **Competing / conflict of interests:** The authors disclose that they have no actual or perceived conflicts of interest. The authors disclose that the scoping review forms part of a wider project for which a research grant from the Association for Academic Language and Learning (AALL) has been awarded.
3. **Use of Generative AI:** The authors declare that they have not used artificial intelligence in the ideation, design, or write-up of this research.
4. **Copyright on teaching materials if included**: The manuscript does not contain any teaching materials which form part of our institution's intellectual property.

Appendix A. Table of findings from scoping review

Article	Authors Year Study site	Aims	Methodology	Population	Outcomes/findings
1	Aspland et al. (2021). Australia. One university.	Exploring academic and non-academic (cultural and social) experiences of on-shore international doctoral students.	Survey design with nine open ended questions. Data were text (qualitative) and analysed thematically.	Participants doctoral international students. 21 survey respondents originating from 14 countries. HDR specified as PhD level.	Themes. 1.Australian HE curriculum is more research intensive than home institution: more rigorous than previously experienced, more challenging, students needed to reposition learning styles, supervisor demands were different. 2.HDR students adopt a range of strategies to meet the Australian HE curricular and supervision demands, especially to transition into new academic and social environments. Seek support from peers, supervisors, senior colleagues and experienced professionals. Needed direction in how to study differently. Develop new capacities, writing, communication, protocols, building confidence and counter loneliness. 3. Surviving the new educational and cultural milieu is contingent on several factors: Access to resources was key to transition. This includes library, printers, space, admin support. Access to resources can make or break transition to new culture. Access to supervision, time, meeting frequency, lack of agency, lack of supervisor investment in relationship. Cultural diversity and respect with supervisors, the university and student peers. Collegiality or competition with peers.
2	Creely et al. (2021). Australia. One major university, diverse faculties/disciplines.	To explore academics understandings and experiences of the academic literacies and literacy needs of international graduate research students.	Qualitative case study, three focus groups (semi-structured with guiding questions only). Purposive sampling across disciplines.	16 academic teaching staff who work with international graduate research students as research teachers/supervisors. HDR level not specified.	Themes. 1. Expectations about language proficiency-a priority includes the need for everyday English, not just academic English, digital literacies, high levels of agency expected. Students should prioritise language proficiency through ongoing opportunities to use English in social and academic settings. 2. Assumptions and beliefs-oral English skills should be central to academic literacies in the Australian context; students have limited opportunities to use their cultural and linguistic resources; current assistance programs are not preparing students well for work. Mixed views about whether academics are responsible for helping students with their academic literacies. 3. Reality is academics lack connectedness with students, disengagement, expect students to have independent learning and good teamwork skills (Western assumptions/attributes

					4. Challenges including social isolation, enculturation, independent thinking skills
3	Due et al. (2015). Australia. One faculty in University of Adelaide.	To explore strategies that may work in assisting international HDR students settle into the environment.	Qualitative interview design Structured interviews -scenarios students might find themselves in presented for comment, questions about their relationships with supervisors or students.	Six supervisors and seven international HDR students from six different countries, in first year of candidature. HDR level not specified	Themes. 1. Role of faculty and university in forming relationships 2. The role of students in events to facilitate relationships (related to number 1) 3. Friendships with local and international students, and factors impacting these friendships. 4. Feelings of loneliness-homesickness, loneliness and isolation 5. Feelings of loneliness-coping mechanisms when feeling friendless 6.Relationships with supervisors
4	O'Mahony et al. (2013). Australia. One university, School of Business.	Evaluation of a writing support program/service in a School of Business.	Qualitative approach. Interviews with students and supervisors.	international HDR students from Non-English-Speaking Backgrounds over two three-year periods: 2011-14 intake; 2012-21 int intake. HDR level specified as PhD	Themes. 1. Confidence building: main reason students attended classes was to gain confidence in writing, including getting a second opinion from somebody not involved in business studies, also developed self-correcting skill. 2. Bridging the ontogenetic: micro genetic divide classes improved their writing drafts and research and communication skills. 3. Improving the service: recommendations made by students. 4. Relationship development: meeting with all stakeholders-including supervisor-important 5. Approach taken by specialist writing expert-scaffolding.
5	Robertson and Nguyen (2021). Australia. One research intensive university.	The study examines strategies the graduates used to empower themselves and shape their academic identities in a foreign academic environment.	Qualitative approach. In-depth interviews. Retrospective exploration of HDR experiences. Thematic analysis.	Six Vietnamese HDR recent graduates. HDR level specified as PhD	Themes. 1. Power and agency. Vietnamese understanding of power and hierarchy This is different and affects relationship with supervisors and student agency. Students do not naturally contest/argue their point. Supervisors are seen as 'fathers/mothers that guide students.' 2. Transactional identity development: acceptance or resistance. Issues of lack of trust and support within supervisory relationship in Australian context, students struggled with supervisor relationship. Struggle to get feedback from supervisors.

					3. Claiming a new identity. Women students developed agency and resilience-females developed stronger agency than males due to determination, independence, resourcefulness, resilience. 4. Seeking new sources of support and developing understanding of unfamiliar cultural student identities. Male students remained disempowered by cultural differences; most students felt powerless to question the supervisors.
6	Son and Park (2014). Australia. One university.	The study explores international students' experiences with PhD programs and the student experience.	Qualitative approach. Focus groups and individual semi-structured interviews. Participants also ranked factors that affected their PhD study	Seven international PhD NSEB students (four Arabic, two Indonesian and one Chinese speakers). HDR level specified as PhD	1. Focus group findings: Early academic research skill issues, finding gap/changing topic, lacking relationships with supervisors-lack of communication with academic staff, finances, resources, ICT support. 2. Interview findings: difficulty reading journal articles, difficulty finding literature gap, difficulty learning how to use software to analyse data, difference in expectations of supervisors. 3. Ranking from most important to least: Motivation to study, English language proficiency, relationship with supervisors, critical thinking, family matters, thesis writing, financial support, use of technology, research support from university, communication skills, future planning, learning styles, social life, understanding of academic culture, intercultural adjustment.
7	Soong et al. (2015). Australia. Specific university setting unclear.	Exploring the development of an intercultural doctoral identity	Qualitative approach. Autobiography research method. Reflective autobiographical narratives.	HDR Chinese and Vietnamese students. HDR level specified as PhD.	Narratives 1. Negotiating identity change and agency in becoming. Asian-Australian migrant cum doctoral student nexus-need both supervisor and student to exercise cultural sensitivity (for supervisors) and heightened agency (for students), feeling abandoned at times. 2. Shifting from being an 'expert' in teacher education in Vietnam to becoming an international doctoral student 3. Navigating doctoral education, motherhood and intercultural being. Also, creation of multiple identities, negotiating this identity change within the context of transnationalism. Empowerment and agency are to be placed at the heart of the supervisor-student relationship involving diverse cultures/intercultural.
8	Winchester-Seeto et al. (2014). Australia. Three universities.	To determine the main issues facing international HDR candidates and supervisors, and their relationship.	Qualitative approach. Semi-structured interviews.	46 HDR students and 38 supervisors. HDR level specified as PhD.	Eight intensifiers that make it harder for international students in a cross-cultural setting: 1. Language 2. Cultural differences in dealing with hierarchy 3. Separation from the familiar 4. Separation from support

					5. Cultural differences (excluding dealing with hierarchy) 6. Stereotypes 7. Time 8. What happens when the candidate returns home?
9	Yeoh and Terry. (2013). Australia. One University.	To investigate the student experiences of international research HDR students and how this impacted upon their studies.	Qualitative approach. Semi-structured interviews. Constructivist grounded theory analysis.	10 international HDR students, including China, Korea, Malaysia, Sri Lanka, Vietnam and Pakistan. HDR level specified as PhD.	Five main areas of difficulty: language barrier, time management, research resources, educational background and cultural background.
10.	Yu and Wright (2016). Australia. One university.	Exploring the experiences and perceptions of international higher degree research students in Australia.	Qualitative Semi-structured interviews and student diary analysis. Thematic analysis.	Six international doctoral students: UK, China, Mexico, Malaysia, Germany. HDR level specified as PhD.	Themes: 1. Sociocultural adaptation: Barriers and challenges: lack of opportunity to socialise, language barriers, lack of student integration, financial difficulties. 2. Academic adaptation issues: unfamiliar with university procedures, lack of resources, academic writing, relationship with supervisors, lack of specific supervisor feedback. Most important issues in terms of satisfaction were not related to academic studies. Factors of importance: Integration into community, interacting with others, relationships with supervisors, adequate resources (e.g. desk).
11	Zeivots (2021). Australia. One university.	To explore the experiences of first year English as an Additional Language (EAL) international research students.	Mixed methods approach. Survey and case study and interpretive phenomenological analysis.	57 EAL International research students with EAL. Participants' first language: Mandarin, Cantonese, Spanish, Vietnamese, Arabic, French, Hindi. HDR level not specified.	Themes: 1. Degree of outsiderness: diverse expectations from academics, lack of sense of belonging, difficulties with English language, lack of cultural integration. 2. Socialisation bump: lack of opportunity to socialise and acculturate, need this for beneficial research degree experiences.

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