arc training centre for **information resilience**

Industry Placement in PhD Training: A National Study of Student and Advisor Experiences

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University of Queensland Researchers

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Acknowledgements

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Acknowledgement of Country

The University of Queensland acknowledges the Traditional Owners and their custodianship of the lands. We pay our respects to their Ancestors and their descendants, who continue cultural and spiritual connections to Country. We recognise their valuable contributions to Australian and global society.

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Foreword

Australia's research training system is at an inflection point. As industry demand for research-trained professionals continues to grow, PhD industry placements are playing an increasingly critical role in bridging doctoral education and the innovation economy. Yet, until now, insight into what enables successful placements for students, advisors, and host organisations alike, has remained fragmented and incomplete.

We undertook this national study to address this gap. Through the ARC Training Centre for Information Resilience (CIRES), and with the endorsement of the Australian Government Department of Education, we set out to establish the first national evidence base on PhD industry placements, including their scope, objectives, outcomes, and challenges. Drawing on the experiences of 345 PhD students and 143 academic advisors from across the country, this report offers a clear and candid picture of a system that has reached maturity in intent and scale, but not yet in consistency of execution.

The findings indicate that placements deliver the greatest value when they are well scoped, aligned with thesis objectives, and supported by genuine collaboration between academic and industry supervisors. The evidence also reveals persistent barriers, such as unclear expectations, administrative and funding delays, and pressures on student progression and student wellbeing, which too often constrain the return on a significant national investment. Our three recommendations respond directly to this evidence: establish clear expectations and alignment early, adopt a genuinely student-centred placement model, and strengthen the administrative, funding, and institutional support systems that underpin successful placement.

This report marks a starting point for ongoing action and collaboration. We invite universities, industry partners, funding bodies, and policymakers to act on these findings with us and join a coordinated national effort, dedicated to the continuous improvement of PhD industry placement programs. There is a clear need to build on this study through a sustained, longitudinal initiative that tracks outcomes over time, compares placement models across disciplines, and incorporates the perspectives of host organisations. We welcome the partnerships and investment required to support and sustain this. Strengthening industry placement is essential to building a robust, sustainable talent pipeline for industry and the broader Australian economy, while safeguarding the research training and wellbeing of the students.

We thank everyone who generously contributed their time and insight to this study, and we look forward to the conversations and collaborations that will follow.

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List of Acronyms

ARC	Australian Research Council
CIRES	ARC Training Centre for Information Resilience
CSIRO	Commonwealth Scientific and Industrial Research Organisation
ITTC	Industrial Transformation Training Centre
HDR	Higher Degree by Research
PhD	Doctor of Philosophy
NIPhD	National Industry PhD Program

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Executive Summary

This report provides the first national evidence on PhD student industry placements in Australia, examining their scope, objectives, experiences, outcomes, and challenges. Drawing on survey responses from 345 current and recently completed PhD students (as of September 2025) and 143 academic advisors, the report shows that industry placements are now an increasingly integral component of doctoral training. While widely adopted through programs such as the National Industry PhD Program, ARC Industrial Transformation Training Centres, APR.Intern, CSIRO iPhD, and university-led initiatives, placements are delivered in diverse ways, varying in duration, structure, funding, and expectations. This heterogeneity creates a complex landscape that students and advisors must navigate across differing institutional and administrative contexts.

The survey shows students most often participate in industry placement during the mid-candidature of their PhD studies. Placements typically last between three and twelve months and are mostly embedded within substantive research activities during students' doctoral training rather than being peripheral tasks. Students identified a number of desirable outcomes, describing placements as career shaping experiences, influencing career thinking by clarifying employment preferences, revealing alternative career pathways (beyond academia), and, in some cases, generating opportunities related to employment, commercialisation, or intellectual property.

The findings also highlight that persistent challenges exist which create barriers to meeting the objectives of industry placement programs. Most students reported that industry placement creates value for their research and career development when projects are well scoped, aligned with thesis objectives, and supported by effective collaboration between academic and industry supervisors. A smaller proportion reported limited or no relevance of the industry placement to their PhD program, due to unclear expectations, misaligned tasks, or weak integration of placement work into the PhD program. Students also face difficulties when balancing placement workloads with PhD progression which leads to a slowing of academic progress. They encounter issues related to unclear expectations, limited skills development, administrative delays, and funding or stipend processing. Advisors face challenges in securing funding, managing student progress during extended placements, and navigating administrative and partnership complexities. Student support during placement is provided by universities, industry partners, and personal networks, but less available in specialised services for career development and commercialisation.

These findings suggest that value from placement programs depends on the design of placement and expectation setting rather than simply providing students with placement opportunities. While PhD industry placements in Australia have reached maturity in intent and scale, they are yet to achieve consistency of execution. Outcomes depend less on the existence of programs than on the quality of placement design. This report provides the evidence and pathways to reshape PhD placement programs with greater emphasis and consistency across (1) establishing clear expectations early; (2) adopting a student-centred approach and (3) strengthening administrative and contractual processes.

Addressing issues and challenges identified in this report can provide a step-change for sustained benefits for research-industry collaboration and enhancement of research training outcomes while safeguarding academic expectations of PhD progression and student wellbeing. We invite organisations and communities engaged with PhD placement programs in Australia to join force with CIRES towards a national initiative for improving PhD industry placements for the benefit of research training and the creation of a robust talent pipeline for industry and the wider Australian economy.

1

Introduction

1.1 Overview of the Report

This report provides findings from a national PhD student industry placement survey deployed by the ARC Training Centre for Information Resilience (CIRES)[1] in 2025. While industry placement becomes more available during PhD research training, the experiences of students and advisors remain anecdotal. Furthermore, information about PhD student industry placement is scattered across different universities and programs. Communications about placement success factors are also lacking in the broader academic community nation-wide. These conditions call for a systematic approach to understand the status and experiences of industry placement across the country. Motivated by this urgent need and reflections from the centre's own placement experiences, CIRES launched a national survey in June 2025 to gather input from PhD students and academic advisors. With their input, the CIRES team analysed the expectations, experiences, and challenges related to industry placement in both groups which are presented in this report.

The findings presented are based on a sample of 345 currently enrolled or recently completed (as of September 2025) PhD students' experiences of participating in industry placement as part of PhD training. Additionally, the findings also include responses from a sample of 143 academic advisors who reported their experiences of supervising student industry placements alongside a set of challenges. The data and analysis presented in this report are intended to inform academic and university leaders, industry partners, and policy makers invested in advancing research training, and strengthen the connections between academic research and industry.

The report is presented as follows. First, the diverse landscape of PhD student industry placement in Australia is discussed, followed by background information about the national survey and survey respondents (including students and advisors). The second and third sections present detailed survey findings from the student and advisor respondents, respectively. The fourth section provides a comparison of student and supervisor responses regarding key challenges encountered in industry placements. The fifth section summarises the key findings from the national survey, highlighting the enablers, barriers, and missing elements that would make industry placements successful. The final section of this report suggests three critical recommendations and pathways for improving the process and outcomes of PhD industry placement programs in Australia.

1.2 The Landscape of Industry Placement for PhD Students

Industry placement for PhD students is a structured, temporary period of research-based work undertaken with a non-academic partner such as a corporation, government agency, or non-profit organisation. Unlike undergraduate placements, industry placement for PhD students is designed to utilise advanced analytical and research capabilities with the intention to bridge the gap between academic research and practical applications.

In Australia, industry placement of PhD students, referred to as industry internships in some programs, has recently shifted from being optional, to serving a central part of many doctoral training programs. This change is largely driven by federal government incentives to connect university research with commercial and public sectors. The landscape of industry placement is complex, containing various programs at the national level and/or with specific industry and university agreements. A leading example is the National Industry PhD Program[2] from the Australian Government's Department of Education. This program supports university-industry collaboration in PhD training where the research projects are co-designed with industry partners, and a 12-week training is embedded in the industrial setting.

1 https://cires.org.au
2 https://www.education.gov.au/national-industry-phd-program

Similarly, the ARC ITTC[3] scheme sponsors university and industry co-designed research projects. An ARC ITTC is typically funded in a specific industry sector like Green Steel, Digital Health, or Food Security where PhD students have opportunities to conduct industry placements within partner organisations.

Brokerage programs also exist, such as APR. Intern[4] which serve as an intermediary between candidates and industry partners offering internships typically lasting 3 to 6 months. Government funded industry PhD programs can provide partially or fully embedded industry-driven research projects for PhD students, an example being the CSIRO Industry PhD (iPhD)[5] which includes a mandatory 60-day industry placement and specialised training in commercialisation and research translation. State-specific schemes for industry placement also exist. For example, the Defence Innovation Network (DIN, NSW-based)[6] offers STEM students internships with scholarships and the iPREP (WA-based) program places interdisciplinary teams of PhD students into six-week projects.[7]

Many Australian universities encourage academic-industry collaboration for research and research training. They support PhD students in exploring specific industry placement programs, leveraging the schemes presented above, as well as dedicated collaborations with industry partners with whom they have a strong relationship and mutual commitment to support research training. Readers of this report can find a list of notable placement programs in Appendix I.

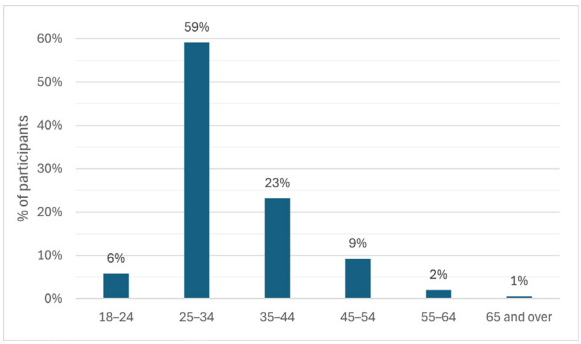
1.3 A National Survey

The national survey deployed was approved by the University of Queensland Human Research Ethics Committee (no. 2024/HE002001) and endorsed by the Australian Government Department of Education. Intended participants of the survey were individuals who, at the time of the survey, had or not yet participated in industry placements either as students or academic advisors. Potential cohorts of participants were identified by the CIRES team through various national industry placement programs and university specific HDR programs to ensure a national pool of respondents. Additional details regarding survey design and methods including participant recruitment are presented in Appendix II.

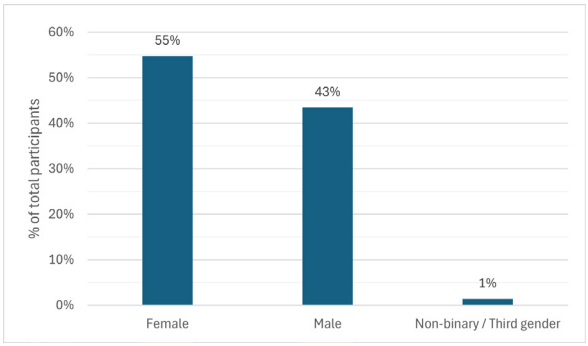
1.3.1 Profiles of Student Respondents

The survey received 345 individual responses from PhD students enrolled in six of all seven states and territories in Australia (see Figure 1.1). Note, no response was received from Northern Territory. Student respondents to the survey were between the age of 25 and 34 years (59%), followed by 23% aged 35 to 44, and less than 10% in other age groups. Over half of student respondents were females (55%), 44% male, and 1% in other gender identities. The geographic distribution of respondents shows a concentration in Queensland (33%) which could partly be attributed to the location of the research team. Significant survey response rates were achieved from other states particularly Victoria (17%) and Western Australia (19%).

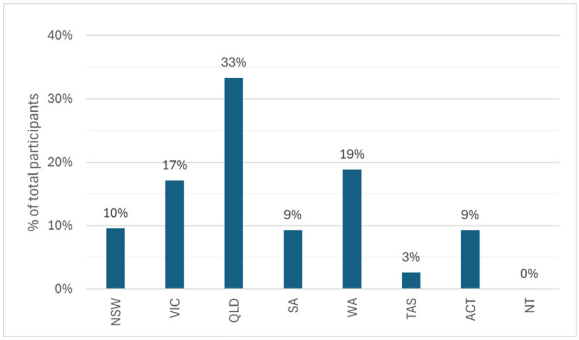
3 https://www.arc.gov.au/industrial-transformation-training-centres
4 https://aprintern.org.au
5 https://www.csiro.au/en/careers/scholarships-student-opportunities/postgraduate-programs-and-scholarships/industry-phd
6 https://defenceinnovationnetwork.com/internships
7 https://www.biodesign.au/iprep



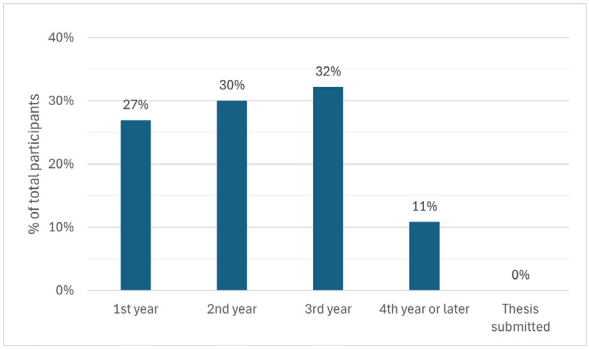
a. Age Distribution



b. Gender Distribution



c. Distribution of Locations



d. Year of Enrolment in PhD Programs

Figure 1.1 *Demographics of students who responded to the survey.*

The student cohort surveyed were full-time students (90%) and close in ratio between domestic (48%) and international (52%). Student respondents represent an even distribution between the first (25%), second (28%), and third year (30%) enrolment into their PhD candidature with fewer responses in and beyond the fourth-year enrolment. Prior industry experience was claimed by a majority of student respondents (62%). A breakdown of respondents' field of study is presented in Figure 1.2, with Life Sciences being the largest group (29%) who responded, followed by Medical and Health (20%), Engineering (13%), and less than 10% in other fields. Overall, gender ratio, age distribution, and field of study of current survey respondents align with national data of PhD (and HDR) students.[8]

8 Australia Universities (2024) reported females represent 56.2% of (domestic) PhD students. The average age for (domestic) students to commence a PhD is 34 and an average age of 37 is found in all enrolled students. Brownlow et al., (2023, p.1609) reported 70% of HDR students were enrolled full-time in 2019. HDR fields of study are "natural and physical sciences (22.8%), society and culture (18.4%), health (16.7%), engineering and related technologies (15.3%), management and commerce (8.3%), education (5.5%), information technology (4.8%), creative arts (4%), agriculture and environment (2.7%), and architecture and building (1.5%)."

Australia Universities. (2024). Investing in PhD candidates in Australia. https://universitiesaustralia.edu.au/policy-submissions/research-innovations/research-funding/

Brownlow, C., Eacersall, D. C., Martin, N., & Parsons-Smith, R. (2023). The higher degree research student experience in Australian universities: A systematic literature review. *Higher Education Research & Development*, *42*(7), 1608-1623.

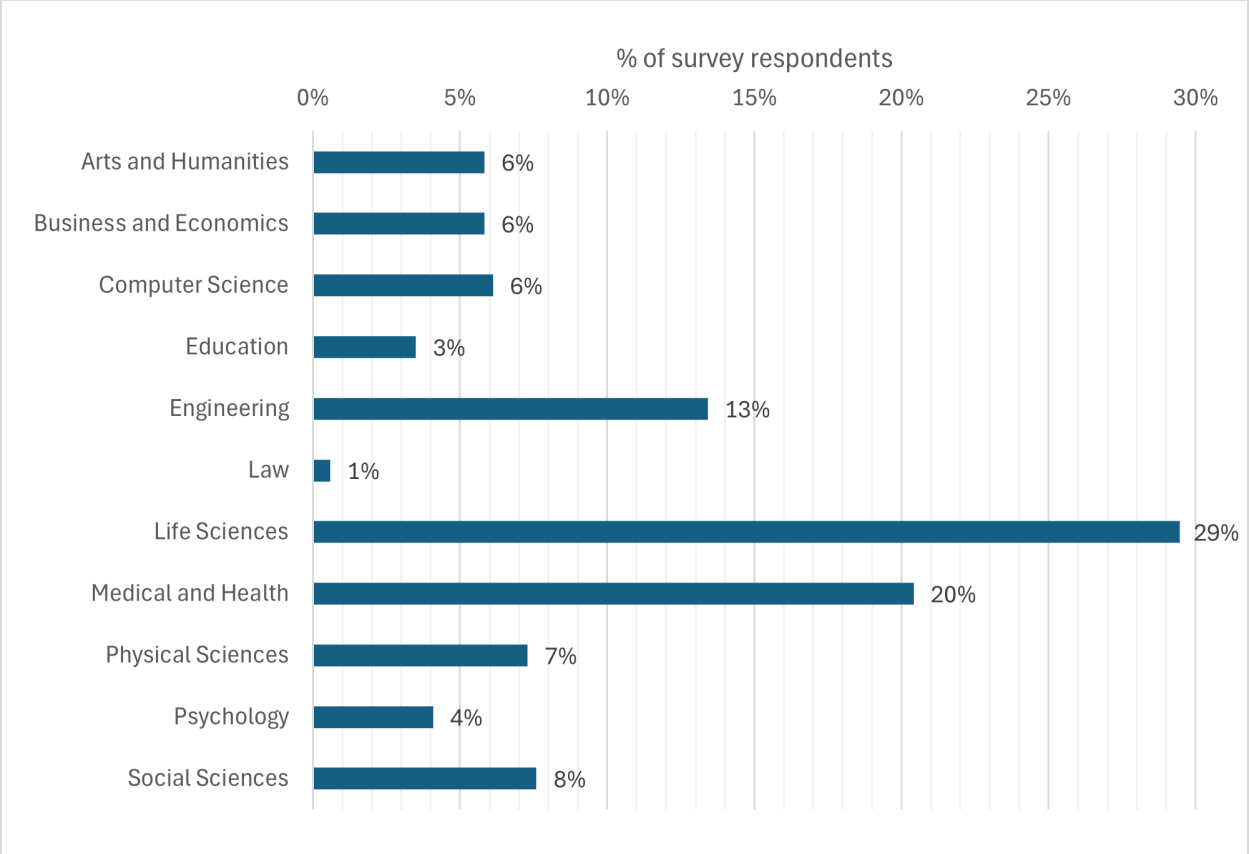
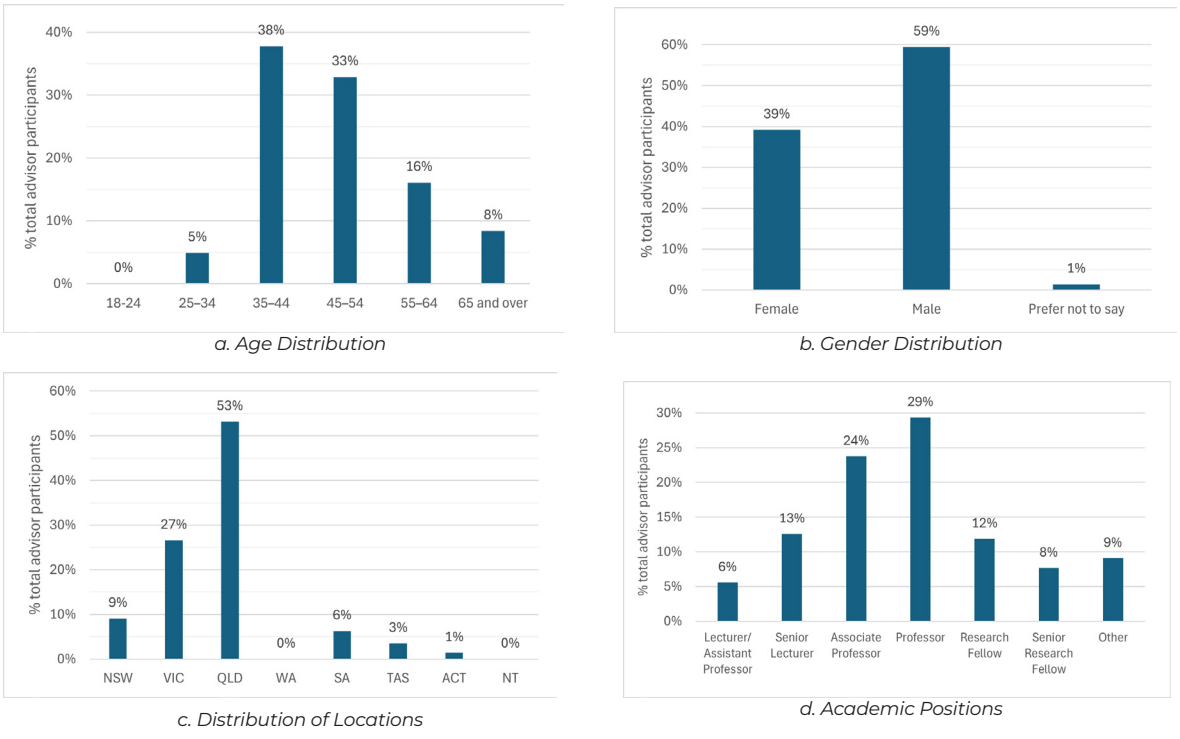


Figure 1.2 *Fields of study of student respondents.*

1.3.2 Profiles of Advisor Respondents

The survey received 143 responses from university-based academic advisors who had a responsibility of supervising PhD students during their academic and/or industry training. These advisors were aged 35 to 44 (38%) and between 45 to 54 (33%) followed by other age groups (see Figure 1.3). Over half the advisors were male (59%) while 39% were female and 1% unidentified. The 53% of advisor respondents based in Queensland could be due to the geographic advantage of the research team being based in Queensland. Despite this local bias, over a quarter of the respondents were from Victoria (27%). However, respondents from other states constitute less than 10%. No responses were received from Western Australia and Northern Territory. Note, the geographic distributions of advisors and students do not have any bearing on the objectives of the survey study and are not indicative of potential high or low incidence of industry placement in a certain location. Therefore, readers should be aware that student and advisor specific findings in the following sections should not be compared based on the geographic locations of respective respondent groups.



a. Age Distribution

b. Gender Distribution

c. Distribution of Locations

d. Academic Positions

Figure 1.3 *Demographics of advisors who responded to the survey.*

Advisor respondents were widely distributed across academic seniority, from lecturers to full professors, and research roles like research fellows. Advisors were surveyed about their field of expertise in which they supervised PhD students. The distribution of expertise shown in Figure 1.4 is based on a subset of respondents who have supervised student industry placement in the past five years. The Medical and Health field accounted for 20% of advisors, followed by 15% in Arts and Humanities, Engineering and Life Science, 12% in Computer Science, 10% in Physical Sciences, and lesser percentages in other areas such as Business and Economics (6%) and Education (3%).

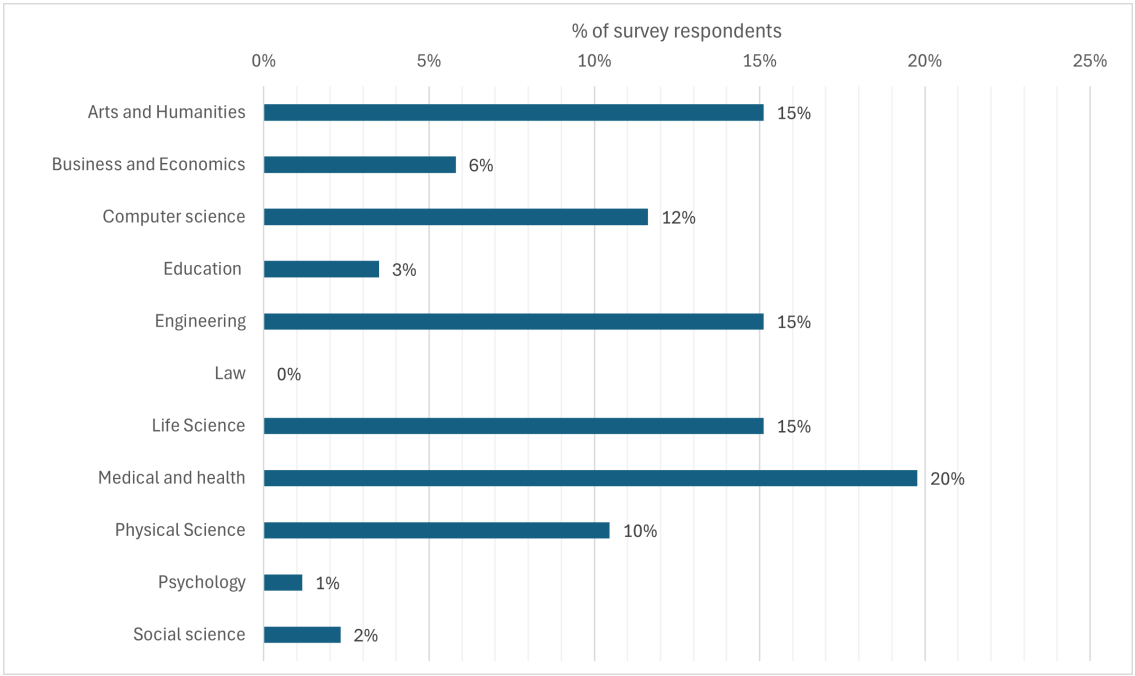


Figure 1.4 *Fields of academic expertise of advisors.*

2

Student Experiences and Expectations

Survey findings of student participation in industry placement are presented in this section. Overall, 156 of 345 or 45% of student respondents indicated they have participated in PhD industry placement. This section presents a comparison between students who have participated in placement and those who have not. The second section presents responses from the former group and the analysis of their inputs such as the perceived impact of industry placement and challenges faced (Section 2.1). Insights from those who have not (yet) participated in placement are then presented (Section 2.2).

Those who had participated in industry placement tend to be in the middle stage of their PhD studies (Figure 2.1). Students who had not participated in placement were predominantly in the first and second year of enrolment.

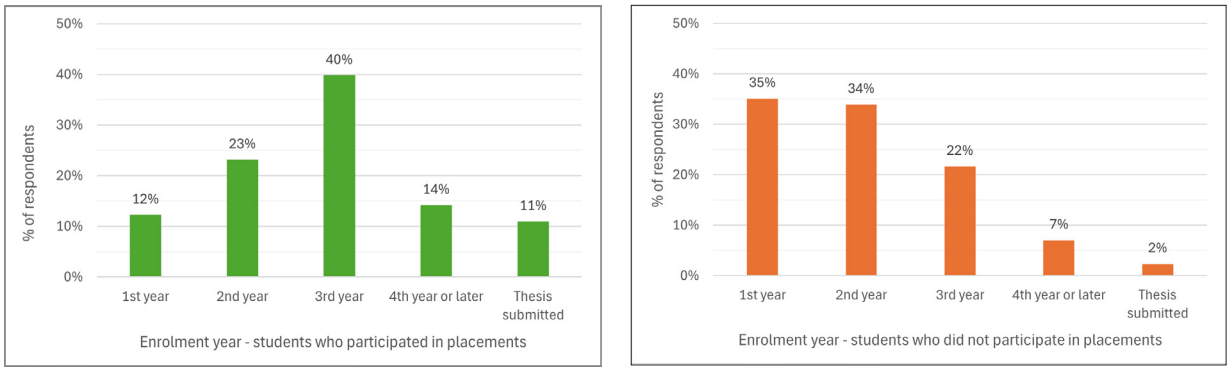


Figure 2.1 *Comparing years of enrolment between students with or without industry placement.*[9]

Students who have participated in industry placement are similarly distributed across many fields of study as those who have not (Figure 2.2). The exceptions observed include for example, proportionally more students in Business and Economic and Engineering not participating in placement. Inversed situations exist in Computer Science, Physical Sciences, and to a lesser extent Medical and Health.

9 In the figures shown in Section Two and Three, the responses from students and advisors with experiences of industry placement are denoted in the colour green. The responses from students and advisors who have not participated in industry placement and related supervision are denoted in the colour orange.

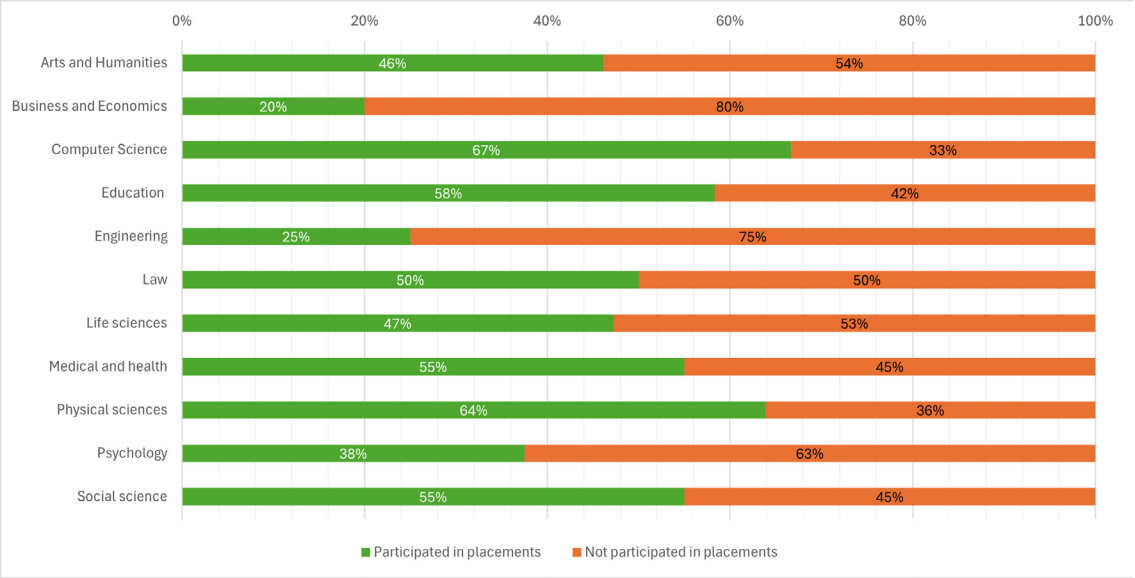


Figure 2.2 *Comparing respondents' field of study between the two groups.*

2.1 Student Participations in Industry Placement

This section presents student experiences and feedback about industry placement from 154 respondents who participated in various placement programs during their PhD studies. Among these students, 91% are full-time PhD students while 9% enrolled part-time.

Student placement can be observed across industries (Figure 2.3), as classified according to the Australian Bureau of Statistics (ABS)[10] system. Under this classification, *Professional, Scientific, and Technical Services* are the largest category where students participated in industry placement (39%). As per the ABS, this industry category provides professional, scientific and technical services with many common processes where labour inputs are integral to the production or service delivery. The activities undertaken in this sector require a high level of expertise and training, and formal, usually tertiary level, qualifications as organisations in this sector specialise in "selling" expertise as services. These services provided include scientific research, architecture, engineering, computer systems design, law, accountancy, advertising, market research, management and other consultancy, veterinary science and professional photography services. The second highest industry sector is *Health Care and Social Assistance* (27%), followed by *Education and Training* (9%) and a range of other industries.

10 https://www.abs.gov.au/statistics/classifications/australian-and-new-zealand-standard-industrial-classification-anzsic/2006-revision-2-0

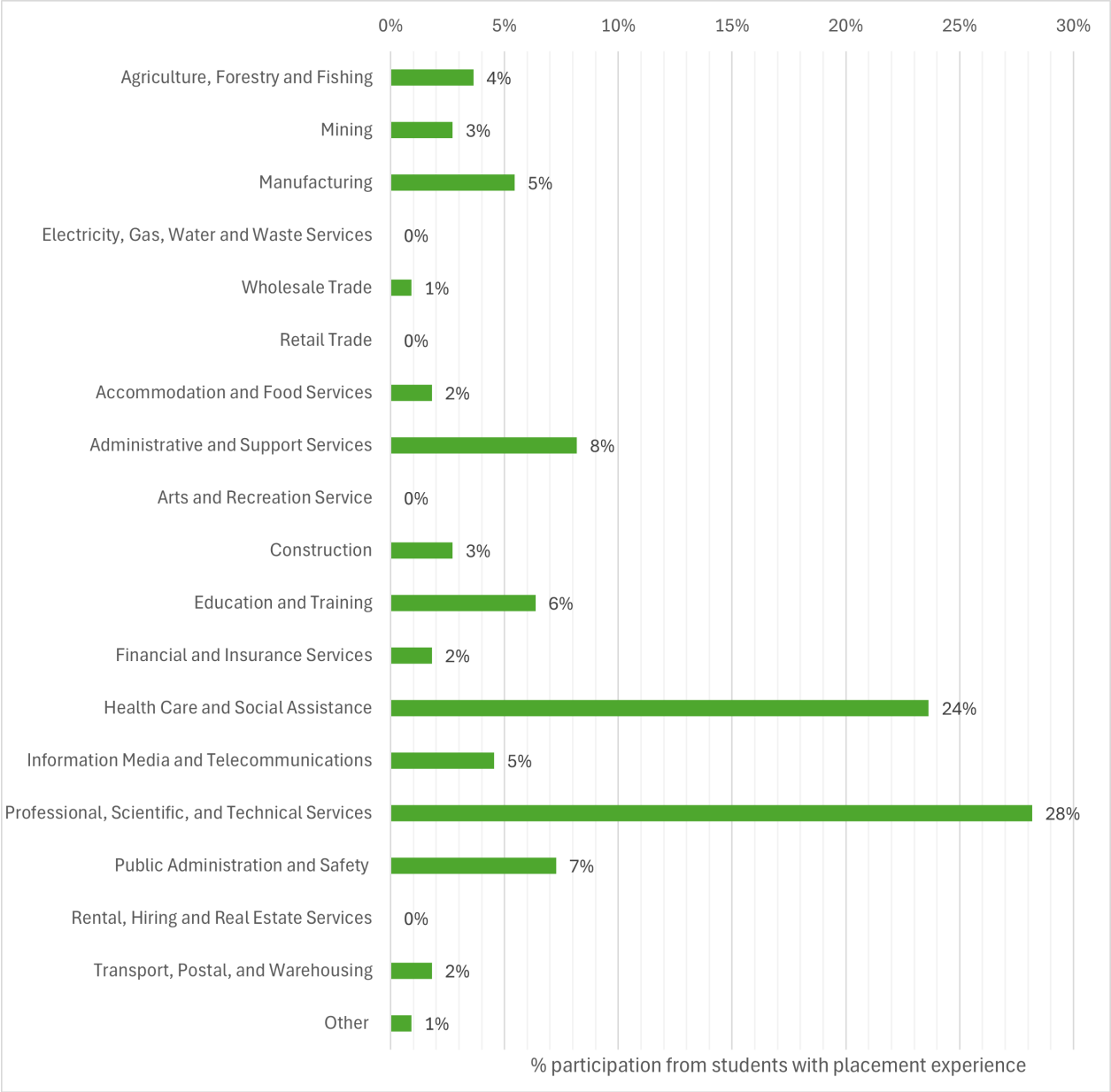


Figure 2.3 *Industry sectors for PhD student placement.*

Figure 2.4 shows the specific industry placement programs in which students participated and the duration of their participation. Approximately one third of the respondents went into placement through university programs, while 15% participated in the National Industry PhD (NIPhD) program, 13% through ARC ITTC placement, 8% through APR.Intern, and 7% as CSIRO iPhD. A quarter of students participated in other industry placement programs including for example, international placement and informal placement schemes.

Placement durations of 3 to 12 months appear to be the most typical length of time with students who spent more than twelve months in placement not uncommon, particularly in ARC ITTC, NIPhD, and other unlisted programs. Those who spent less than three months are more common in university specific industry placements. Other engagement durations were also seen among the students like those done with flexible/part-time arrangement, or sporadic engagement throughout students' PhD studies.

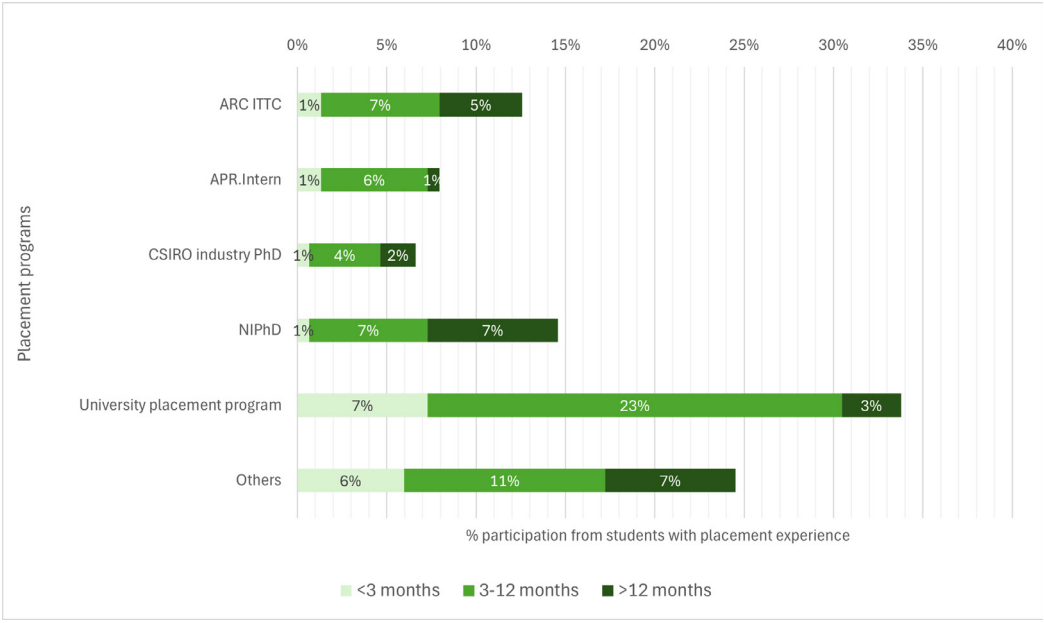


Figure 2.4 *Industry placement program and duration.*

Students' working capacity during placement (see Figure 2.5) included 64% in ARP.Intern placements working full-time, and respectively, 67% in the National Industry PhD Program and 56% in the CSIRO industry PhD program. In other placement programs, more than half the students worked part-time with respondents through ARC ITTC programs having the least full-time placements (39%). Other types of engagement stated in the survey included placement on an ad hoc basis or as casual work.

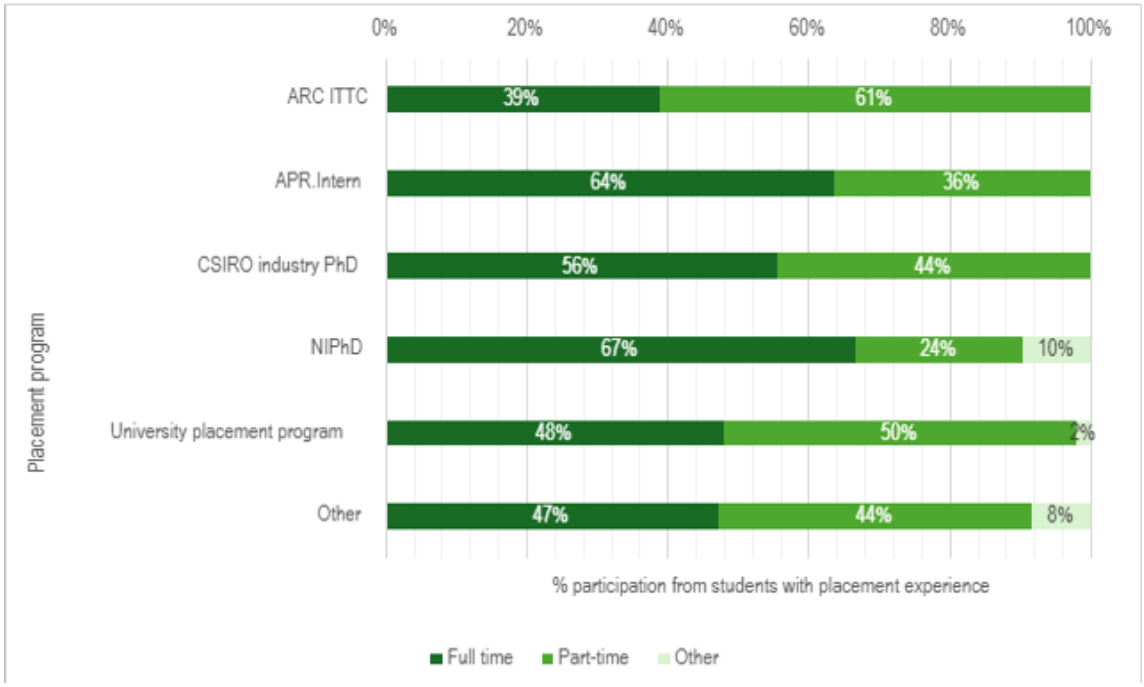


Figure 2.5 *Percentage of students engaged in full-time and part-time placement.*

Students sourced information about industry placement from different channels. Almost half the respondents indicated their university or academic programs as being the source of information. Approximately one third of respondents (34%) created their own opportunities for an industry placement, and 23% had current employers with whom they were either already embedded during PhD students or sought to do their placement. There were 25% who received placement information through specific, externally run industry or government schemes. The remaining 11% sourced their placement through other means like through their own scholarships, own supervisors, or joint ventures through their supervisors and the industry partners.

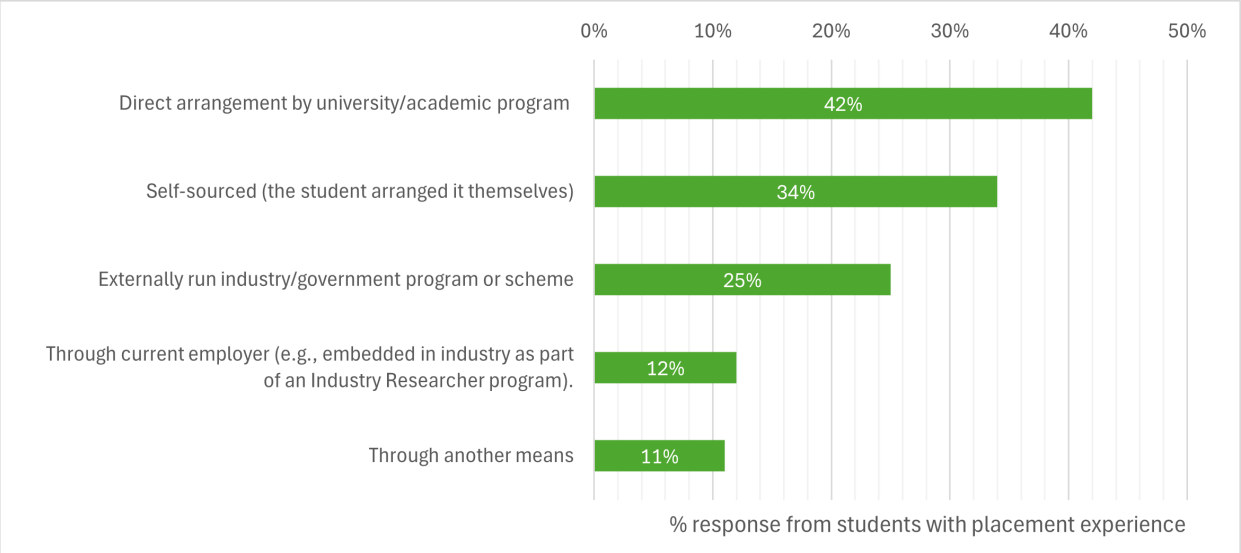


Figure 2.6 *Student source of information about placement opportunities.*

2.1.1 Objectives and Skills

Students' intended objectives for industry placements are indicated in Figure 2.7. Such objectives were primarily oriented toward research translation and career development rather than compliance with degree requirements alone. Student stated their objectives were to apply research in real-world contexts, develop industry relevant skills, and expand professional networks. Of the students who completed industry placements (45% of all student respondents), nearly half reported participating on a voluntary basis (approximately 50%), while a further 25% cited a combination of personal motivation and fulfilment of PhD program requirements. These motivations are reflected in commonly cited objectives such as bridging theory and practice, accessing research data, and developing specialised expertise relevant to future careers. Financial considerations also feature among stated objectives, consistent with later findings that funding and workload pressures are among the most frequently reported challenges. While many students intend their placements to be directly relevant to their PhD research, subsequent responses suggest varied levels of realised relevance, ranging from full integration into thesis work to partial or limited alignment, highlighting the importance of setting clearer expectations and placement design.

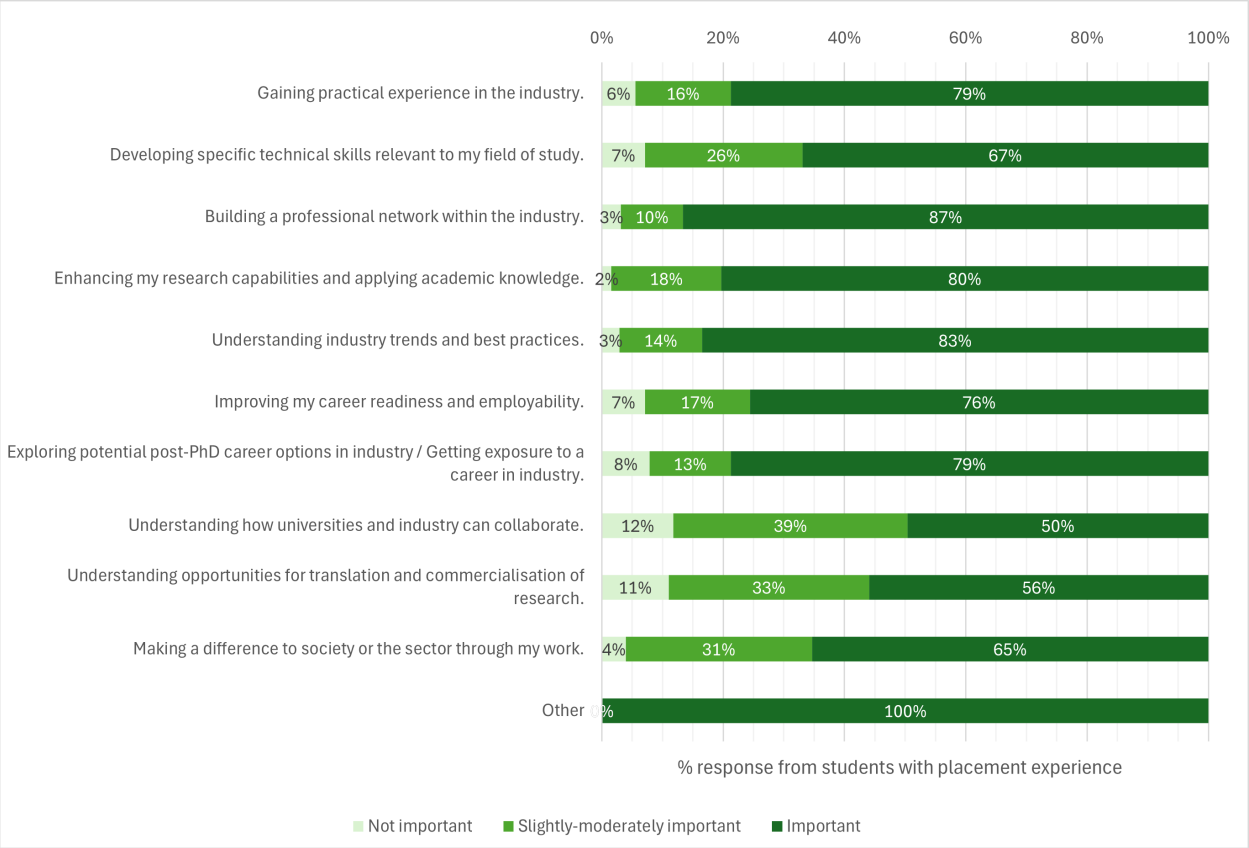


Figure 2.7 *Intended objectives from participating in industry placement.*

Students were asked about the primary nature of their work and the tasks involved, with responses predominantly pointing to research and development tasks (81%). Research and development tasks were defined as activities involving for example, data analysis, literature review, experimental design, and contributing to innovative projects. Eleven percent of students reported primary tasks as project-specific tasks including for example, event planning, marketing campaigns, or software development. Five percent were involved in technical or hands-on work with a practical purpose such as equipment maintenance, coding, or lab work. Only a small set of students (1%) reported primarily focusing on client-facing or customer service type tasks, providing support, information, or service.

Students reported development across both technical and transferable competencies during their industry placements (see Figure 2.8). This pattern is consistent with the preceding figures in this section; because most placements involved applied research, data analysis and project-based work, students are likely to have strengthened practical research capability and problem-solving in real-world settings. Importantly, the skill areas students report developing align closely with advisor priorities elsewhere in the report—advisors emphasise communication (94%), adaptability (88%), teamwork and collaboration (87%), problem-solving (85%), professional conduct (84%), critical thinking (74%), project management (70%), alongside technical skills (58%) and managerial skills (37%)—suggesting placements are targeting the right capabilities for industry facing research careers.

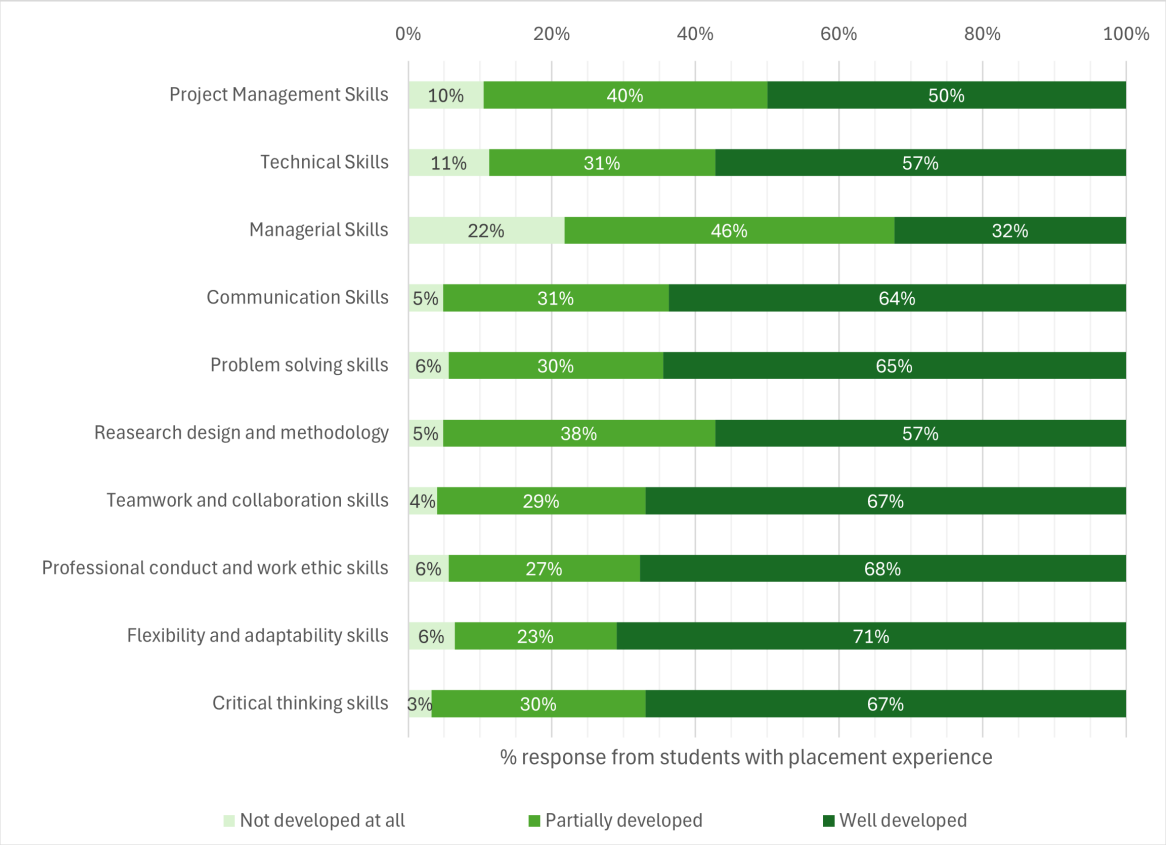


Figure 2.8 *Skills and levels developed during placement.*

2.1.2 Relevance and Impact

In terms of relevance of placement to students' PhD research, over half the respondents considered it relevant (55%). A significant portion (39%) considered placement partially relevant to their PhD, while a small number (6%) considered it irrelevant. Students who responded "relevant" pointed to clear integration of access to field sites and real-world pain points, broadened networks and expert feedback, shared IP arrangements, and in some cases discoveries that effectively became the PhD project—illustrating how well scoped tasks and collaborative supervision make placements substantively contribute to thesis progress. Students also link perceived relevance to career direction and opportunities (positive and negative), reinforcing that meaningful alignment can shape post PhD pathways as well as research outcomes.

In contrast, students who considered placement irrelevant described being given tasks unrelated to their thesis, having no clear assignment, or working in a different field. Some students felt poorly embedded because industry supervisors were unsure how to utilise a PhD researcher, or felt the placement added little due to extensive prior experience. Meanwhile, students who considered placement partially relevant reported parallel topics, overlapping methods, and useful transferable skills or professional interactions.

Students predominantly reported positive impacts of industry placement to their career (Figure 2.9), with 47% suggesting placement played a strong impact on their career directions while 45% suggested similarly about the impact on career opportunities. Forty percent reported minor to moderate impact on career directions and 42% on career opportunities. In contrast, only 12-13% reported no impact on either career directions or opportunities.

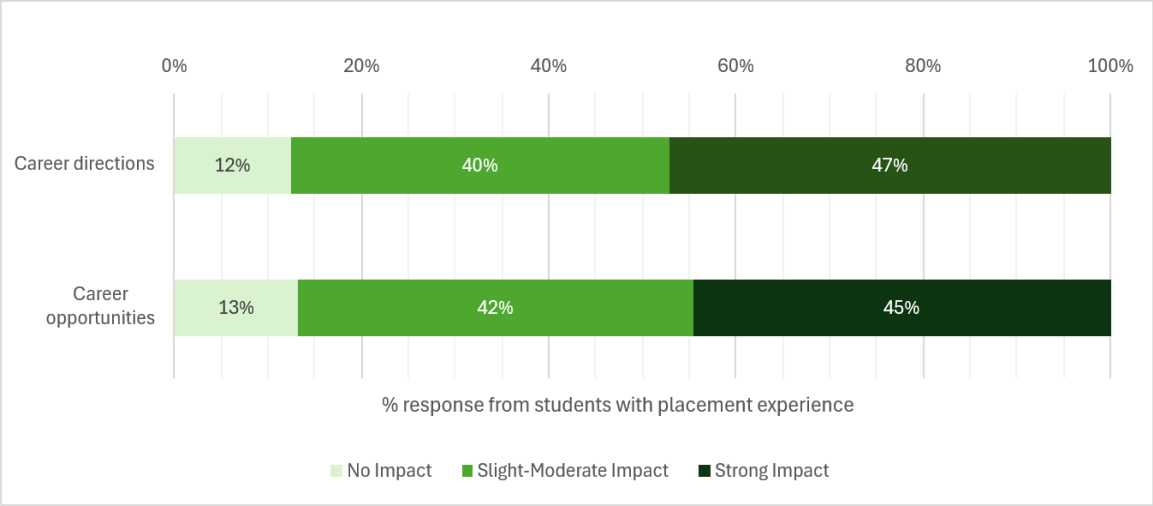


Figure 2.9 *Impact of placement on students' career.*

Lastly, students reported that participating in industry placements influenced their career thinking in substantive and varied ways. Figure 2.10 shows students most commonly indicated placements expanded their professional network (75%), clarified their career goals (54%), and provided essential practical skills relevant to their desired career (49%). One fifth of participants in industry placement had a job offer or placement extension as a result. A small portion of the respondents (6%) suggested placement confirmed industry was not the right fit for them, while 13% reported participating in placement did not have any influence on their career.

Interesting findings from the 14% students who responded "other" include some students considering industry placement negatively affected their career progression and technical skills development, while others identified alternative career paths otherwise unknown. Other respondents reported new opportunities for commercialisation and intellectual property from industry placement.

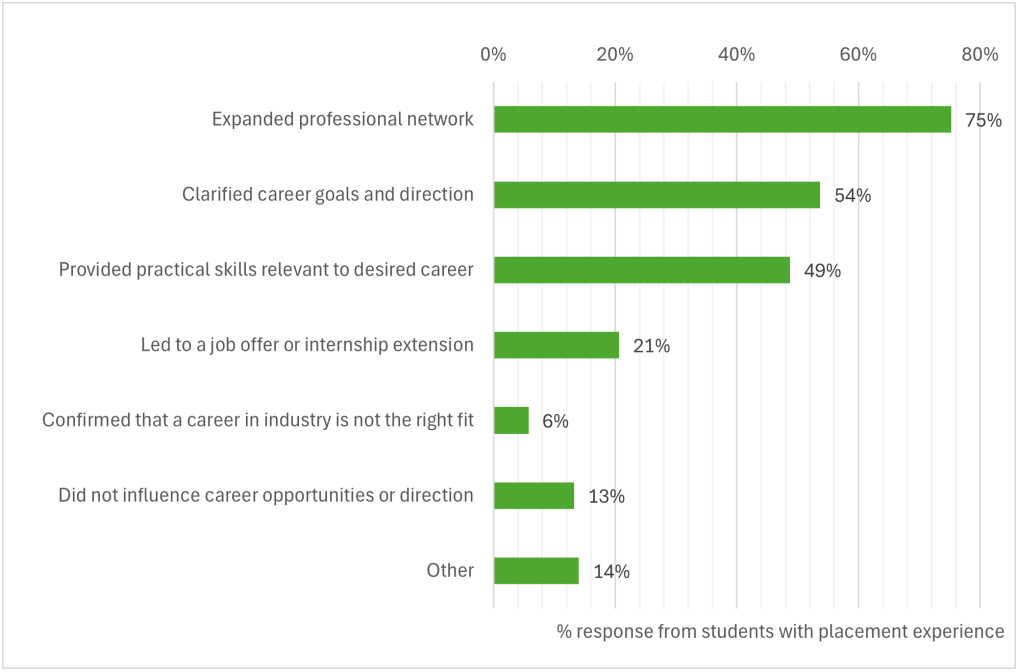


Figure 2.10 *Career influence from participating in industry placement.*

2.1.3 Challenges

Students faced various challenges during industry placements with balancing workload and academic progression posing the most significant hurdles (see Figure 2.11). According to the survey, progression on PhD thesis and workload burden were the two most taxing areas, with 79% of students reporting these challenges at minor to severe levels. Over a quarter of the students (26%) reported thesis progression was a significant to major challenge. Issues such as lack of clarity in expectations also affected more than half of the students (64%). Meanwhile, areas such as university supervision and funding availability appeared to be less problematic, as 58% and 61% of respondents respectively reported no challenge in these categories. Overall, the data suggests that while institutional and financial support systems were relatively stable, the internal pressure of managing time and dual responsibilities remained a primary concern for students.

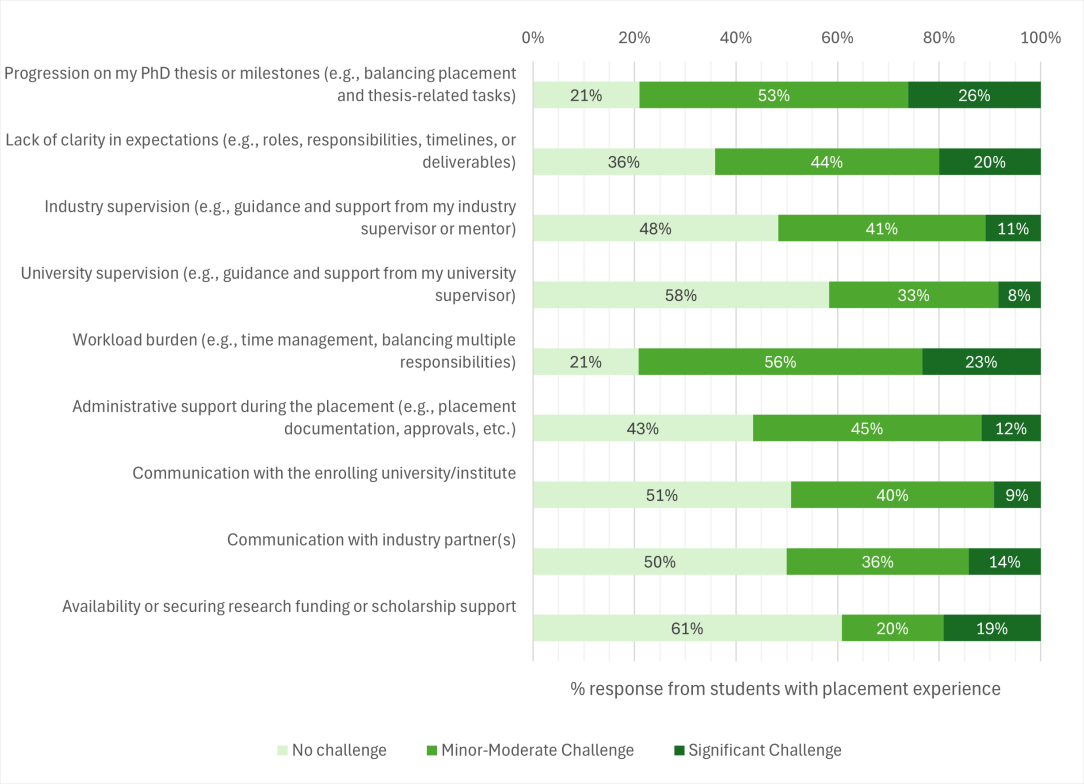


Figure 2.11 *Challenges students faced in placement.*

Other challenges were reported as further complicating the placement experience for students. Respondents noted that logistical and systemic delays, such as significant turnaround times for lab results and unexpected shifts in industry professionals' priorities, directly stalled PhD data collection. Communication remained a friction point, as students often found it difficult to balance the competing expectations of university supervisors, industry mentors, and other project stakeholders. Administrative and institutional barriers were reported; some students faced disapproval from academic stakeholders regarding their placement, while others completed long-term internships, such as an 18-month stint, without receiving a corresponding extension for their PhD timeline. Even day-to-day factors like the physical travel time to and from the placement site were highlighted as contributing factors to students' overall burden.

Students were asked to provide descriptive answers as to why – for the most challenges faced - were difficult to resolve. These insights are presented in Table 1.

Table 1. *Insights on major challenges*

Major challenge	Why major challenges were difficult to resolve
PhD thesis or milestone progression	• Intensity of placement delays PhD progress. • Stress of managing expectations (e.g., publication, PhD milestones). • Limited mental capacity to cope.
Workload burden	• Inability to manage conflict and potential disappointment. • Placement and PhD workload exceeding expectations.
Lack of expectation clarity	• Industry partner either did not understand or was vague about the aim and tasks for students. • Students were provided with little guidance.
University and enrolling unit Administrative support	• Unclear process and poor communication at the university. • Delay of placement commencement due to contracts between university and industry parters. • Students experienced unfair treatment from university.
Industry supervision and communication	• Limited contact with industry supervisor. • Unpreparedness of industry supervisors. • Students experienced unfair treatment at placement. • Difficult communication between stakeholders.
ACADEMIC supervision	• Academic advisors may expect students to work in extra capacity beyond PhD due to industry placement.
Research funding or scholarship support	• Bureaucratic process and long lead time to receive stipends. • Funding had to be self-sourced by students. • Insufficient funding.

2.1.4 Support Received During Placement

The survey captured the types of support students received, in addition to the challenges identified, indicating help was distributed across multiple sources. Placement organisations provided the most frequent assistance, with 29% of students reporting support from their host site. This support was closely followed by the students' enrolling universities or institutes, for 27% of respondents. A smaller segment of 17% noted they received other forms of support during their placement period.

Survey responses focusing specifically on the support provided by PhD students' enrolling universities or institutions, showed direct mentorship was the most common form of institutional aid. That is, 20% of students received support directly from an academic supervisor. Financial assistance, such as stipends and travel grants, and access to university resources like libraries and databases were each utilised by 17% of respondents. Fifteen percent of students benefited from regular check-ins or mentorship from university staff. Academic credit or formal recognition was granted to 13% of the participants. In contrast, specialised services were utilised less frequently. For instance, networking opportunities were accessed by only 7% of students, while career services and specialised training in areas like commercialisation or entrepreneurship each supported only 3% of the cohort.

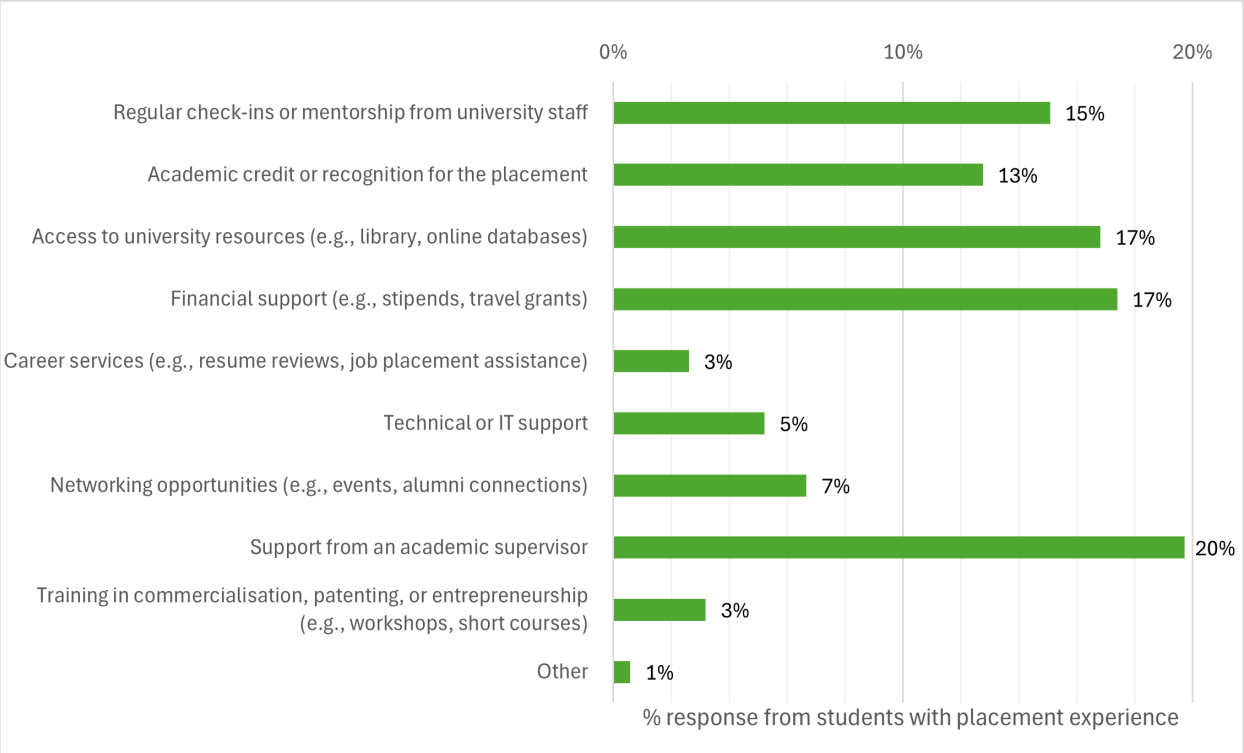


Figure 2.12 *Support from students' enrolling university or institution.*

Mentorship and practical integration were the most prominent features when looking at the support provided by placement organisations. Mentorship or guidance from an industry supervisor was the most common form of assistance, cited by 26% of students. This support was bolstered by access to organisational resources and networking opportunities with industry professionals, each utilised by 22% of respondents, while 20% benefited from regular feedback and performance evaluations. Although formal reimbursement for expenses was less common at 9%, qualitative feedback revealed some organisations went far beyond standard provisions.

Students also reported receiving high-value personalised support from their host organisations like financial stabilisers of stipends, and comprehensive travel packages that fully covered expenses for interstate travel, accommodation, meals, and high-level presentations to government and industrial stakeholders. Some organisations even facilitated media campaigns on news channels to highlight the students' work. Perhaps most importantly, students noted that organisations provided emotional support, which helped mitigate the logistical and academic pressures inherent in their PhD placements.

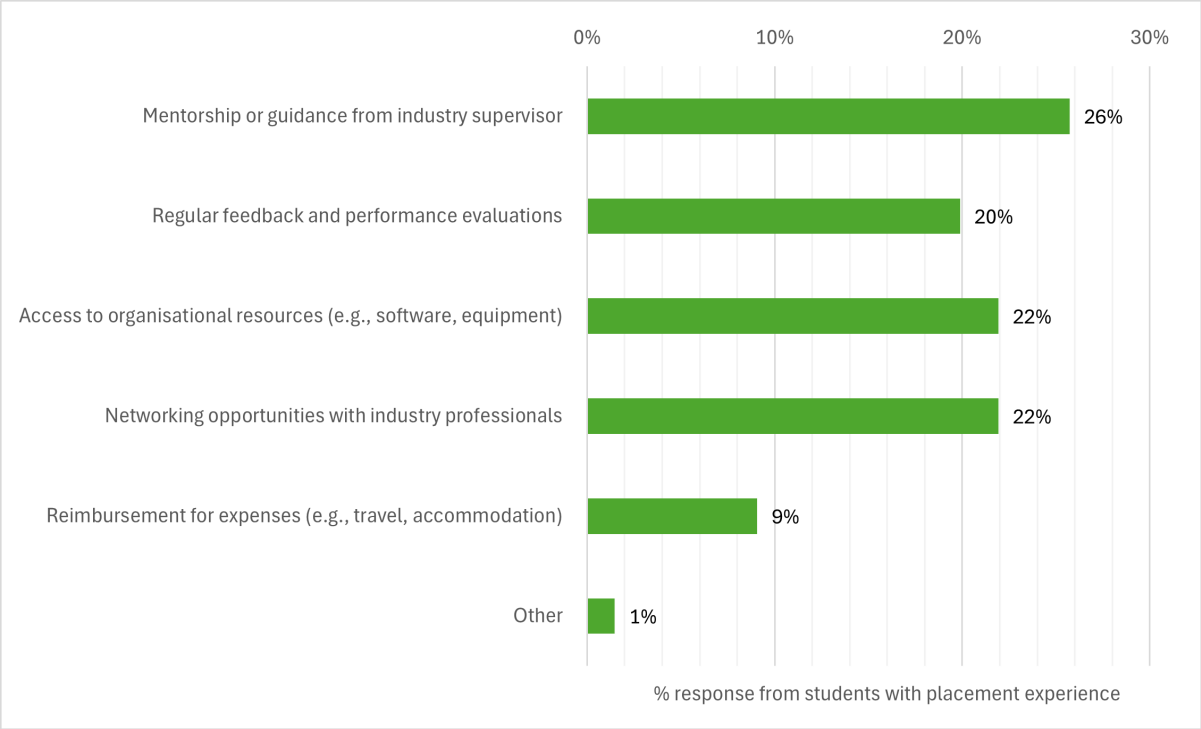


Figure 2.13 *Support from the host organisation of placement.*

When looking at support systems beyond the core academic and host institutions, personal networks and external organisations played a significant role. Support from family or friends, including emotional and financial assistance, was the most prevalent external source, cited by 58% of respondents. This support was followed by professional associations or industry groups at 19% and online resources at 16%, while government-funded programs supported a smaller 4% of the cohort. Other responses further highlighted the importance of peer networks, with students identifying support from research colleagues as a vital resource. External programs, like those provided by APR. Intern, offered structured assistance through training workshops and stipends, supplementing the primary institutional frameworks.

2.2 Students Who Have Not Participated in Industry Placement

The survey gathered input from 171 PhD students who have not participated in industry placement. This section presents findings from this cohort. First, the respondents were asked about the reasons for not having participated in industry placement (Figure 2.14). Unawareness of such programs emerged as the primary barrier for PhD students to not participate in a placement. Nearly one third of respondents in this cohort (29%) indicated they were unaware of available placement opportunities. Beyond this informational gap, personal priorities and scepticism regarding value played a role, as 12% of respondents preferred to focus on other aspects of their PhD studies, and an equal 12% felt a placement might not align with their research or career goals. Additionally, 11% were unsure about the potential benefits of an industry placement, while 10% noted other commitments made participation challenging. Institutional support appeared to be less of a deterrent, as only 4% cited a lack of university support as a reason for not participating.

Students provided other responses about the practical and structural barriers to participation. Many reported the heavy workload of an industry placement was difficult to manage alongside

existing commitments, particularly when coupled with low stipends that prevented taking on other work. Timing often proved problematic, as students frequently found themselves either too late in their candidature to start a placement or were deterred by the difficulty of the application process itself.

Some individuals opted out because they already worked in their field, were seeking a placement in a different area of study or felt they had insufficient time remaining as they entered their fourth year to complete their thesis.

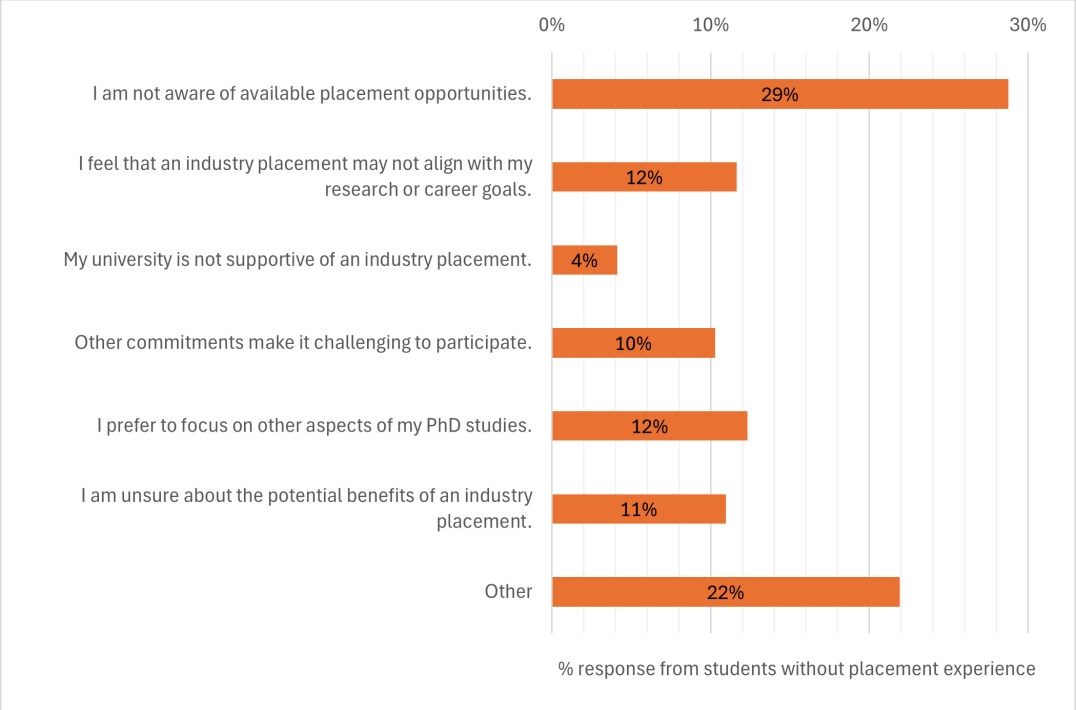


Figure 2.14 *Reasons for not participating in industry placement.*

There was a strong inclination toward future engagement among students who had not yet participated in a placement, despite the previously mentioned barriers. Over half of the respondents (57%) indicated they had existing obligations and plans to undertake a placement in the future. In contrast, 23% of students stated they had no obligations or plans to do so, while 20% remained unsure about their future participation. This response suggested the underlying interest in industry experience remained high across respondents even while informational gaps like a lack of awareness (29%) were significant hurdles.

Among the cohort of students planning to participate in future placement, 42% stated that doing so was an entirely voluntary decision. A further 22% indicated their plan for future industry placement stemmed from a combination of personal desire and formal requirement, while a small minority of 4% cited placement as a strict obligation of their program. These numbers suggest while formal requirement of industry placement exist for some students, the primary driver for future placement engagement is the student's own perceived value from potentially participating in industry placement. Students who had plans and/or obligations stated various motivations for doing a placement program in the future such as: 1. placement is strongly encouraged in their field of study; 2. placement will help understand their field of study better; and 3. with an objective to obtain more stipends through participating in placement.

Students' interest in future participation was evenly distributed across several established placement programs (Figure 2.17). University-level

placement programs were the most popular choice, selected by 18% of respondents, followed closely by the ARC ITTC at 17%. The APR Intern, CSIRO industry PhD, and NIPHD programs each garnered 16% interest, indicating students valued a variety of structured pathways. While 13% of students remained unsure or were still exploring their options, a small minority of 5% expressed interest in other unspecified programs. Other placement programs were reported such as through industry jobs, self-sourced opportunities, through industry partners of PhD studies, and other unlisted placement schemes.

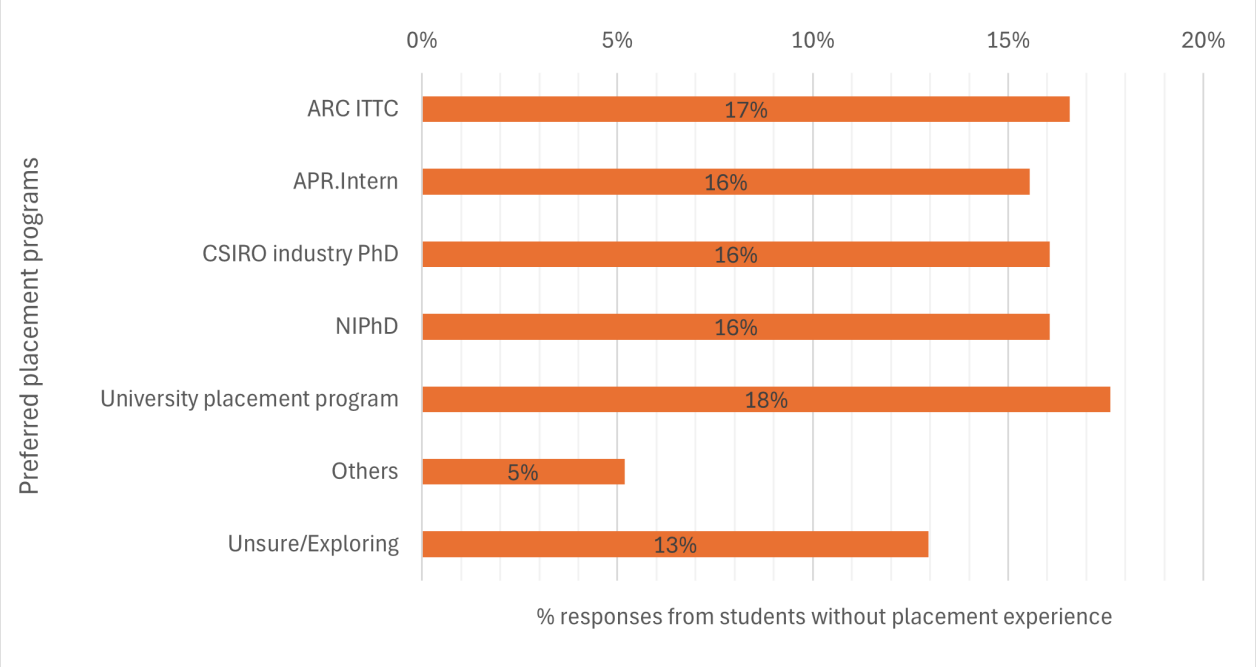
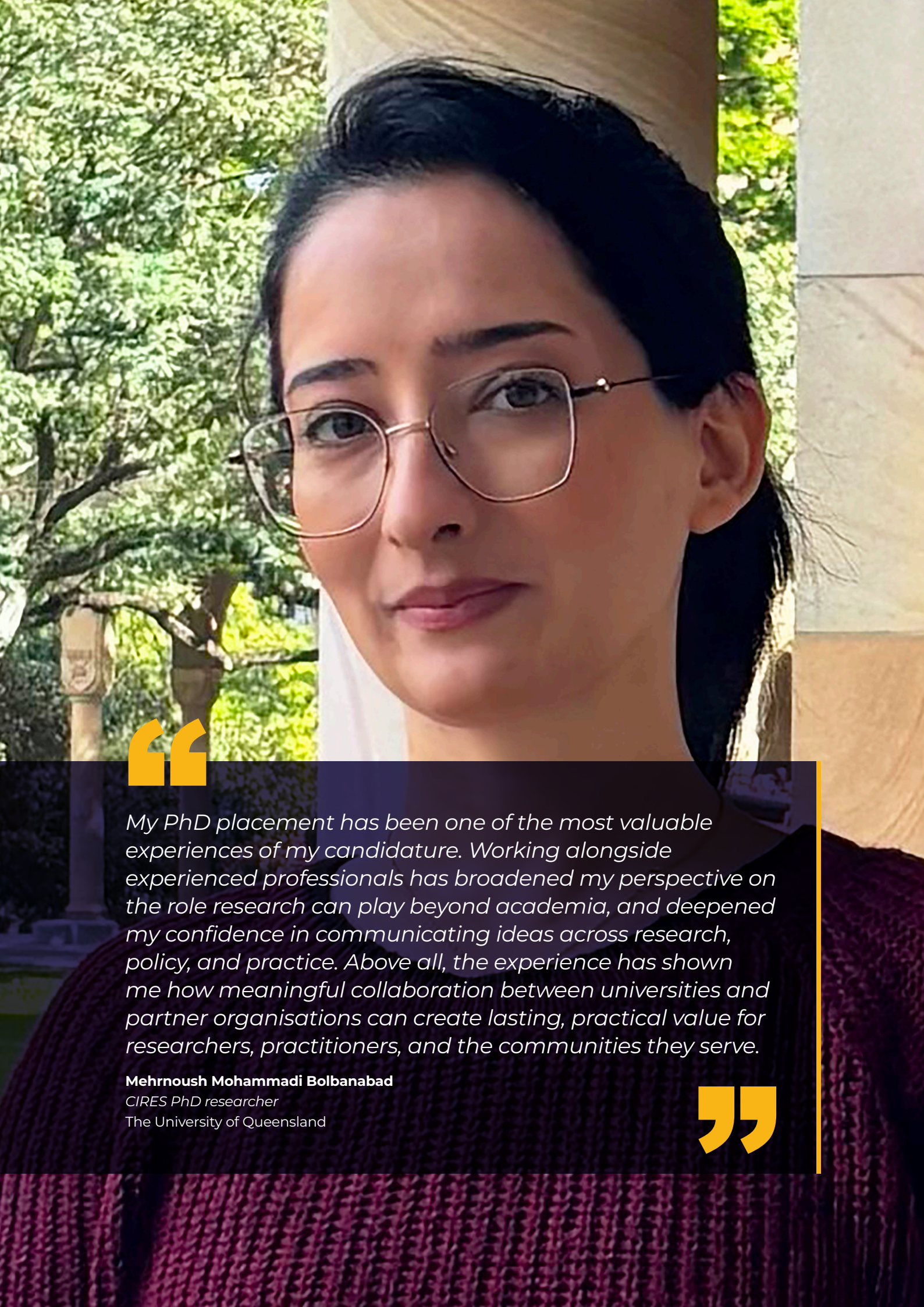


Figure 2.15 *Preferred programs of future industry placement.*



My PhD placement has been one of the most valuable experiences of my candidature. Working alongside experienced professionals has broadened my perspective on the role research can play beyond academia, and deepened my confidence in communicating ideas across research, policy, and practice. Above all, the experience has shown me how meaningful collaboration between universities and partner organisations can create lasting, practical value for researchers, practitioners, and the communities they serve.

Mehrnoush Mohammadi Bolbanabad
CIRES PhD researcher
The University of Queensland

3

Advisor Experiences and Expectations

This section presents advisor experiences in supervising student industry placement and their expectations of the impacts and challenges associated with placement programs. Note that in the context of this report, advisors refer to *academics* who have the responsibility of supervising PhD training, which may or may not involve industry placement. Overall, most advisors who responded to the survey (76%, or 108 of 143) have supervised students with industry placement in the last five years. The first section presents answers from this experienced cohort (Section 3.1), followed by responses from advisors who had not supervised students in industry placement at the time of the survey (Section 3.2). A comparison of survey responses between the two advisor cohorts is then presented.

3.1 Advisor Participations in Placement Supervision

The respondents, 60% male, 38% female, and 2% undisclosed, represented a wide spread of academic levels, ranging from lecturers and senior lecturers through to associate professors and full professors, alongside research-focused roles such as research fellows. This wide distribution suggests supervision of PhD industry placements is not confined to a particular career stage, rather it involves academics with varying levels of experience.

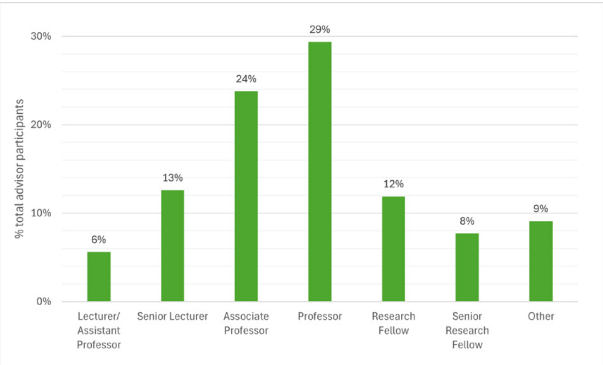
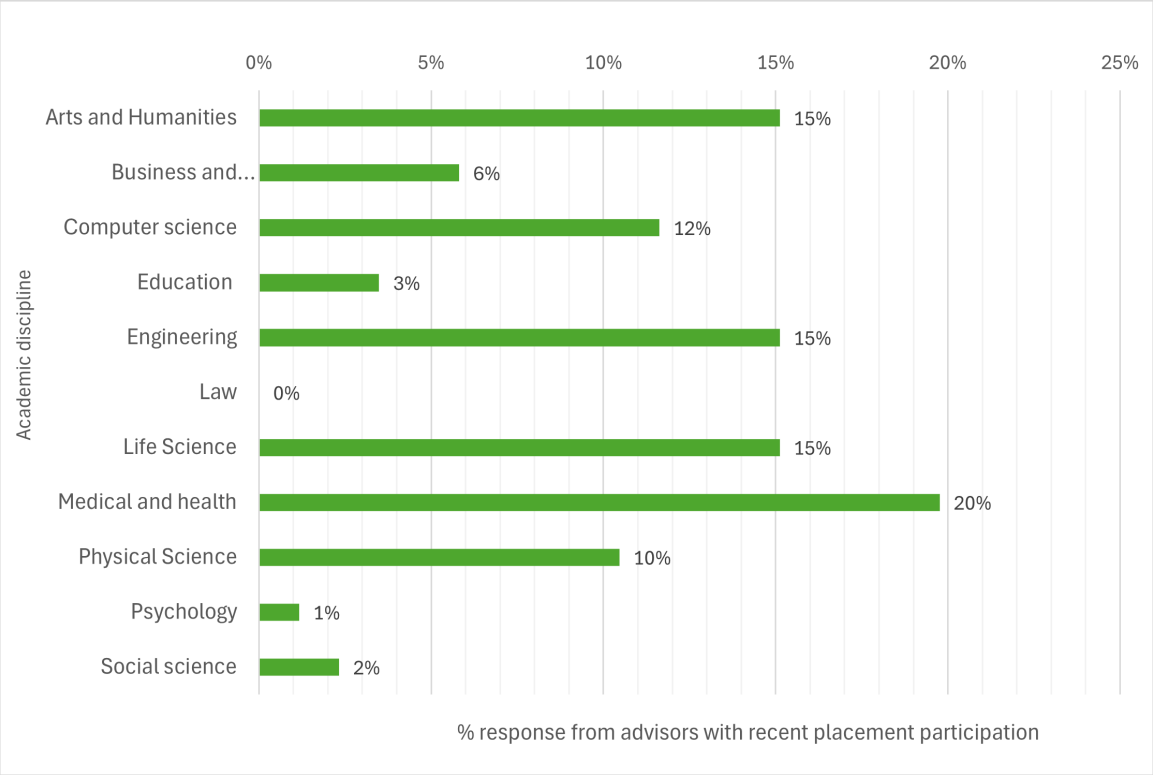


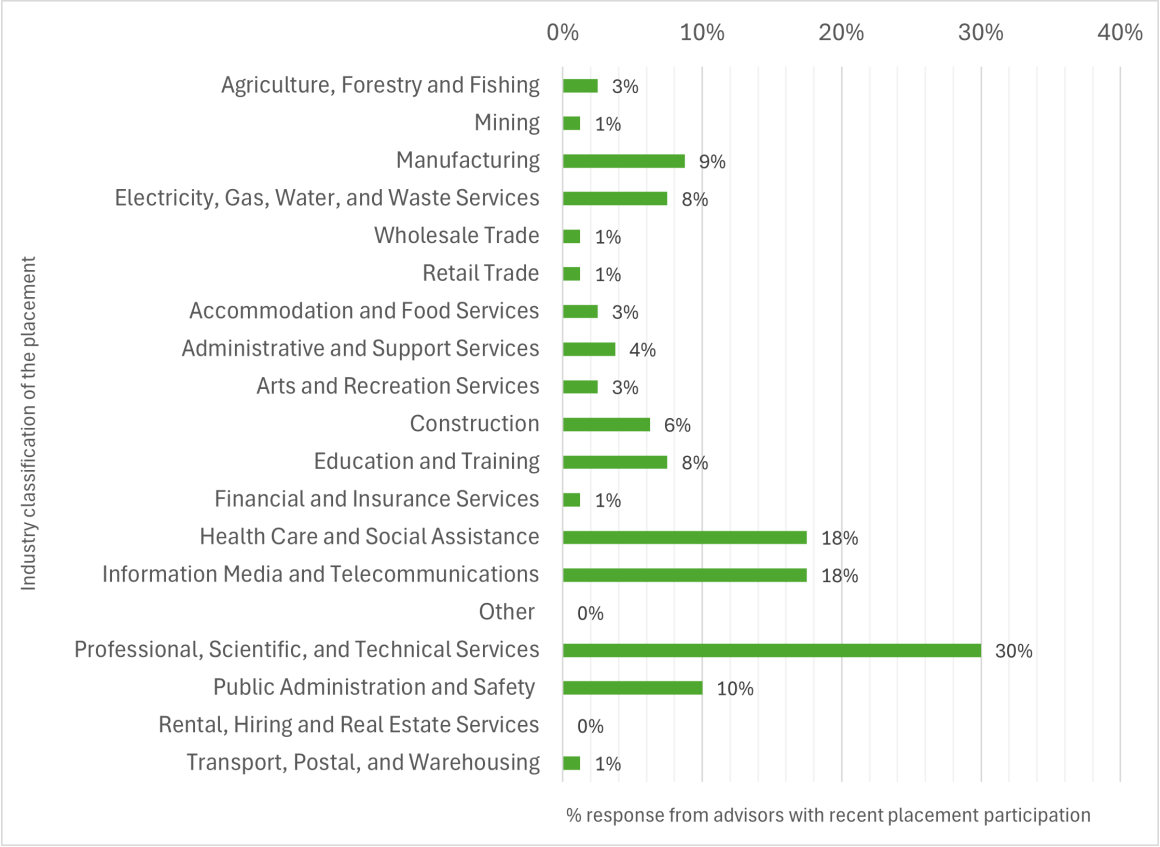
Figure 3.1 *Academic positions of advisors who have supervised industry placement.*

The distribution of academic fields of advisor with placement supervision experience is wide (Figure 3.2a) in addition to academic levels. Among the cohort of advisors who have supervised PhD students and overseen industry placement, a relatively even distribution is found in the study of Arts and Humanities (15%), Engineering (15%), Life Science (15%), and Medical and Health (20%), with other fields being slightly or significantly less (e.g., 12% in Computer Science and 2% in Social Science). Note, academic fields represent advisors' academic expertise which are different from the industry sectors where they may supervise student industry placement.

The industry sectors where advisors supervised student placement are shown in Figure 3.2b. A shift in the distribution is observed between advisors' academic fields and the industry sectors where they supervise student placements. For example, Arts and Humanity as an industry sector seems notably less represented in placement projects than as an academic field supervised (i.e., 3% in placement vs. 15% in academic field supervised). Conversely, Social Science is notably higher as an industry sector for overseeing student placement than supervised academically (i.e., 12% versus 2%, respectively). Less notable changes in either direction are seen in other fields like Education and Computer Science which have slightly more uptake as industry sectors for placement than the academic field, while an inversed situation is seen in Medical and Health. Figure 3.1b presents the combined survey results for the sectors of Life Science and Physical Science. The combined percentages are comparable between academic fields and industry sectors for placement supervised.



a. Academic fields of PhD supervision.



b. Industry sectors of placement supervision.

Figure 3.2 *Comparing academic fields of study and industry sectors supervised.*

Figure 3.3 shows the length of time advisors spent supervising industry placement varies. Close to half the respondents (43%) spent a flexible amount of time supervising PhD students' industry placements based on the needs of the student and industry partners. On the other hand, over a quarter of the advisors seemed to abide by a more structured time frame of either an academic semester (14%) or a year-long period (13%). The remainder of respondents either had no formal arrangement (13%) or stated as "other" (16%).

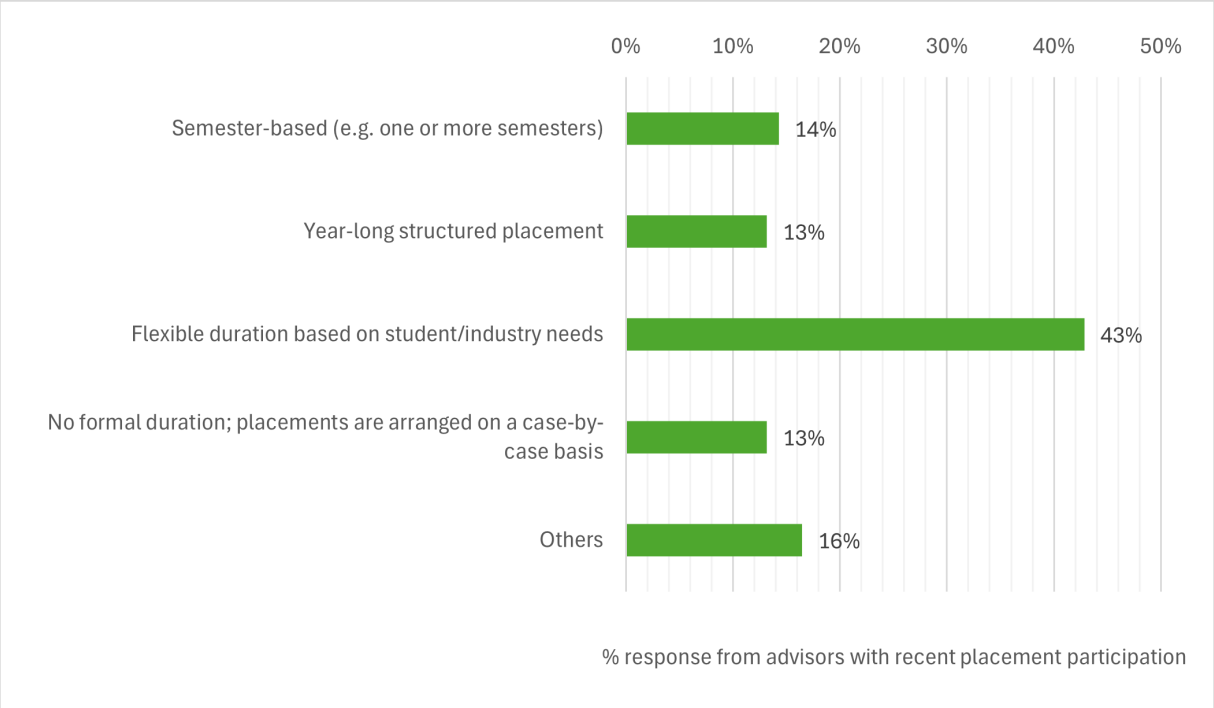


Figure 3.3 *Duration of industry placements supervised.*

Advisors with student placement supervision experience were involved in a variety of placement schemes (Figure 3.4). Close to half their experiences come from university placement or internship programs (49%). The second largest percentage of advisors who are experienced in student industry placement participated through the ARC ITTCs (27%), followed by the National Industry PhD program (13%). Other placement schemes such as the APR.Intern (5%) and CSIRO industry PhD program (7%) accounted for less of the advisor experience, while one fifth of the respondents did not specify.

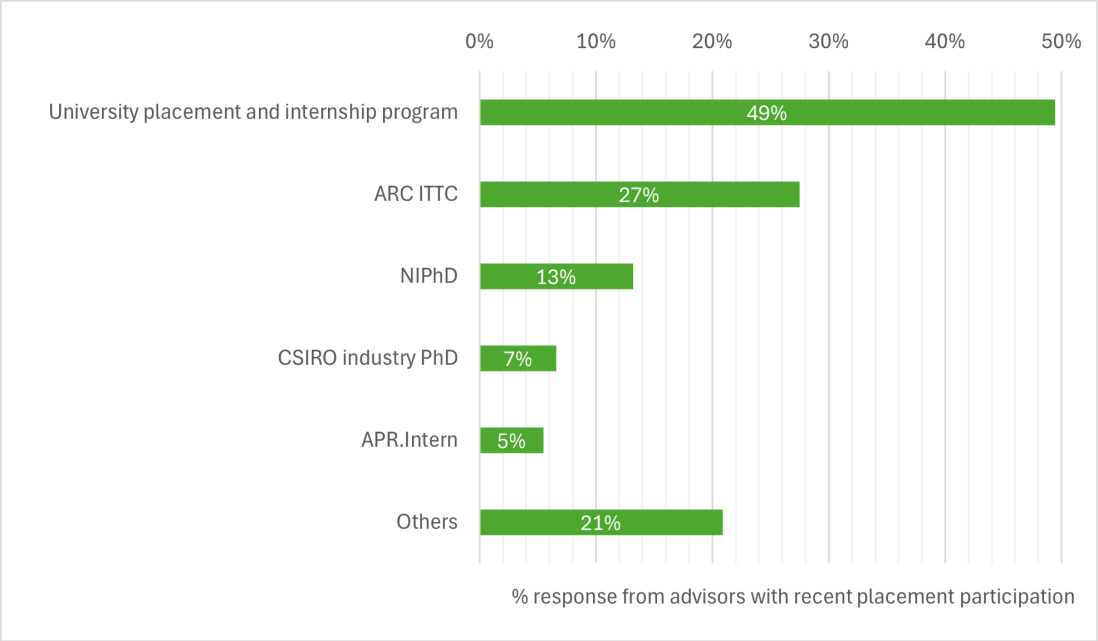


Figure 3.4 *Placement schemes participated by supervised students.*

Advisors participate in supervising PhD student placement for different reasons (Figure 3.5). More than one third of respondents stated they participated on a voluntary basis (38%). In this case, advisors encouraged their students to join industry placement as part of their training. In 28% of the cases, advisors came on board when their students independently decided to take industry placement, while close to another third of the advisors were obliged to supervise student placement as part of their commitment to the university and academic collaboration of which they are a part, such as the ARC ITTC.

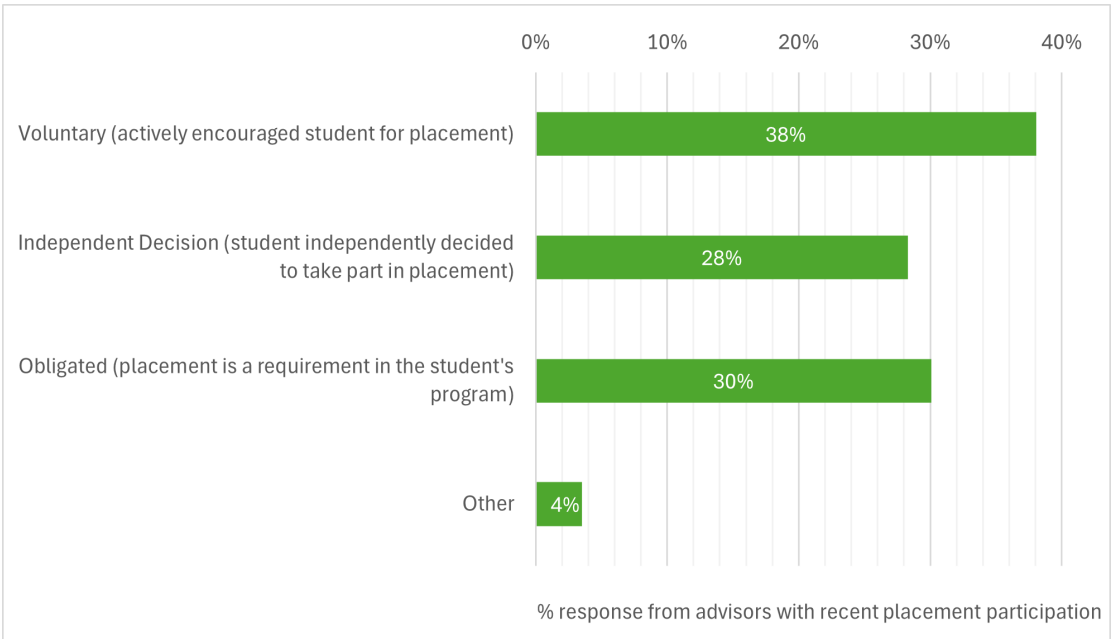


Figure 3.5 *Reasons for advisors to participate in supervising industry placement.*

3.1.1 Impact on Student Development

From the perspective of research training, industry placement should help PhD candidates develop skills, capabilities, and industry experience for future careers. Advisors surveyed were asked a series of questions regarding developmental impact on students based on their perception. Figure 3.6 shows respondents overwhelmingly agree industry placement provides students practical experience (80%), technical skills (68%), professional networks (82%), enhanced research capability by applying academic knowledge (79%), exposure to industry trends and best practices (71%), and career readiness and employability (84%). Other benefits mentioned included developing confidence interacting with stakeholders, cultural immersion at workplaces, satisfying university's requirements, early translation of research findings to practice, and practical benefit of getting an extension on PhD timeline and scholarship.

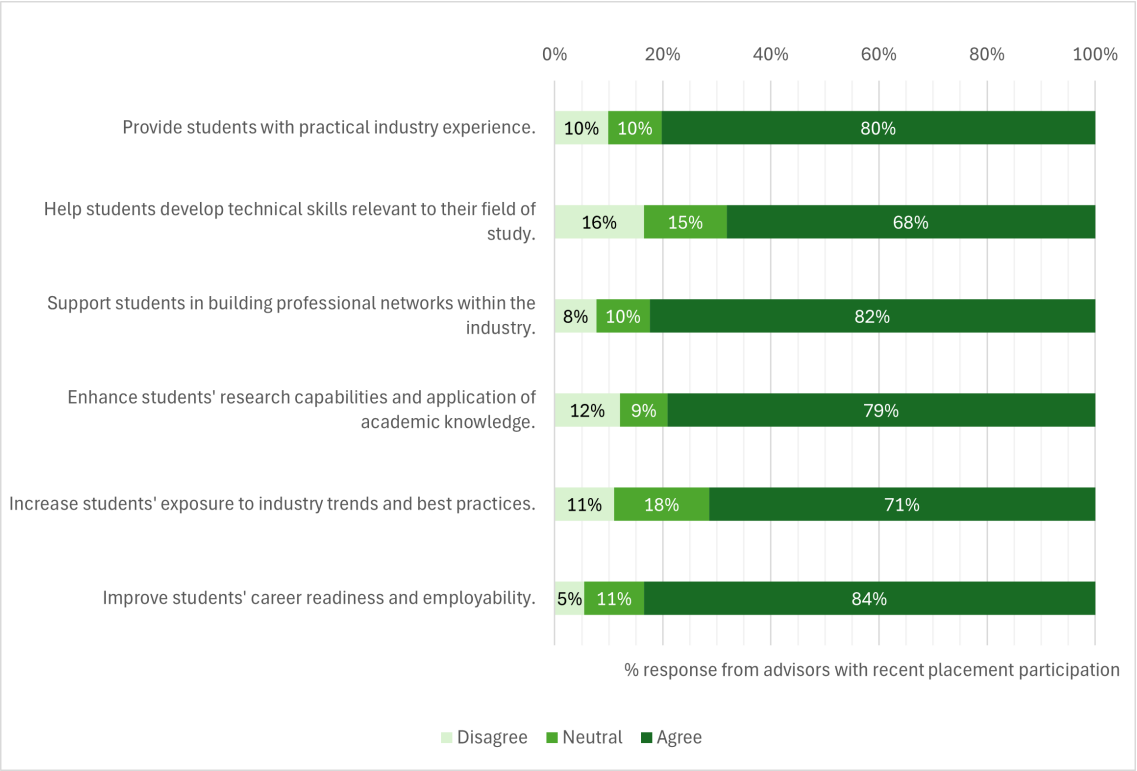


Figure 3.6 *Perceived developmental impact of industry placement on students.*

Advisors consider a range of skills to be important for students to develop during industry placement (see Figure 3.7). Again, advisors overwhelmingly consider skills relating to communication (94%), adaptability (88%), teamwork and collaboration (87%), problem solving (85%) professional conduct and work ethics (84%), critical thinking (74%), and project management (70%) even more crucial compared to technical skills (58%) and managerial skills (37%). Such findings are highly relevant as these highly rated skills require training for students to develop, which maybe only partially supported by universities or industry partners.

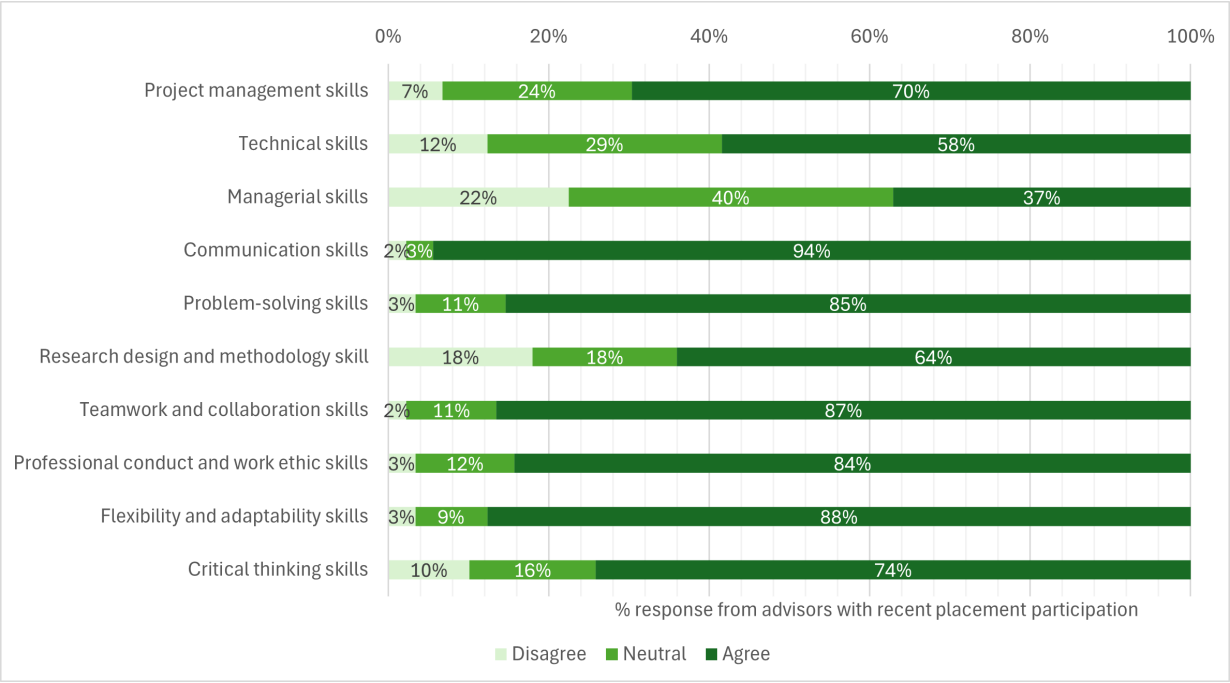


Figure 3.7 *Skills considered important by advisors for students to develop in placement.*

Advisors consider industry placement important for career development in terms of expanding students' professional network (29%), helping clarify students career goals and directions (23%) in addition to gaining skills for a desired career (26%).

In some cases, advisors reported their students found an industry career did not suit them through placement (8%). In other cases, advisors reported students receiving a job offer or an internship extension from the industry placement (14%).

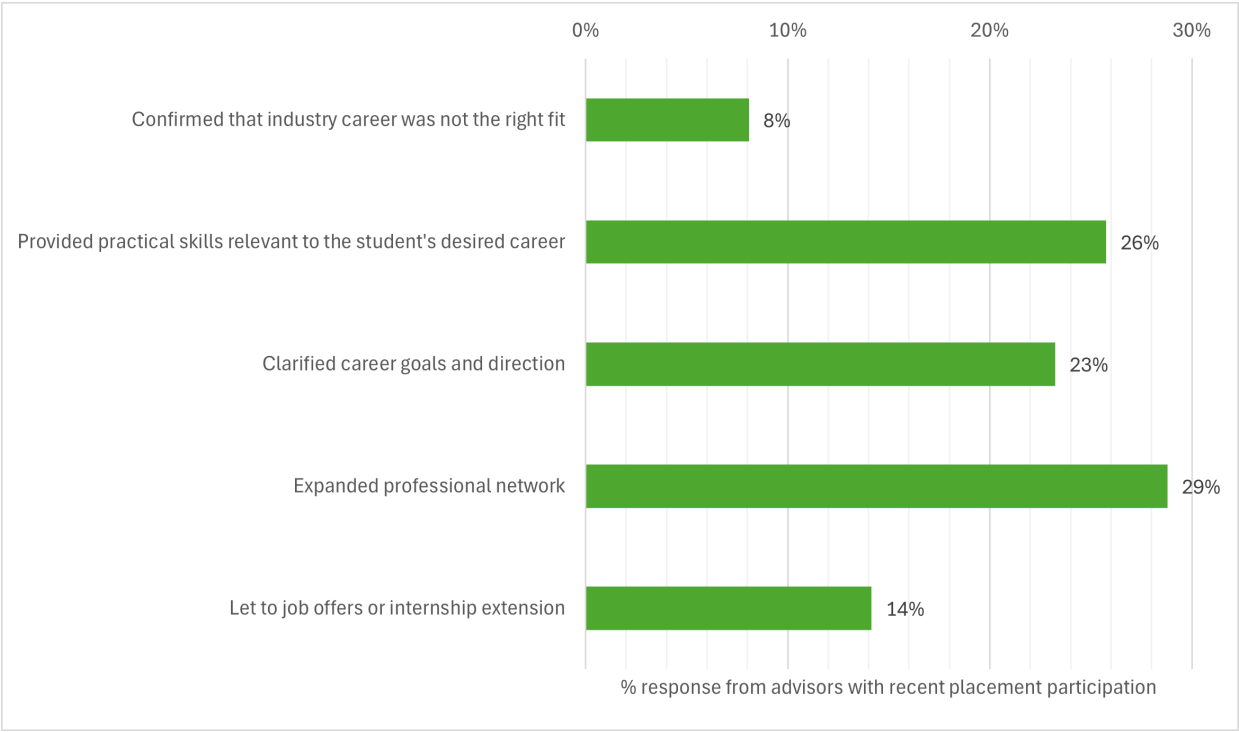


Figure 3.8 *Impact on student career development according to advisors.*

3.1.2 Success Indicators

Advisors were asked about suitable success indicators of student industry placement (Figure 3.9). Almost all respondents (94%) agreed students experience and feedback about their placement are suitable indicators for success. Feedback from industry partners (89%), employment outcomes (65%) such as job offers and career progression after placement, and research outputs (65%) such as publication and industry driven research outcome were subsequent indicators offered.

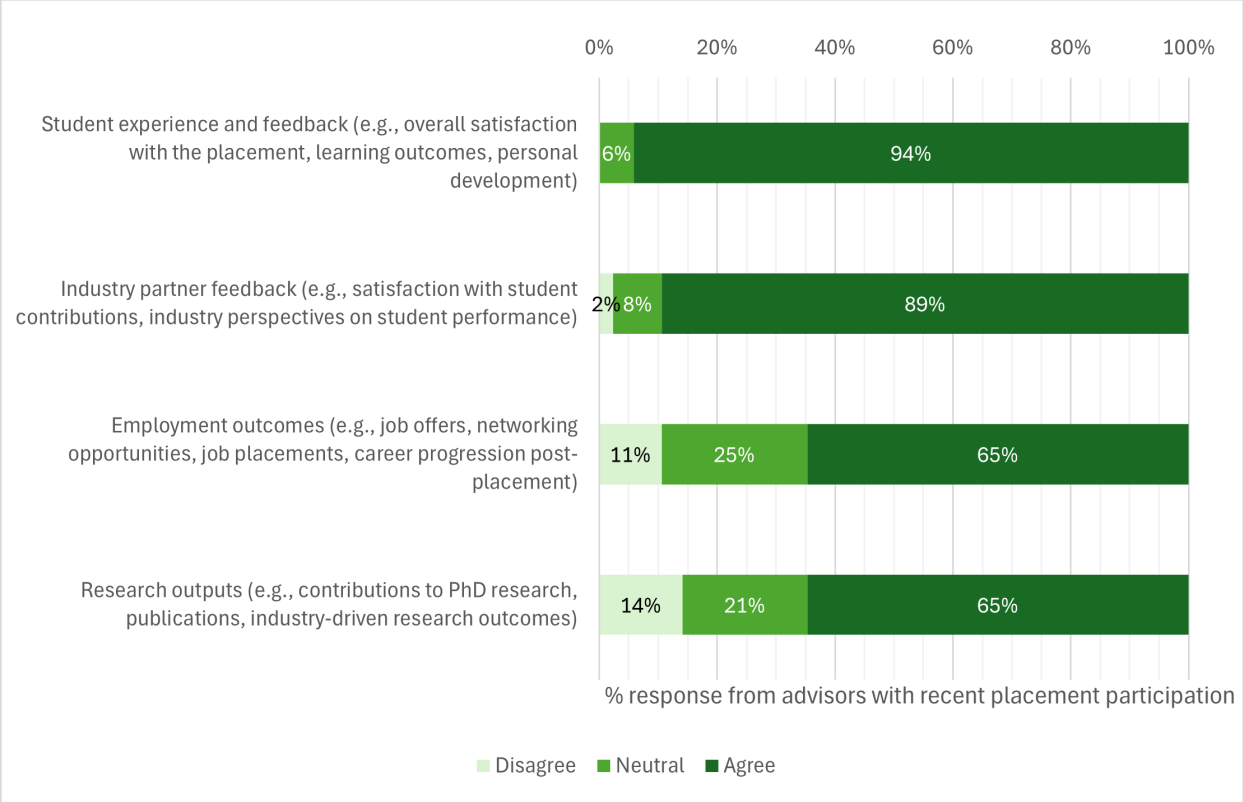


Figure 3.9 *Advisors' agreement on potential success indicators of student placement.*

3.1.3 Challenges

Advisors were asked about the challenges they faced in supervising student industry placement. The question provided nine options and asked the respondent to rate the severity of each option from no challenge (0) to major challenge (5). Figure 3.10 shows among all listed challenges, communication with students was considered to cause the least challenge with 42% of advisors answering "no challenge". Supervision from the university in terms of providing guidance to students was also considered a minor challenge with only 12% of advisors reporting significant or major challenges. Similarly, liaising with industry supervisors seems to cause minor or moderate levels of a challenge (60%) with 23% having experienced it more significantly.

Alternatively, more than half the advisors (54%) experienced significant to major challenges with securing funding or student scholarships for placement. This number is followed by 40% reporting students' progress in PhD milestones being a significant or major issue from participating in industry placement. Workload burden, admin support, communication with industry partners, and lack of clarity in expectations invariably cause minor to major challenges.

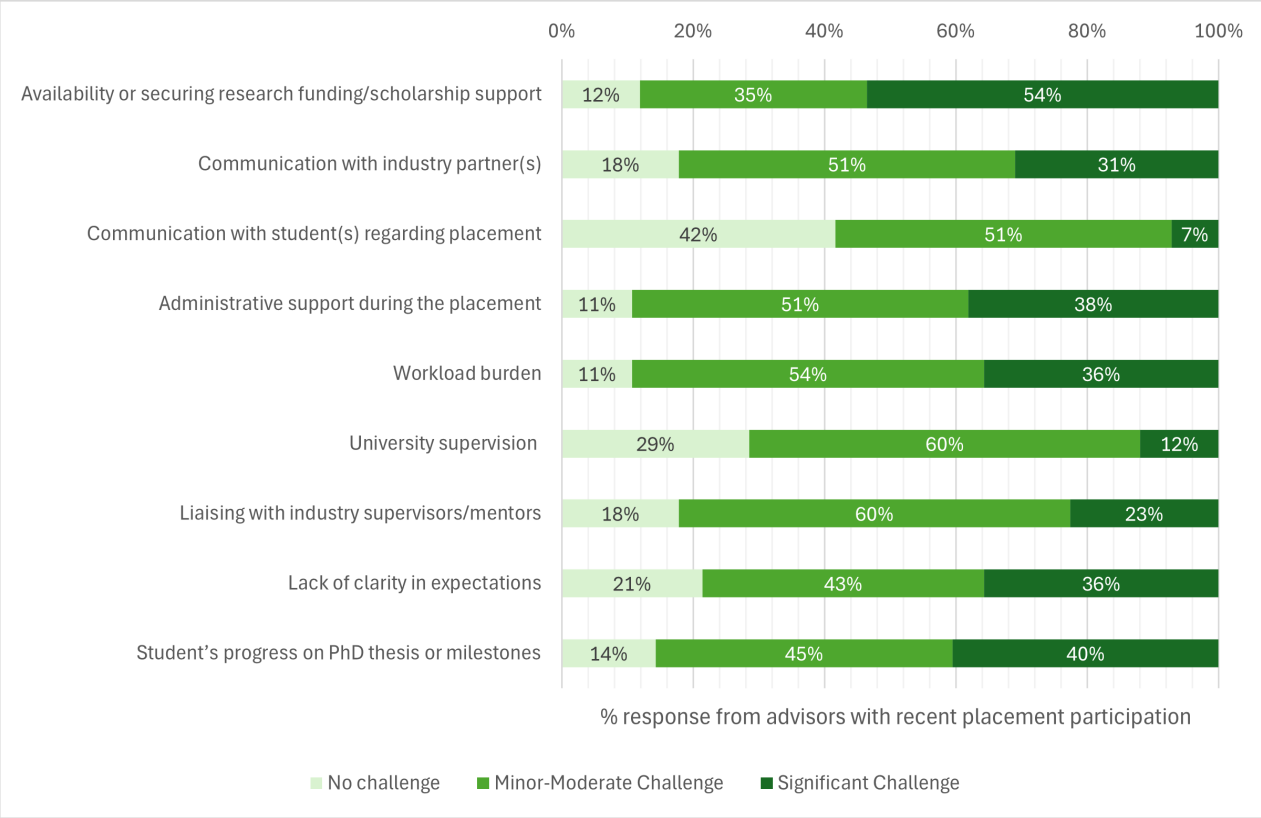


Figure 3.10 *Challenges faced by advisors in student industry placement.*

The survey asked advisors to explain why certain challenges are difficult to resolve with responses summarised in Table 2.

Table 2. *Reasons for persistent challenges faced by advisors.*

Major challenges	What made these challenge difficult to be addressed?
1. Research funding or scholarship support	• Insufficient university funding with strict rules. • Industry funding for placement is limited.
2. Communication with industry partner(s)	• Different expectations and ways of working. • Lack of industry commitment.
3. Administrative support	• Setting up agreements is bureaucratic. • Lack of administrative support.
4. Work-life balance	• Placement supervision is not recognised as workload. • Students may overwork in addition to PhD studies.
5. ACADEMIC supervision	• Difficult for advisors to supervise industry-led placement.
6. Liaising with industry supervisors/mentors	• Hard to find suitable partners and manage industry expectations.
7. Lack of expectation clarity	• Lack of awareness of placement or unreasonable demands from the industry partner. • Difficulty in aligning student and industry expectations.
8. PhD Thesis Or Milestone Progression	• PhD programs are becoming very slow and bureaucratic. • Placement is a distraction and delays student progression.

3.1.4 Student Support

Advisors were asked to select the type of support they provided for students during industry placement (see Figure 3.11). Many advisors provide ongoing mentorship (43%), pre-placement training (21%), while a sizable number stated they provide no support to their students (23%). A small number of advisors provided career counselling (2%). Ten percent of respondents mentioned other types of support including institutional level support from the university, industry support and training, and administrative support.

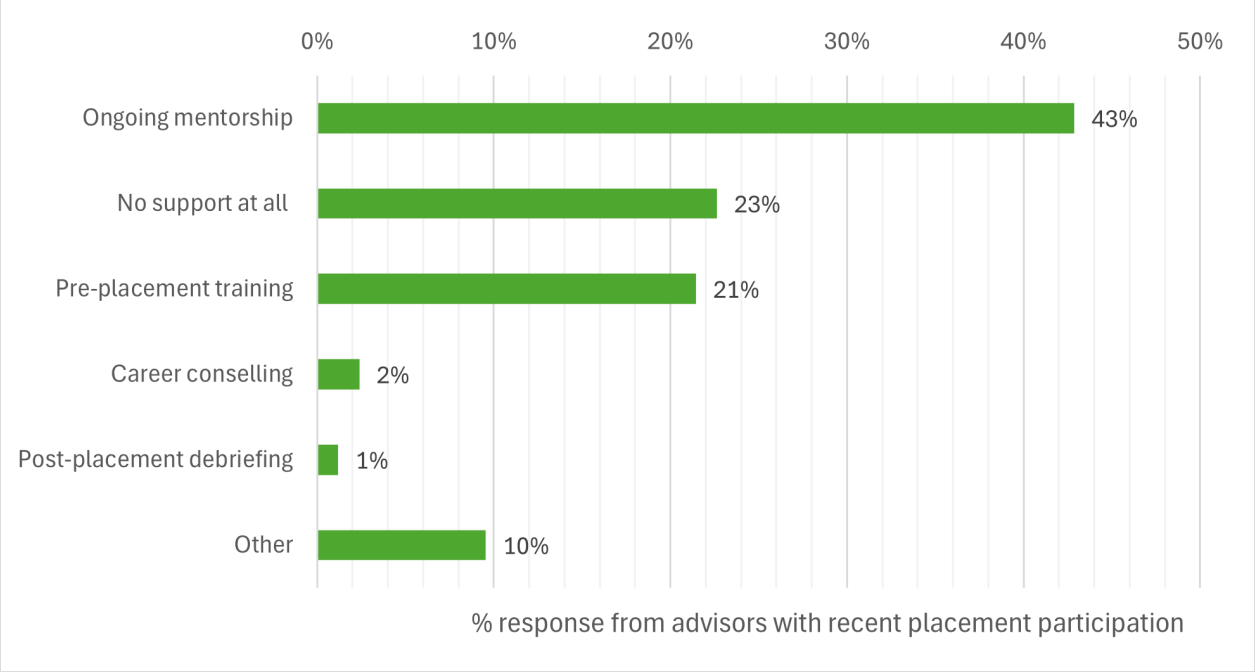


Figure 3.11 *Types of support to students undertaking industry placement.*

The survey also asked advisors to identify the support sources offered to students who undertake placement. The University or the students' enrolling institute in the university is considered the greatest source for support (74%), followed by the host organisation of industry placement (63%), and advisors or other (14%).

3.1.5 Student Selection Mechanisms

Advisors were asked to evaluate the effectiveness of student selection mechanisms for placements. An overwhelming majority of advisor respondents considered faculty recommendations, student preferences, and industry requests as effective selection methods of PhD students who are suited to a placement. More than half the respondents considered structured university-industry selection processes or other formal (i.e., competitive) processes effective. However, fewer advisors favoured matching algorithms (32%).

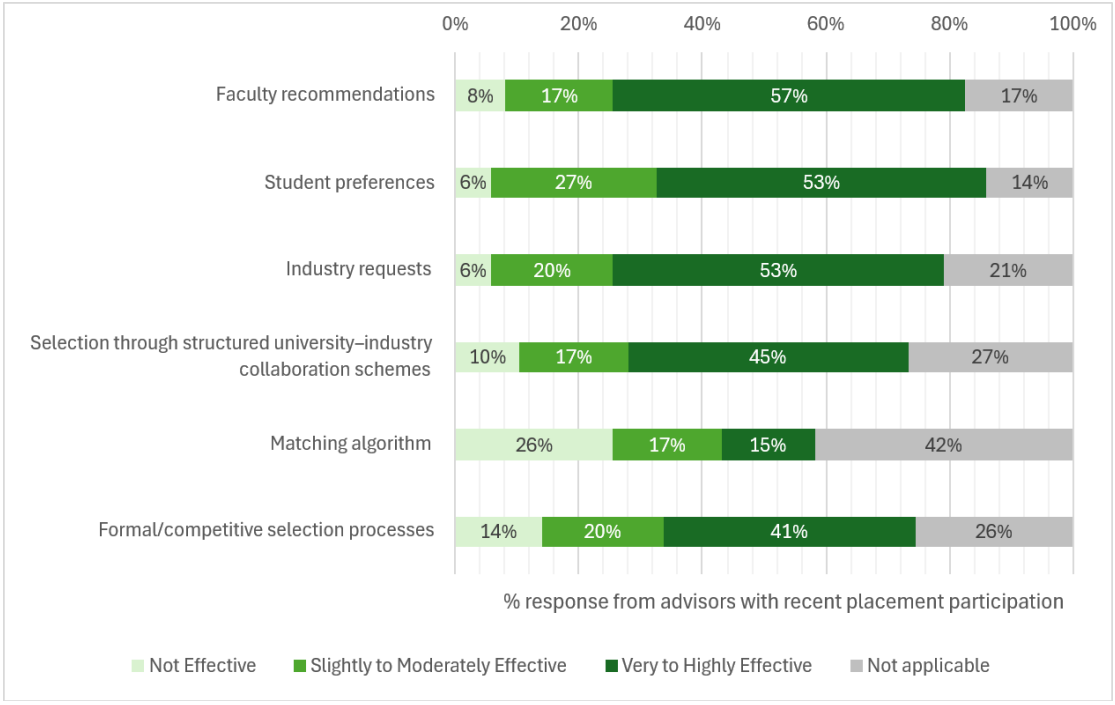


Figure 3.12 *Advisors' evaluation of student selection methods for placement.*

The survey asked advisors how feedback was collected from industry partners regarding their experiences with the student undertaking placement. Forty-seven percent of advisors confirmed industry feedback was collected by themselves or the university, while 42% were unsure if feedback was collected, and 8% confirmed feedback was not collected. The advisors who collected or received feedback also indicated the frequency of varying means through which the university or institution collected feedback (Figure 3.13), with the most frequent being through informal check-ins. Other continuous feedback mechanisms often used included regular progress reports, submission of work logs or portfolios, and status meetings. End of placement surveys and formal review were rarely done.

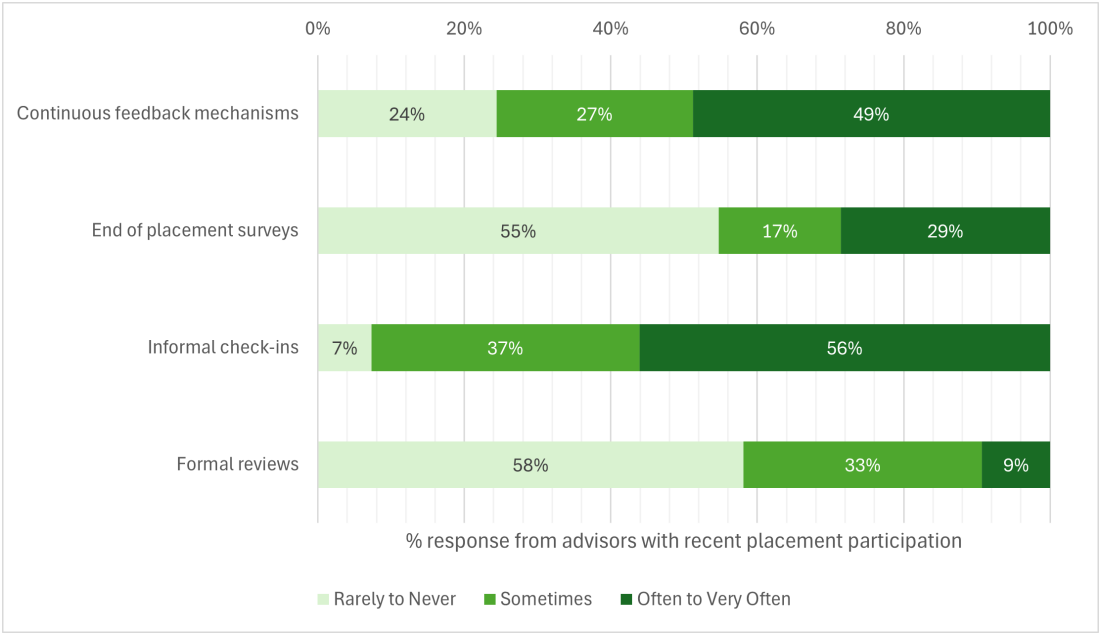


Figure 3.13 *Frequency of industry feedback about student placement.*

Advisors reported the most common topics of feedback they received from industry about student placements (Figure 3.14) were student performance and achievement (19%) as well as their professionalism and work ethics (19%), followed by students' communication and collaboration skills, and quality of research and contributions (both at 14%). Challenges or issues faced during placement (12%), students' adaptability and problem-solving skills (8%), as well as networking and relationship building (8%) accounted for other topics of feedback.

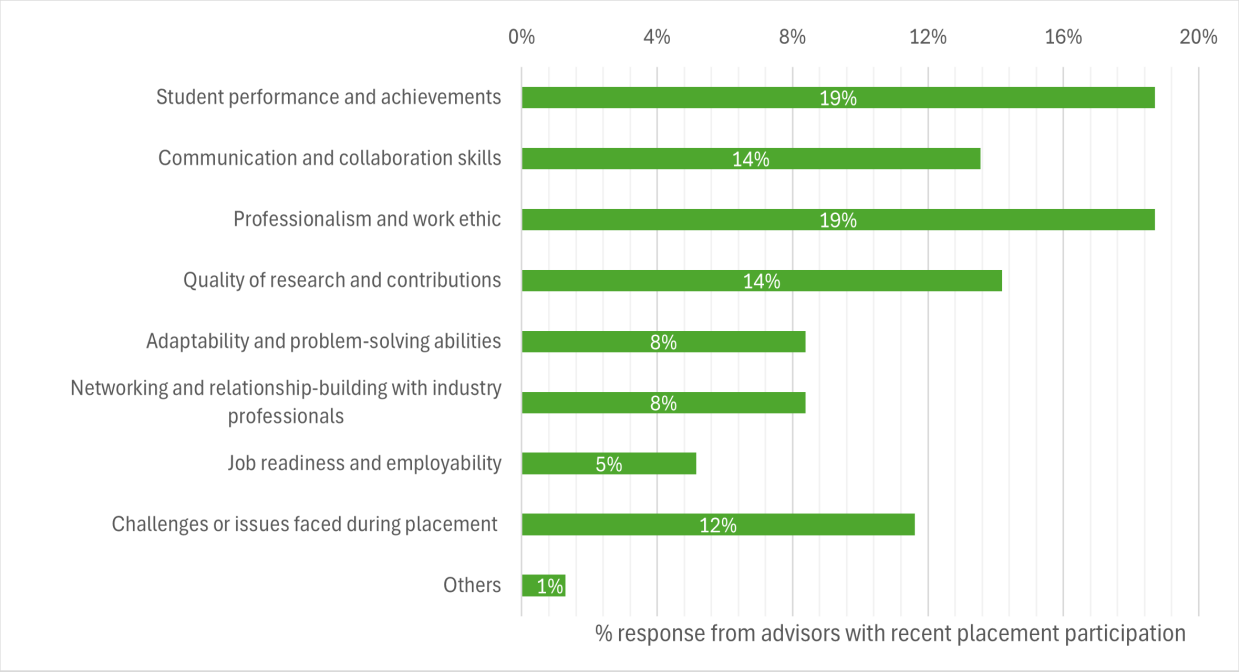


Figure 3.14 *Topics of feedback about student placement received by advisors.*

3.1.6 Potential Improvement for Future Placements

The survey asked advisors to prioritise a list of potential improvements for future PhD student industry placements (Figure 3.15). Their highest priorities are increasing funding or stipends (70%), expanding industry network (63%), and improving industry mentor involvement (56%). The several areas given less, but significantly high priorities for improvement include the matching process of students and projects (37%), additional academic support (41%), career placement assistance (37%), and equity and inclusion in placement opportunities (32%). Fewer respondents prioritised offering more emotional or personal support (26%) and modifying placement program structures (26%) for future improvement.

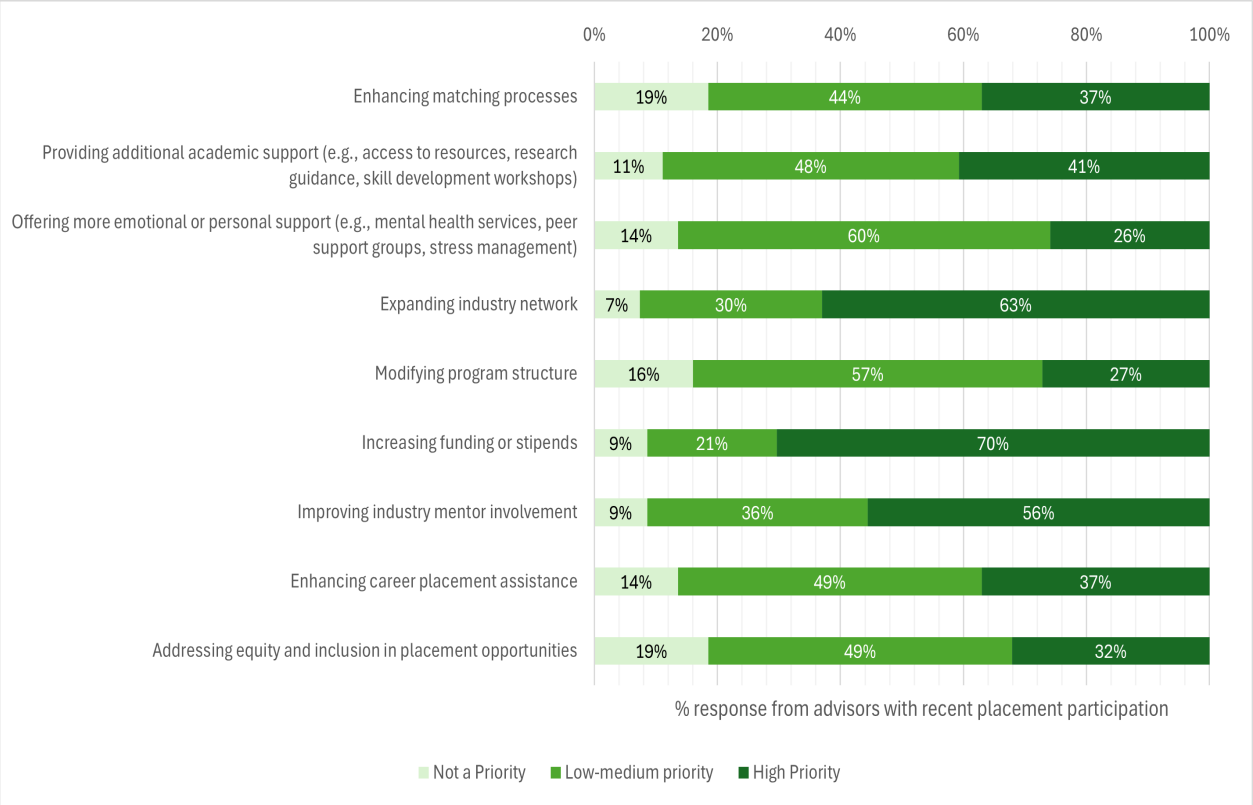


Figure 3.15 *Priorities for future improvement according to advisors.*

3.2 Advisors Who Have Not Supervised Industry Placement

This section presents the perceptions of PhD advisors who have not yet supervised industry placement of their students. The survey revealed a strong future interest alongside specific structural and disciplinary barriers preventing advisors from participating in placement supervision. A significant majority of respondents (65%) expressed clear interest or plans to become a placement supervisor in the future. 23% remained unsure and 13% indicated they did not intend to take on such a role. Feedback highlighted these reservations often stemmed from a perceived lack of institutional integration, with some supervisors noting they were not embedded enough within their university to effectively drive students toward industry programs. Other deterrents included a lack of relevance to specific PhD disciplines or the fact that some staff had already completed their involvement and felt no further need to participate.

The levels of awareness regarding industry placement programs varied across different schemes (Figure 3.16). University-level placement and internship programs were the most well-known, with a 25% awareness rate. This level was followed by CSIRO iPhD at 21% and ARC ITTC at 20%. The NIPhD program was recognised by 18% of the cohort, while the APR.Intern program saw a lower awareness level of only 8%. Notably, 8% of participants reported they were not aware of any industry placement programs whatsoever.

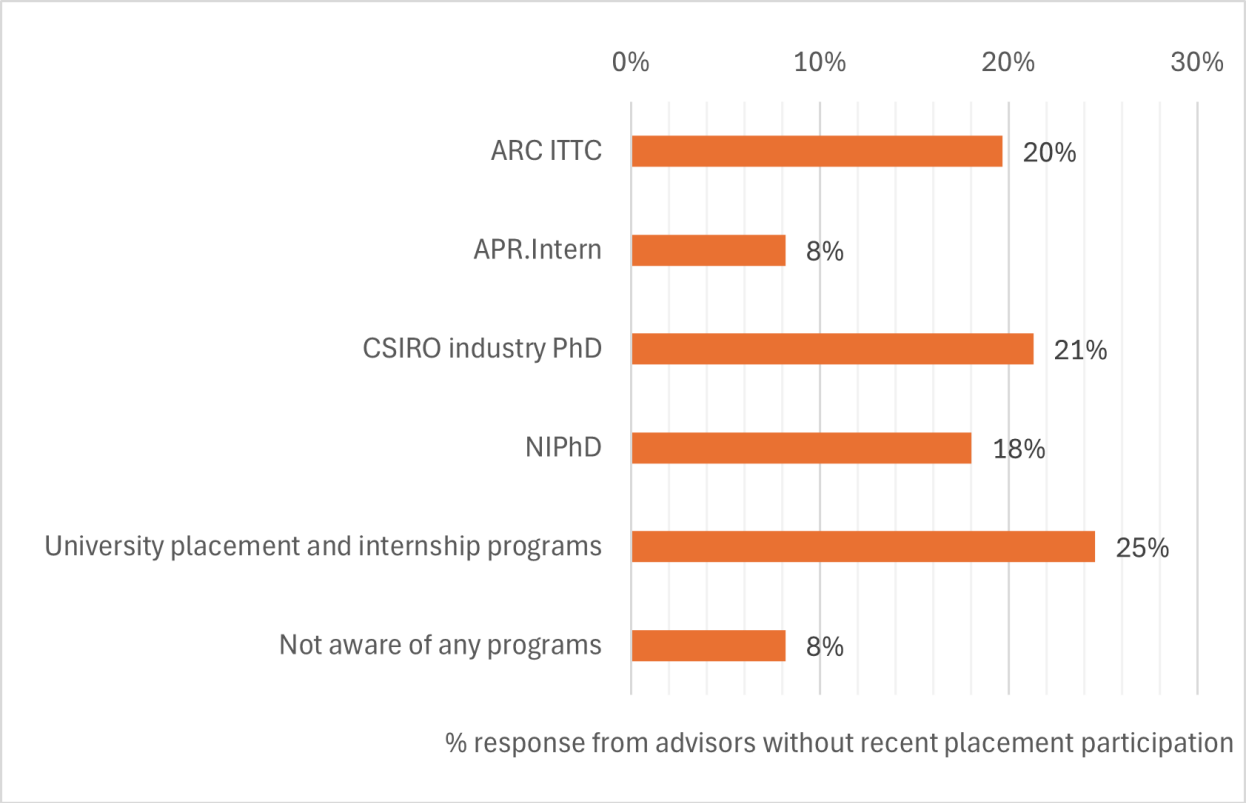


Figure 3.16 Advisors' awareness of PhD industry placement programs.

Industry placements were viewed as quite beneficial for students, particularly in terms of building professional networks within the industry. However, these non-participating respondents maintained a more neutral stance regarding the extent to which placements actually enhanced a student's research capabilities or the application of academic knowledge. This skepticism was echoed by two respondents who disagreed industry placements assisted students in developing technical skills in their field. Nor did they believe the programs significantly improved research capabilities or the practical application of academic knowledge.

This cohort of respondents were also asked about their perceived benefits of industry placement programs for PhD students (Figure 3.17). High consensus was reached on the practical advantages of these programs, with 96% of respondents agreeing they helped students build professional networks and 92% agreeing they provided practical industry experience and exposure to trends. While a majority (79%) believed placements improved career readiness, the group expressed more varied opinions on academic integration with 33% remaining neutral on whether placements enhanced research capabilities or the application of academic knowledge. A small minority explicitly disagreed that these programs provided practical industry experience (8%) or helped develop relevant technical skills (4%).

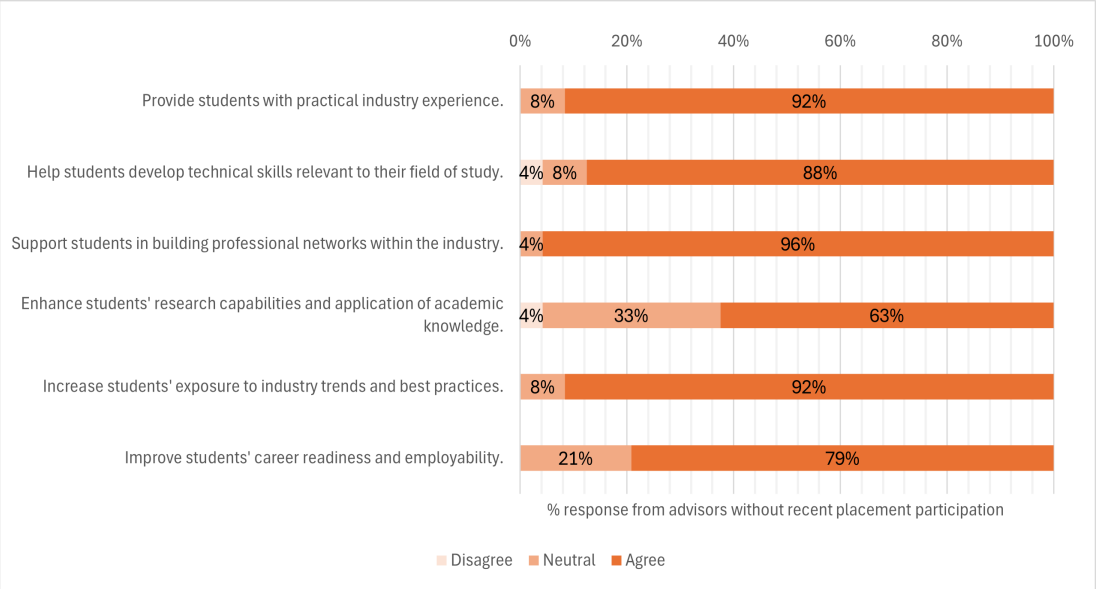


Figure 3.17 *Perceived benefits according to advisors who have not supervised placement.*

The survey asked about the importance of developing specific skills through industry placements (Figure 3.18). There was a strong consensus across all categories that placements were valuable for skill acquisition, with professional conduct and work ethic skills achieving a unanimous 100% agreement rate. Communication skills followed closely with 96% agreement, while teamwork and collaboration skills were valued by 91% of those surveyed. While most areas showed high levels of support, managerial skills saw the lowest level of agreement at 52%, with a significant 39% of respondents remaining neutral on their importance. Other core competencies such as problem-solving and flexibility and adaptability, both garnered 87% agreement, reinforcing the general perception that industry engagement is critical for broad professional development.

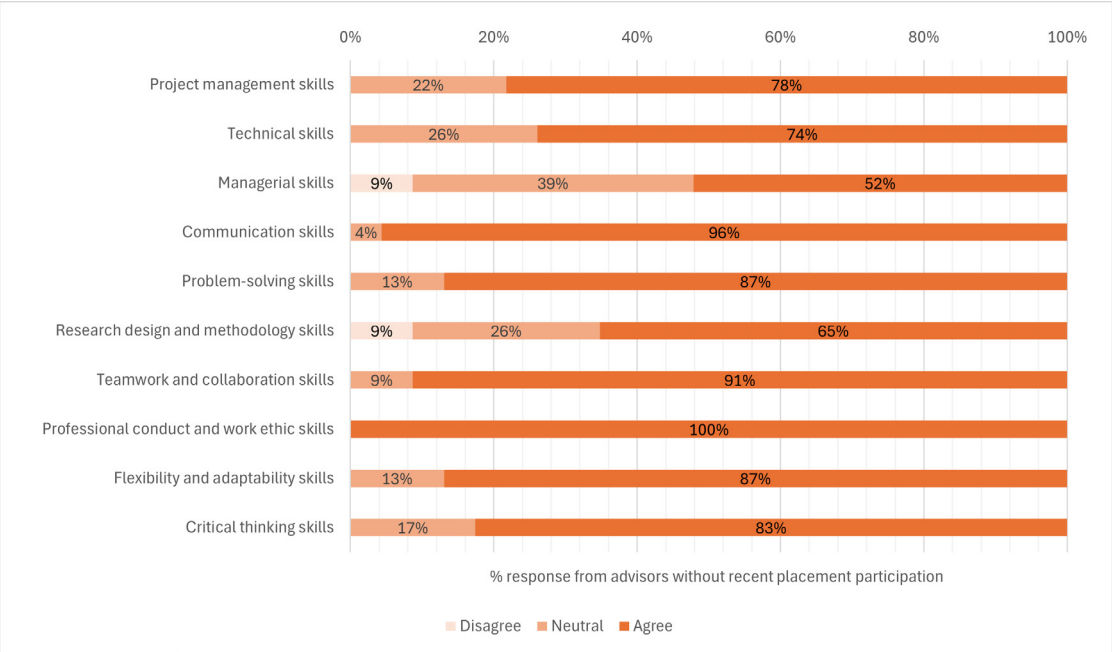


Figure 3.18 *Skills considered important by advisors who have not supervised student placement.*

3.3 Comparing Responses from Advisors with and Without Placement Experience

3.3.1 Expected Benefits of Industry Placements

Advisors generally react positively to the benefits for students of participating in industry placement. Those who have not participated in placement programs tend to rank the benefits higher than those who have supervised student placement with exception in the areas of enhancing research capability and academic knowledge and improving student career readiness and employability. Advisors who had not supervised student placement reported notably higher expectations on students gaining more technical skills and being exposed to industry trends than those who had experiences in student placement.

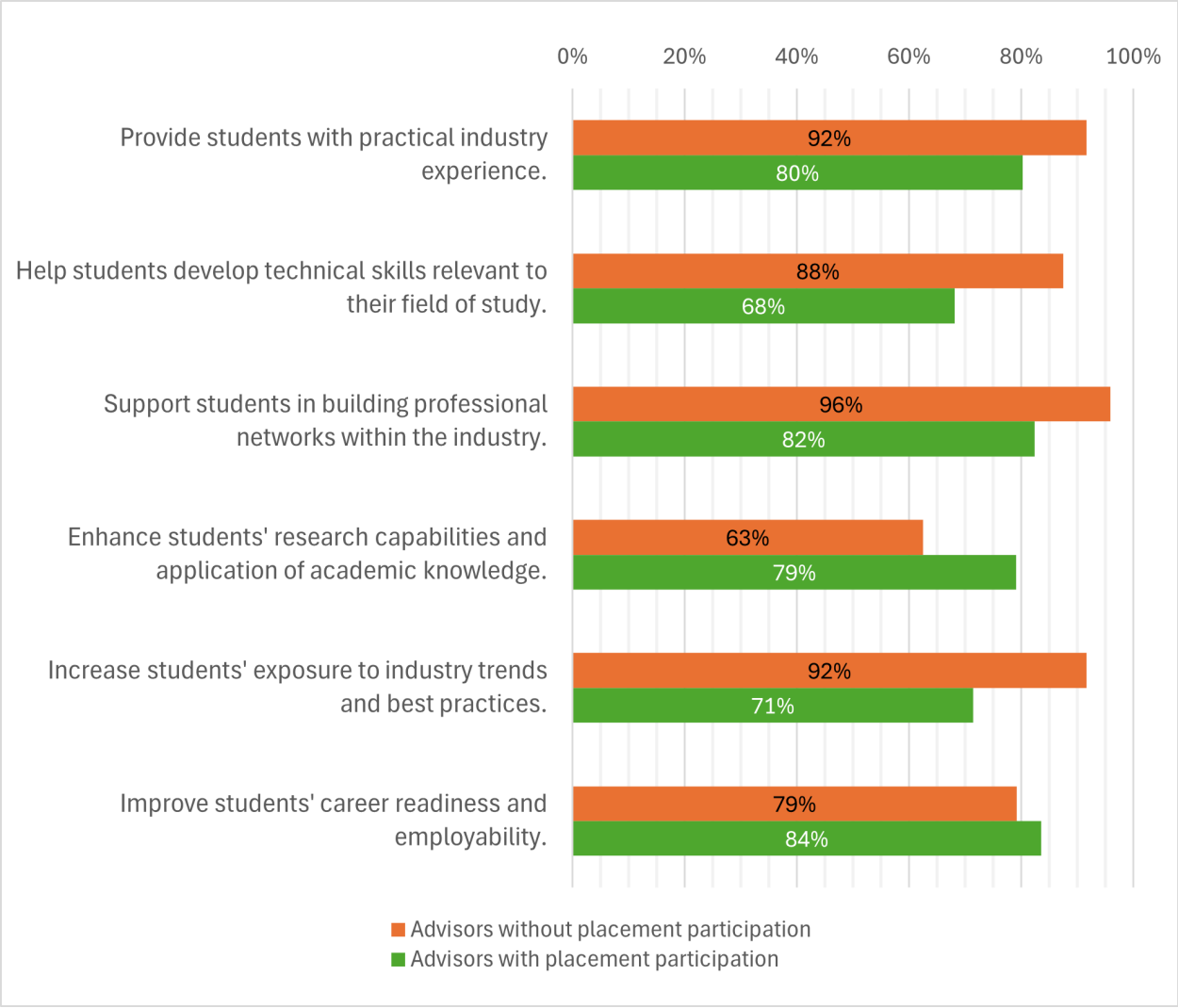


Figure 3.19 *Comparing advisors' feedback on the benefits of PhD student industry placement.*

3.3.2 Importance of Skill Development for Students in Placement

Advisors generally reacted positively to the importance of a range of skills students can develop in industry placement, while those who had not supervised placement reported higher levels of importance to almost every skill listed in the survey. Advisors who had supervised student placement have a relatively low regard for the importance of managerial skills students may develop while the expectation from advisors who had not experienced student placement is higher (i.e., 37% vs. 52%). Similarly, experienced advisors reported a moderate consideration of the importance of students developing technical skills in placement (58%) while inexperienced advisors seem more optimistic (74%).

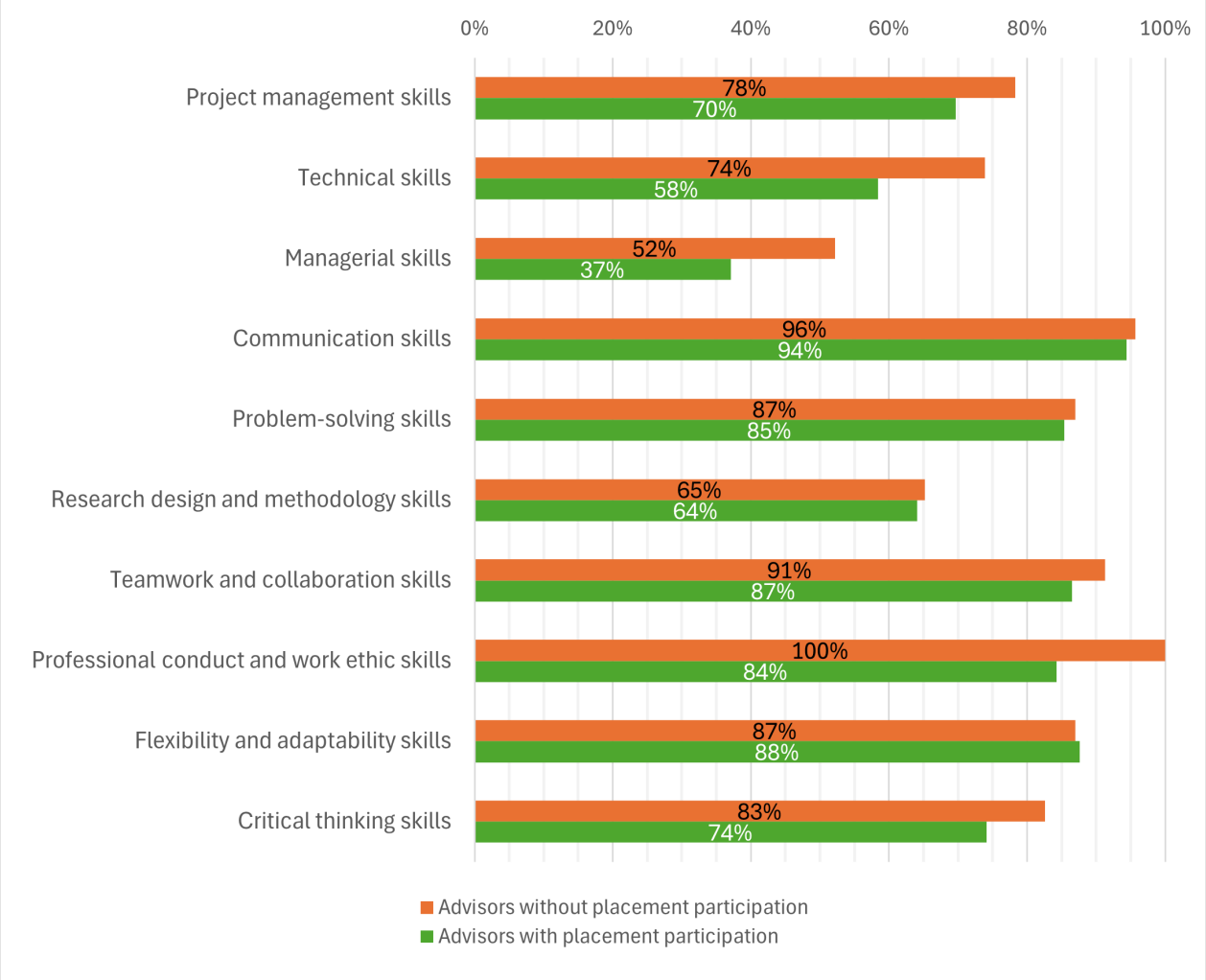
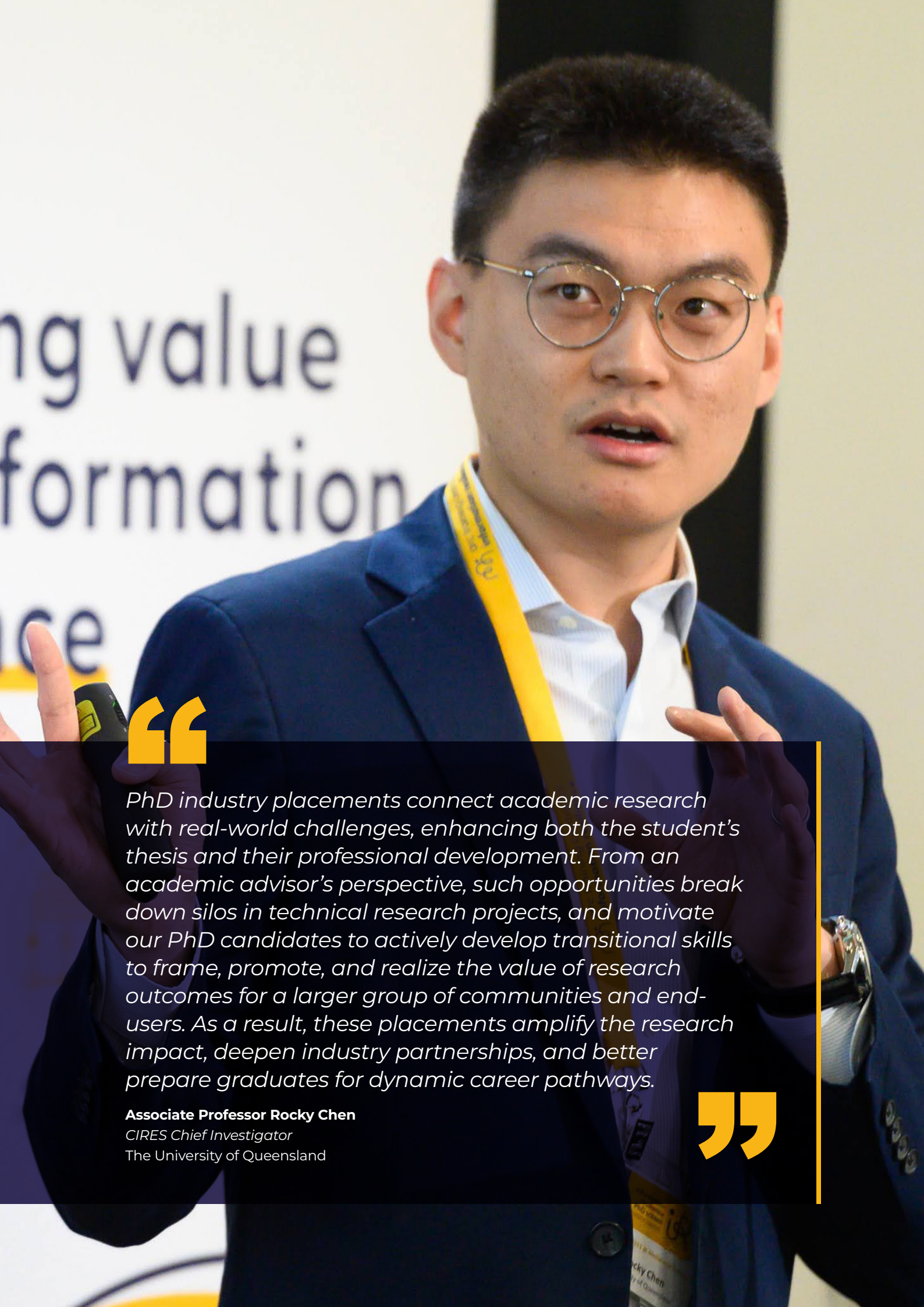


Figure 3.20 *Comparing advisors' feedback on skill development.*



PhD industry placements connect academic research with real-world challenges, enhancing both the student's thesis and their professional development. From an academic advisor's perspective, such opportunities break down silos in technical research projects, and motivate our PhD candidates to actively develop transitional skills to frame, promote, and realize the value of research outcomes for a larger group of communities and end-users. As a result, these placements amplify the research impact, deepen industry partnerships, and better prepare graduates for dynamic career pathways.

Associate Professor Rocky Chen
CIRES Chief Investigator
The University of Queensland

4

Comparing Student and Advisor Responses

This section compares the responses between the student and the advisor to identify critical points of consensus and divergence regarding skill development, career directions, challenges, and support in the context of industry placement. Before each of these areas of comparison are expanded in the following sub-section, Figure 4.1 shows the industry sectors in which students surveyed undertook placement compared to those where advisors' placement supervision took place.

The students surveyed undertook placement in several concentrated sectors, notably Professional, Scientific, and Technical Services, and Healthcare and Social Assistance. Advisors also reported these two areas as the top sectors where they have supervised student placement, with the spread of their supervision experience wider across industry sectors. Advisors reported sectors such as Information Media and Telecommunications, Public Administration and Safety, Electricity, Gas, Water, and Waste Services, and Manufacturing, where little to no students in this survey participated. The difference in the distribution of industry sector between the student and the advisor cohorts may affect expectations of their experiences reported.

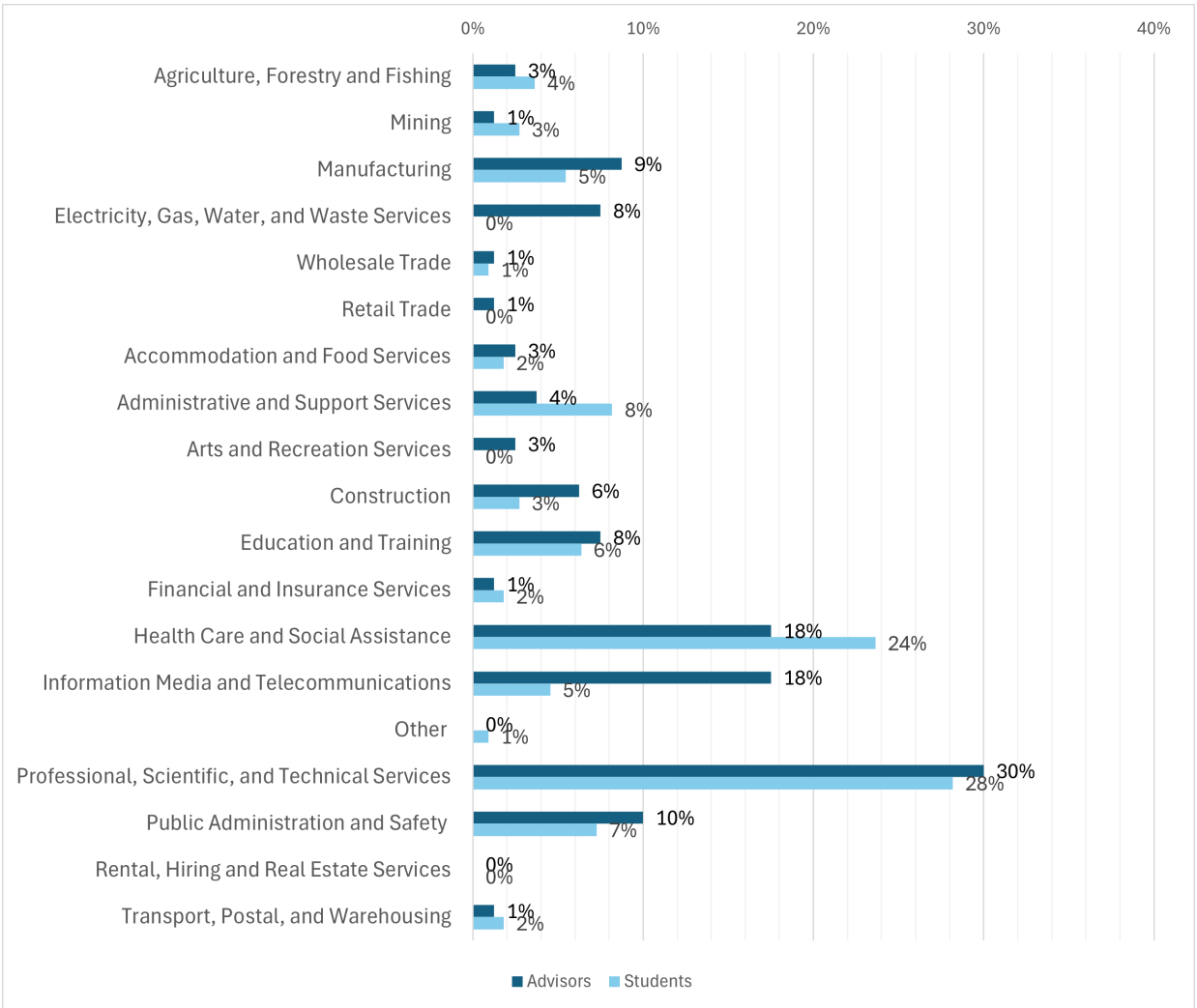


Figure 4.1 *Industry sectors of student placement vs advisor supervision.*

4.1 Skill Development Perspectives

The skill categories students expected (and were able to) to develop by participating in industry placement generally align with what advisors consider important.[11] However, advisor expectations seem to exceed those of the students in many areas, with *communication skills* representing the largest gap between the two cohorts (i.e., a difference of 30%). The closest expectation on skill development between the two lies in *technical skills*. Both cohorts share a low expectation regarding the importance of managerial skills.

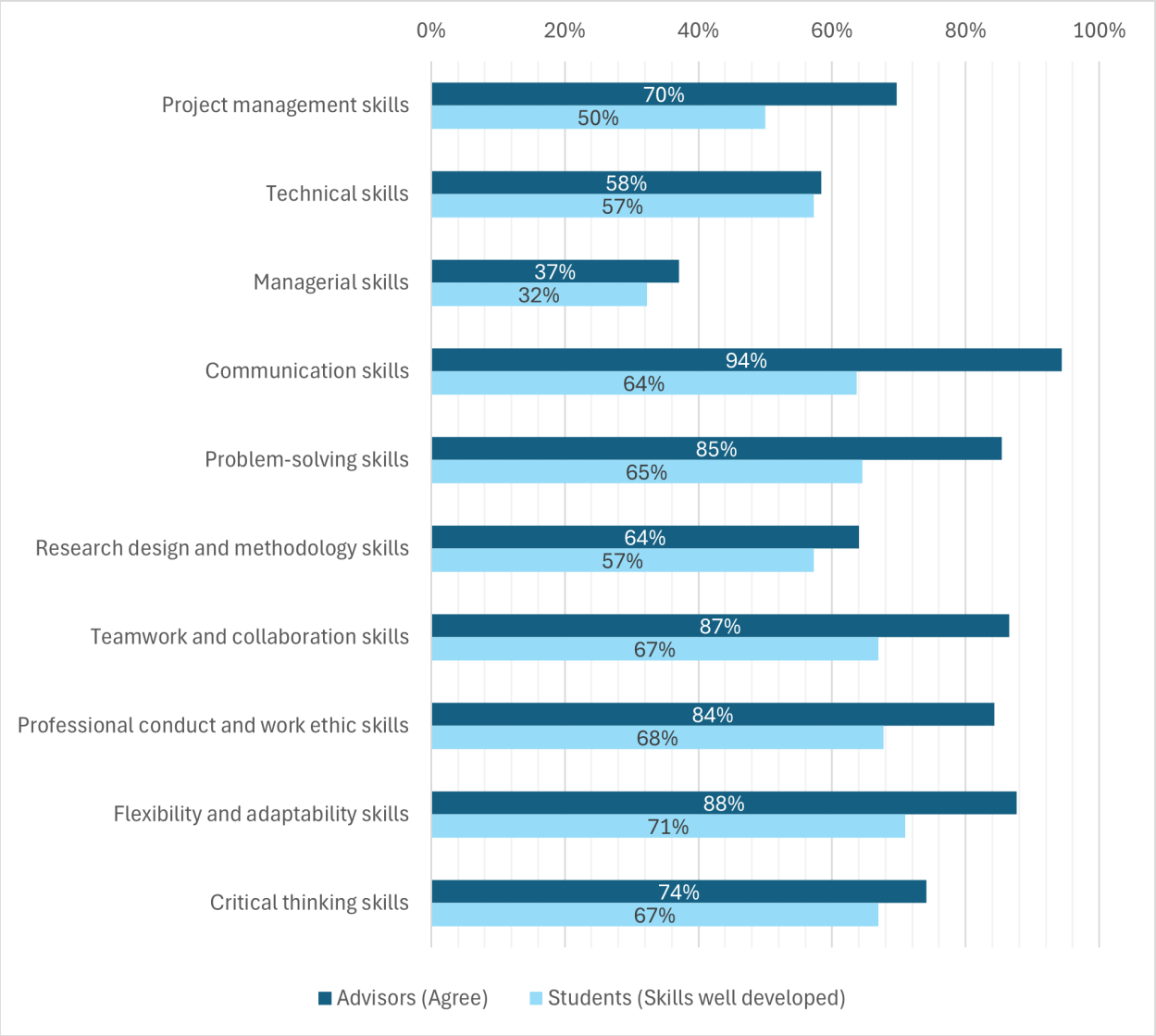


Figure 4.2 *Comparing student and advisor expectations on skill development.*

11 This comparison draws from the findings from 2.1.1 and 3.1.1.

4.2 Career Directions Perspectives

Students view industry placements as significantly more transformative for their professional futures than do advisors.[12] While both groups rank "expanding professional networks" as the primary benefit, students rank this influence much higher. Students report placements have a major influence (over 45%) on their specific career goals and the development of skills relevant to their desired career paths, whereas advisors consider these impacts to be less significant.

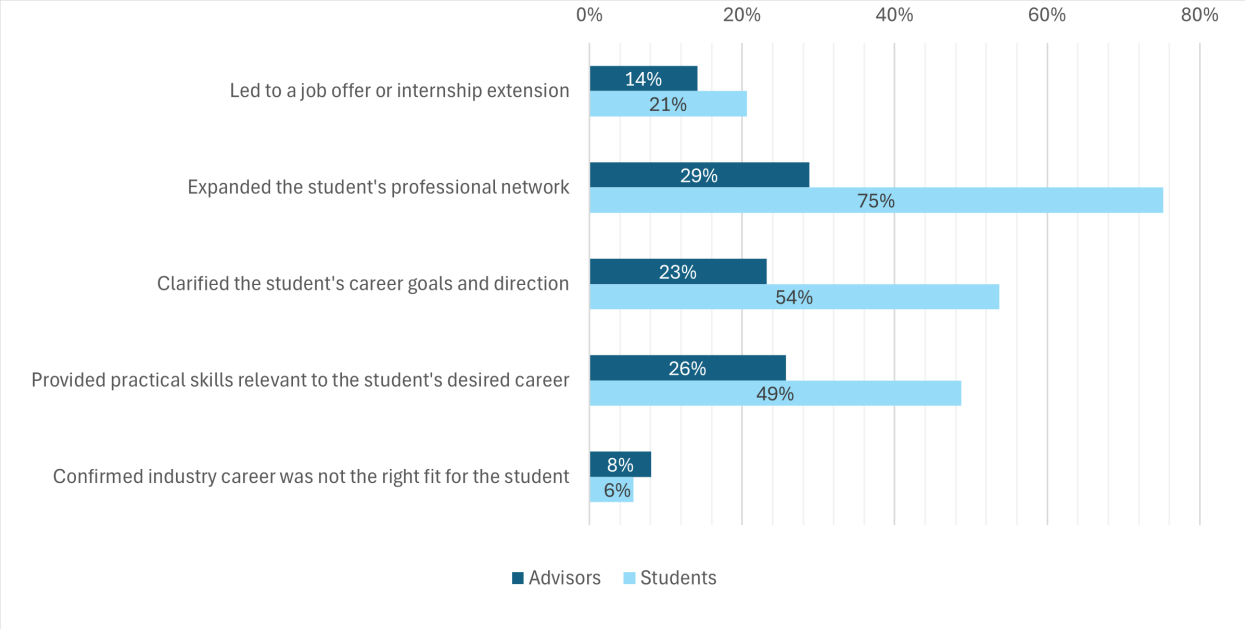


Figure 4.3 *Comparing student and advisor perspectives on career prospects.*

4.3 Industry Placement Challenges

Advisors report facing minor to moderate challenges across almost all categories, suggesting the administrative and systemic burden is largely borne by the advisor.[13] Students report fewer challenges overall but identify the "progression of PhD thesis milestones" as their most significant hurdle. A notable point of difference is funding. Advisors view the availability of scholarships as their largest challenge, whereas students find this to be the least challenging aspect of the process.

Both groups identify systemic, structural issues rather than isolated problems, viewing placements as under-supported and poorly integrated into the PhD lifecycle. Shared challenges (Table 3) include funding constraints, administrative bureaucracy, and unclear industry expectations. However, students emphasise personal impacts such as financial distress, burnout, and power imbalances, while advisors highlight institutional constraints, including restrictive funding schemes and a lack of workload recognition for supervision.

11 This comparison draws from the findings in 2.1.2 (as shown in Figure 2.12) and 3.1.1 (as shown in Figure 3.7).
13 This comparison draws from the findings in 2.1.3 and 3.1.3.

Table 3. *Common challenges for students and advisors.*

Challenges in industry placement	Explanation
Funding constraints	• Insufficient, delayed, inflexible funding • Misalignment between placement duration and scholarship/ extension rules
Communication with industry	• Unclear expectations • Limited commitment or understanding from industry partners
Administrative burden	• Slow, bureaucratic university processes • Contracting and paperwork delays • Lack of centralised or effective admin support
Unclear expectations	• Industry misunderstanding of PhD training vs employment • Poor definition of student roles, deliverables, and scope
Impact on PhD progression	• Placements delay milestones and completion • Reduced research output during placement • Increased stress and burnout
Workload pressure	• Placement work exceeds expectations • Competing demands between PhD and industry work

Students and advisors do share a number of common challenges and also reported different experiences. Table 4 details how key challenges affect the two cohorts.

Table 4*. Differences in how challenges affect students and advisors.*

Theme	Students	Advisors
Funding	Delays, insufficiency, personal hardship	Restrictive, inflexible, unattractive schemes
Industry communication	Inaccessible, unclear, unprepared	Low commitment, misaligned expectations
Administration processes	Confusing, slow, discriminatory	Time-consuming, discouraging, unsupported
Expectations	Vague tasks, unclear role	Industry and government misunderstanding about PhD training
Workload	Overwork, pressure, burnout	Unrecognised workload, poor timing
Supervision	Absent, excessive demands	Hard to supervise industry-led research
PhD progression	Delays, fewer publications, extensions	Slower completions, reduced research focus

4.4 Placement Program Support

A notable gap is perceived to exist regarding the provision of support during industry placements, with advisors potentially overestimating the level of assistance students receive compared with students' own experiences. While advisors suggest that enrolling universities provide the majority of support, students report more balanced sources of support where assistance is split almost equally between the university and the host organisation. Students identify their academic supervisors and financial stipends as the primary forms of university-based support, whereas the support provided by host organisations is more multifaceted, encompassing mentorship, resource access, and professional integration in a more evenly distributed manner.

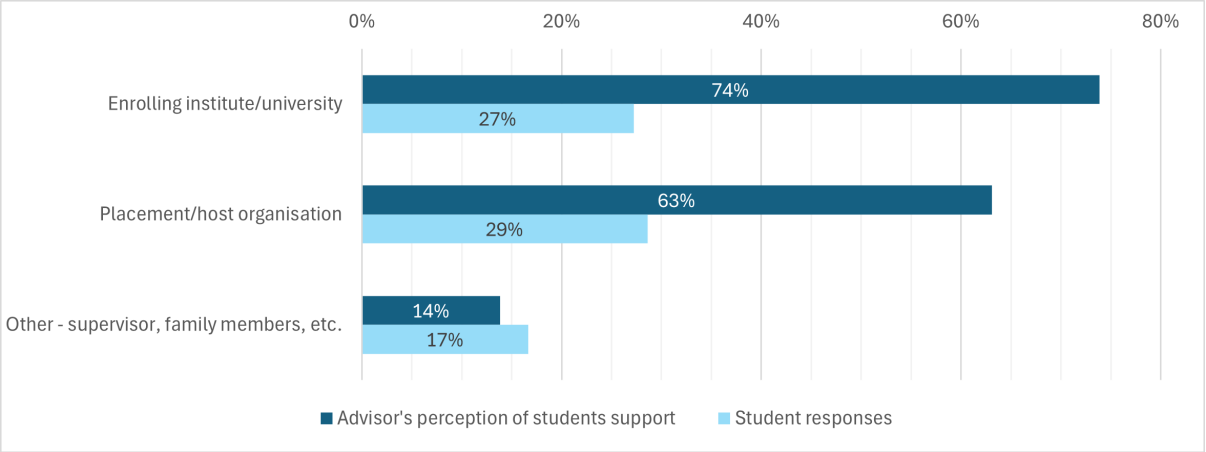


Figure 4.4 *Comparing student and advisor perspectives on the support received.*

5

Summary of Key Findings

This section presents the summary of survey findings, highlighting key insights from PhD students and academic advisors regarding their expectations and experiences of industry placement, as well as the challenges faced.

5.1 Enablers and Barriers of Industry Placement

Survey findings indicate industry placement is becoming a significant component of PhD training and student experience with an increasing number of initiatives and schemes acting as a key enabler of placement participation. This study found faculty recommendations, student preferences, and industry requests were the most effective selection mechanisms for student participation in placements. These selection mechanisms were often supported by structured processes between universities and industry. Meanwhile, matching algorithms between placement and candidates seemed less favoured by survey respondents.

While nearly half the students who responded to the survey participated in industry placement, a clear barrier existed for students who had not participated. Nearly one-third of students were unaware of placement opportunities. From the perspective of advisors, significant challenges in securing funding or student scholarships for placement were found to be a key barrier. Advisors worried about the impact of industry placement on students' progress and PhD milestones. Similarly, students faced a workload burden and lack of administration support, communication with industry partners, and clarity in expectations.

Despite these barriers, both students and advisors viewed placements as a powerful tool for career development and research translation. Students prioritised the applying of their research to real-world contexts and expanding professional networks, with many reporting significant growth in their industry connections. Advisors, on the other hand, emphasised "industry readiness" with a focus on students acquiring transferable skills like communication, adaptability, and professional ethics.

5.2 Differed Expectations and Experiences

Students and advisors both valued industry placements, though the survey found their expectations and experiences differed. Advisors tended to expect more skills development through placement than how students experienced such development (see 4.2). Conversely, students considered industry placement far more beneficial for setting career directions and career development than advisors (see 4.3).

There does exist a gap in the perception between advisors who have supervised student placement and those inexperienced in this regard. Advisors without placement supervision experience tended to hold more optimistic views on the benefit of placement for PhD students (see 3.3.1). These advisors also reported higher expectations of the skills students can develop from participating in a placement, particularly technical and managerial skills, and professional conduct and ethics experiences (see 3.3.2). Advisors who had placement supervision experience reported more reserved expectations and experiences in terms of the benefit of a placement and skills students can develop.

5.3 Misalignment Between Expected Success and Support

As discussed, the survey findings underscore differences between student and advisor expectations on satisfying industry placement experiences and the formal mechanisms needed to ensure its success. The lack of formal support towards successful placement is shown, for example, by the reported experience of relying on private negotiations between students and advisors regarding research outcomes rather than integrating such objectives in a formal feedback loop among the student, advisor, university, and industry partner. Such misalignment between expected success and a lack of formal mechanisms to support PhD students' industry placements cause difficulties in many cases. The

most significant difficulty, among others, lies in the challenge to balance industry placement and thesis progression which in turn causes delays in PhD milestones and heightened stress.

Student and advisor cohorts consistently recommend that universities implement formal candidature extensions for students undertaking placements to mitigate academic delays caused by industry commitments. These findings highlight the need for streamlined administrative processes and clearer communication between industry mentors and academic supervisors to ensure research objectives remain visible and achievable throughout the placement period.

5.4 Support Mechanisms for Managing Workload

The survey findings show support for student industry placement is delivered through multiple layers of assistance. Respondents indicated industry partners provide frequent practical help, followed by universities offering academic guidance and financial stipends. However, over half the students rely on personal networks for emotional and financial stability.

The survey findings show effective placements benefit from early and well-structured engagement between students and industry partners. Such engagement, as suggested by survey participants, should aim at aligning research with clear timelines and documentation to minimise administrative burden. Sustained communication between universities, industry mentors, and students is needed to maintain alignment and resolve issues promptly, supported by guidance on workplace integration, professional conduct, and research continuity.

Given the workload burden is the most significant hurdle with more than three quarters of students struggling to balance industry work and thesis progression, more flexible candidature extensions and adaptable guidelines for placement-based PhD pathways may be needed. So too do students and advisors deserve more streamlined administration to ensure industry placement is successful and professional development does occur through placement.

5.5 Formal and Informal Feedback

Industry feedback processes remain inconsistent with half the advisors unsure whether it is being collected. This finding highlights the need for more reliable and transparent feedback to ensure a placement is on track. Among the advisors who do receive industry feedback about student placement, the most common channels are informal check-ins, supplemented by ongoing practices such as regular progress reports, worklog or portfolio submissions, and status meetings, while formal end-of-placement surveys and structured reviews are used far less frequently.

The feedback content mostly concerns student performance and achievement, and professionalism and work ethics, followed by comments on communication and collaboration skills, the quality of research and contributions, challenges encountered during placement, and aspects such as adaptability, problem-solving, networking, and relationship-building. Collectively, these findings show feedback is occurring, is fragmented, heavily informal, and unevenly captured, limiting its value to improve placement design, student preparation, and long-term university–industry partnership quality.


2023

6

Recommendations and Conclusions

This report presents extensive findings from a national survey of PhD students and advisors with the purpose to establish the current state of industry placement within Australian doctoral training. The analysis of survey findings from students and academic advisors shows PhD industry placements have become a well-established component of research training, delivered through multiple national, sectoral, and university level models. While participation pathways, durations, and supervisory arrangements vary considerably, industry placement has generally been designed to support research translation and career development, rather than functioning solely as degree completion activities.

Alongside many benefits, the survey identified several systematic challenges experienced by students and advisors. The three recommendations are actionable for institutions, industry organisations, and policy makers to ensure successful industry placements.

RECOMMENDATION ONE

Establish clear expectations and alignment early

1. **Define placement scope, roles, and deliverables upfront.**
   Require a formal, co-signed placement plan that specifies research objectives, tasks, expected outputs, supervision arrangements, and communication protocols before placement begins. This directly addresses widespread issues of unclear expectations and misaligned work reported by both students and advisors.
2. **Ensure explicit alignment between placement work and PhD outcomes.**
   All placement activities should demonstrably contribute to thesis progression, research outputs, or clearly defined skill development. Where alignment is partial, universities should require documented justification and mitigation strategies.
3. **Introduce structured pre-placement planning and readiness checks.**
   Implement mandatory pre-placement briefings involving students, academic supervisors, and industry mentors to align expectations, timelines, and success criteria. This should include discussion of workload, milestones, and integration with candidature requirements.
4. **Set measurable skill and career development targets.**
   Require students to define specific capability goals (e.g., communication, project management, industry engagement) and capture evidence of development through structured reporting. This builds on evidence that placements are valued for skill development but outcomes are inconsistently realised.
5. **Formalise timing and candidature flexibility policies.**
   Establish clear institutional guidance on when placements should occur (e.g., post-confirmation) and guarantee access to candidature extensions where placements impact progress. This responds directly to the high incidence of delays and workload conflicts.

RECOMMENDATION TWO

Adopt a genuinely student-centred placement model

6. **Position placements as structured learning experiences, not labour.**
   Require industry partners to demonstrate capacity to support PhD-level learning, including mentoring, research engagement, and supervision, not just task delivery. This addresses reports of students being underutilised or misused in roles unrelated to their expertise.

7. **Strengthen supervision and tri-partite engagement.**
   Mandate regular, structured check-ins involving the student, academic supervisor, and industry mentor to maintain alignment and resolve issues early. This reduces communication breakdowns and weak supervision identified across the study.
8. **Actively manage workload and wellbeing.**
   Introduce formal workload planning and monitoring during placements, including agreed limits on working hours and expectations across both PhD and industry commitments. This is critical given that nearly 80% of students reported workload and progression challenges.
9. **Expand access to career and professional development support.**
   Scale up underutilised services (e.g., career advice, commercialisation training, networking support) before and during placement. Evidence shows these supports are currently minimal despite being central to placement value.
10. **Support informed participation and equitable access.**
    Improve visibility of placement opportunities through centralised communication and targeted outreach, particularly given that nearly one-third of non-participating students were unaware of opportunities. Ensure equitable access across disciplines, student cohorts, and career stages.

RECOMMENDATION THREE

Strengthen administrative, funding, and institutional support systems

11. **Streamline administrative and contracting processes.**
    Establish centralised, standardised processes for agreements, IP arrangements, and onboarding to reduce delays and confusion. Administrative inefficiencies were consistently identified as a major systemic barrier.
12. **Ensure reliable, aligned funding and financial support.**
    Provide clear, timely, and sufficient funding mechanisms (stipends, travel, placement support) aligned with placement duration and expectations. This addresses both advisor concerns about funding constraints and student experiences of delays and financial stress.
13. **Incentivise and recognise academic supervision of placements.**
    Formally recognise placement supervision in academic workload models and provide institutional incentives. This responds to advisor-reported challenges around unrecognised workload and declining capacity to support placements.
14. **Establish structured feedback and evaluation systems.**
    Implement consistent, formal feedback mechanisms (mid-placement and end-of-placement reviews) involving all stakeholders. Current feedback processes are fragmented and largely informal, limiting continuous improvement.
15. **Build institutional and industry partnership capability.**
    Invest in developing long-term industry relationships, including support for academics to build partnerships and for organisations to understand PhD training. This directly addresses misaligned expectations and weak industry engagement identified across the report.

Conclusion

The national survey reported in this document suggests PhD student industry placement in Australia has reached a level of maturity in intent and scale but has not yet achieved consistency of execution. The success of industry placement depends on end-toend design, consistency of funding and administrative processes, and active, ongoing engagement between all stakeholders with a student-centred approach. Strengthening these elements is essential to ensure that PhD placement programs are reaching their objectives of a robust and sustainable research industry talent pipeline and PhD students can achieve enhanced research training outcomes through placement while protecting their wellbeing and PhD progression.

The report lays the groundwork for much needed efforts to uplift the benefits of industry placement as a core component of doctoral education, balancing the goals of research excellence, translational impact, and meaningful career development. There is an evident need to build on this study by examining placement outcomes longitudinally, comparing placement models across disciplines, and integrating host organisation perspectives. The establishment of an annual survey of this nature but potentially larger will typically cost between $120-150K. The research team through the ARC Training Centre for Information Resilience invites relevant organisations and communities to assemble a longitudinal joint initiative to pursue the improvement of PhD industry placement programs through systematic periodic reviews, sharing of best practice and celebration of successes.

A

APPENDIX

I PhD Industry Placement Programs In Australia

National Industry PhD Program

University-industry co-designed PhD training funded by the Australian Government's Department of Education.

https://www.education.gov.au/national-industry-phd-program

Australian Research Council (ARC) Industrial Transformation Training Centres (ITTC)

Placement as part of PhD training co-funded by the ARC and industry partners.

https://www.arc.gov.au/industrial-transformation-training-centres

APR.Intern

A national brokerage scheme for PhD students and industry partners for placement.

https://aprintern.org.au/

CSIRO iPhD

Commonwealth government funded, industry co-designed PhD program.

https://www.csiro.au/en/careers/scholarships-student-opportunities/postgraduate-programs-and-scholarships/industry-phd

Examples of State-Specific Schemes

Defence Innovation Network, NSW-based program offering STEM students internships.

https://defenceinnovationnetwork.com/internships/

iPREP, WA-based program for interdisciplinary teams of PhD students.

https://www.biodesign.au/iprep

Examples of University-Led Placement Programs

The University of Queensland higher degree by research industry placement.

https://cdf.graduate-school.uq.edu.au/hdr-industry-placements

The University of Adelaide industry engaged higher degree by research program.

https://www.adelaide.edu.au/graduate-research/industry-opportunities/industry-engaged-hdr-program

II Survey Method

A. Participant recruitment method

Following the survey design, participant recruitment began in June 2025 with the closing date being the 5th of September 2025. The primary mode of communication for announcing the survey and recruiting participants was via email. Firstly, email communication for recruitment was distributed by CIRES Director, Professor Shazia Sadiq and Centre Manager, Mrs Kate Aldridge to the stakeholder groups identified by the research team:

- The Australian Council of Graduate Research (ACGR)
- University-level industry placement and internship programs to 25 Australian universities
- Australian Research Council (ARC) Industrial Transformation Training Centres (ITTCs) and Industrial Transformation Research Hubs (ITRHs).

These organisations distributed the survey to their respective PhD student and advisor cohorts who may have been interested in responding.

Secondly, CIRES researchers and colleagues including Chief Investigators, affiliates, partner investigators, postdoctoral research fellows and engineers, PhD researchers, and strategy board helped distribute the survey. Students who participated in the CIRES Information Resilience PhD School between 2022 and 2024 (representing 12 universities in Australia) were invited to participate in the survey.

Lastly, the CIRES team identified specific programs to help distribute the survey on behalf of the team:

- National Industry PhD Program
- Australian Postgraduate Research Intern (APR.Intern)
- CSIRO Industry PhD (iPhD) Scholarship Program
- Trailblazer Universities Program
- Curtin University - Resources Technology and Critical Minerals
- Deakin University - Recycling and Clean Energy Commercialisation Hub (REACH)
- The University of Adelaide - Defence Trailblazer for Concept to Sovereign Capability
- The University of Queensland - Food and Beverage Accelerator (FaBA)
- UNSW - Trailblazer for Recycling and Clean Energy (TRaCE)
- University of Southern Queensland - Innovative Launch, Automation, Novel Materials, Communications, and Hypersonics Hub (iLAuNCH)

B. Survey Questions to Students

Section	Variable Type	Example Questions	Analysis Method
1. Background Information (Demographics)	Categorical / Nominal	Age group, Gender, State, Domestic/International, Enrolment status, Year of PhD, Prior industry experience, Field of study	Descriptive statistics: Frequencies & percentages
2. Participation in Industry Placement	Categorical	Participated (Yes/No), Plans to participate, Reasons for not participating, Primary reason, Placement schemes	Descriptive
3. Objectives & Skill Development	Ordinal / Likert 1–5	Importance of objectives, Skill development	Descriptive Inferential: compare Objectives & Skill Development results across groups, e.g., Full-time vs Part-time students.
4. Placement Experience	Categorical / Nominal + Open-text	Types of tasks, Relevance to PhD, Open-text description of relevance	Descriptive: Frequencies for types of tasks. Qualitative analysis: Thematic analysis on open-text fields.
5. Impact on Career	Likert-scale + Categorical	Career opportunities & direction, and Career influence	Descriptive Compare impact across fields of study or placement types.
6. Challenges & Support	Likert-scale + Categorical + Open-text	Challenges, Major challenges, Support received	Descriptive Compare severity by placement type or student type. Qualitative: Thematic analysis for open-text responses.
7. Suggestions for Improvement	Open-text	suggestions for • PhD students • Advisors and supervisors • Host organisations	Qualitative: Thematic analysis. Code responses into categories (e.g., Preparation, Supervision, Host organisation support, Process facilitation).
Follow-up Participation	Yes/no	Descriptive frequency	% willing to participate

C. Survey Questions to Academic Advisors

Section	Variable Type	Example Questions	Analysis Method
1. Demographics & Background	Categorical (Nominal / Binary)	Age, Gender, State, Academic Position, Supervision experience	Descriptive statistics: Frequencies & percentages.
2. Awareness & Participation	Categorical / Multiple response	Awareness of programs, interest in future involvement, placement schemes, advisor role in student decisions	Descriptive statistics.
3. Benefits, Skills & Objectives	Ordinal (Likert 1–5)	Benefits of placements, skills importance, objectives, future improvements	Descriptive statistics Median, IQR; Mann-Whitney U (2 groups), Kruskal-Wallis H (3+ groups); Friedman test for within-participant comparisons. Open-ended responses (e.g., additional skills/objectives) → Thematic / content analysis.
4. Placement Details & Industry Context	Categorical / Multiple response	Field of study, industry sector, placement duration	Descriptive statistics.
5. Student Selection & Feedback	Ordinal (Likert 1–5) / Multiple response	Selection methods, feedback frequency, feedback types	Descriptive statistics Open-ended responses (e.g., additional methods, other indicators) → Thematic / content analysis.
6. Challenges & Support	Ordinal (Likert 1–5) / Text	Challenges faced, additional challenges, support types, support providers	Descriptive statistics Compare these ratings between groups. For example, we can check if lecturers face more challenges than professors Open-ended responses → Thematic / content analysis.
7. Suggestions for Improvement	Qualitative (Text)	Suggestions for students, advisors, host organisations,	Thematic / content analysis; frequencies/percentages for follow-up interest.
Follow-up Participation	Yes/no	Descriptive frequency	% willing to participate.

D. Data Analysis

For both student and advisor parts of the survey, the analysis approach was primarily descriptive and exploratory.
Quantitative results were summarised using frequencies, percentages, and medians, while Likert-scale responses enabled comparisons across groups. Open-text responses were examined using thematic analysis to capture qualitative insights. Student and advisor survey responses were compared for their potential alignment in skill priorities, challenges faced, and suggestions for improvement.

arc training centre for **information resilience**

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