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FOREWORD

Architectural Education and the Profession is the first wide-scale study of architectural education and the profession involving all Australasian stakeholders. Initially conceived by the AACA in 2018 as an update on the seminal research on architectural education conducted by Michael J. Ostwald and Anthony Williams in 2008, the research also examines the relationship of education to the architectural practice environment.

It is a significant milestone in our mission to increase research on architectural education and practice that is useful across the profession as a whole.

The generosity of everyone involved in this research is noteworthy. It is reflective of the shared interest of all stakeholders that architectural education and regulatory regimes are best practice and accommodate the changing context of architectural practice.

Thank you to the many academics, practitioners and students across Australia and New Zealand who participated in the research; our research team and editors; and our expert advisory group.

We expect to see a number of exciting and relevant research projects arising out of the findings of this comprehensive report.

Kate Doyle
AACA CEO
ARCHITECTURAL EDUCATION AND THE PROFESSION IN AUSTRALIA AND NEW ZEALAND

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CREDITS

Architectural Education and the Profession was initiated and led by the Architects Accreditation Council of Australia. It was undertaken in collaboration with all universities and stakeholder organisations in Australia and New Zealand, and was guided by an expert reference group.

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Monash University
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Ethics approval
This project was undertaken in accordance with best practice principles for human research and has approval by the Human Research Ethics Committee at the University of Technology Sydney (approval number ETH18-2931N).

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DEMOGRAPHICS AND PARTICIPATION

There has been a substantial increase in student numbers over the last decade, but this has not been matched by a similar increase in academic staff numbers. Student numbers have increased by 35% since 2016, with ongoing staff increasing by 14% in the same period.

Numbers of international students have increased substantially in Australia over the last decade (less so in New Zealand). By 2018, 45% of the masters student cohort was international. This varies across states and institutions; the highest proportion is Victoria at 55%.

Women are well represented in the student cohort, and have increased their presence as educators, particularly at senior levels. Women have comprised 51% of New Zealand graduates and 45% of Australian graduates for the last decade, and have averaged more than 41% of the graduating cohort in both countries since the mid-1990s. Almost 50% of lecturer positions in Australia and 42% in New Zealand are held by women. In Australia in 2018, 33% of professors were women, a significant increase since 2012 when only 12% of Australian professors were women.

Indigenous students are underrepresented in architecture programs.

EXPERIENCES AND RESOURCES

Academics generally have good job satisfaction, but experience competing pressures to meet teaching, administration and research obligations. Many work excess hours to manage the workload. The large majority of continuing academics are traditional teaching and research appointments.

Students are happy with their decision to study architecture, but face pressures related to high living costs, high course costs and available time for a demanding course of study. Many are working part-time while studying full time, and some are travelling substantial distances between home and university.

There is a heavy reliance on sessional staff to deliver architectural education. In Australia, 77% of the architectural teaching workforce is casual; in New Zealand, it is 68%. There are challenges in finding enough experienced sessional teachers, and there is a strong feeling that rates of pay often do not reflect the work and time required.

Diminishing resources present ongoing challenges in terms of time available, funding, staffing and facilities.

PERSPECTIVES ON CURRICULUM

There is strong alignment between academics and practitioners about the importance of most skills. Critical thinking, problem solving, communication, time management and collaboration are all highly rated by both.

An overwhelming majority of practitioner respondents would like increased focus on practical matters – construction, project management and practice management. Most are satisfied with graduate knowledge in design, communication and the history and theory of architecture.

There is a shared aspiration across the academy and the profession to provide students with enhanced exposure to the world of practice. However, there is little agreement on how this can be achieved. Currently, many students graduate with little experience in an architectural office or construction site.

Technological change and ethics and social responsibility are seen as important drivers of future curriculum development. But 25% of practitioner respondents considered it more important to consolidate the basics rather than move into new areas.
DESIGN STUDIO

Design studio continues as a major focus within the curriculum, typically comprising 40% of the overall five-year program. This is matched by the value placed on design by academics, practitioners and students. The commitment to design studio remains strong, but the way in which this is delivered is changing.

Time allocated to design studio has reduced and staff-student ratios have increased. This was seen as an issue a decade ago, and has not changed. Most teachers are highly committed – both ongoing and sessional – and many work additional hours to provide studio teaching. Some schools and educators are experimenting with new teaching approaches to maintain quality in the face of reduced contact hours.

The way studio spaces are used has changed. The most important aspect is now the provision of dedicated space for permanent use by the architecture program – with space for pin-up, and the capacity to change spatial configuration. The nostalgia expressed by many respondents for individual studio space is not matched by contemporary patterns of use, even in those few institutions that maintain individual spaces.

Increasing centralisation of space allocations, timetabling and financial management have had major impacts on teaching within architecture programs, and present a particular challenge to the design studio format.

GRADUATES IN PRACTICE

The key qualities sought when employing graduates are enthusiasm and a willingness to learn, along with the ability to collaborate and work effectively in teams.

Many student participants are concerned about the transition from study to work, particularly in Australia. In contrast, most practitioner participants had positive experiences on graduating, and three quarters had found work in an architectural practice within three months of graduating.

A high proportion of architecture and built environment masters graduates are fully utilising their skills and education in their job, according to the 2018 Graduate Outcomes Survey (78% as compared with 71% of all fields of study).

MORE RESEARCH NEEDED

More data and research is required. This study revealed the paucity of related data about the profession more broadly and the challenges faced by architects and architectural practices. There is no recent information on length of time between graduation and registration, and no detailed information about graduate destinations and career pathways. There is no reliable data about the number of practices in Australia, their size, practice model, or types of work undertaken. There is no detail on the numbers of students working in architectural practices, and only limited information on the diversity of students and the architectural workforce.
This is the first major study into architectural education in Australasia since 2008. Critically, it is also the first research in the region to include perspectives from practitioners and sessional teachers as well as academics and students.

The study aims to increase understanding of the experience of architecture students, graduates and academics, and to support greater connections between schools of architecture and the architectural profession. The study identifies a range of substantial challenges facing architectural education. Increasing student numbers have not been met with a concomitant increase in ongoing academic staff, while the timeframes within which education occurs have been compressed and the resources allocated to deliver architecture programs are diminishing. All of this creates a high pressure environment for the education of architects, which can be stressful and challenging for all. Despite these difficulties, the academics participating in the study are mostly committed educators who feel that their work is meaningful and worthwhile, and students are generally positive about their study and future careers.

Practitioner participants expressed a desire for graduates to have more practical and practice-based knowledge – this has been an ongoing theme in practice-based commentary on architectural education for a century. However, the surveys of practitioners revealed satisfaction with graduate’s knowledge in other curriculum areas. Critical analysis and strategic thinking are seen as vital for graduates, while employers look for enthusiasm, humility and strengths in working in teams. There is a sense that architectural education can play an important role in identifying new and more robust futures for the profession, and the necessity to equip graduates with the skills required to operate in a fast-changing and challenging professional world.

The study also reveals positive change. The proportion of women teaching architecture has risen, with particular growth in senior leadership roles. The data on graduate employment is also strong, while figures from the Graduate Outcomes Survey show that 78% of architecture and built environment masters graduates were fully utilising their skills and education in their job. Interesting new insight is revealed into the changing use of studio spaces in architecture schools. The commitment expressed by many architects to individual studio space as a primary educational tool is not matched by contemporary patterns of use. Instead, the provision of dedicated space for permanent use by the architecture program – with provision for pin-up, and the capacity to change spatial configuration – emerges as the most significant need.

This study shows the paucity of data and knowledge about the structure and makeup of the architectural profession in Australia and New Zealand, and the range of graduate destinations. More research is needed if we are to better understand the interface between education and the profession.
BACKGROUND

This research builds on and develops the first major study of architectural education in Australasia, completed in 2008 by Michael Ostwald and Anthony Williams.\(^1\) It replicates much of this earlier study with the aim of building longitudinal understandings of architectural education and its relationship to practice. This earlier study noted that architecture degrees were facing significant challenges from underfunding and changing practices in higher education. In the intervening decade, the Australasian university system has been the subject of further reform, new quality standards and continuing financial cutbacks. The architectural profession has also become more competitive, internationalised and technology-driven. Given this changing context, there is a growing need to understand the challenges and opportunities in the relationship between architectural education and practice.

Information was assembled using a range of sources and methodologies. The study began with an analysis of demographic data and a review of existing literature on architectural education. Information was sought from architecture academics and practitioners in Australia and New Zealand via surveys, which built on and developed the questions from 2008. These gained 508 responses from academics and 2,773 responses from practitioners. The respondents skewed towards older, established practitioners in senior roles, with recent graduates and young architects under-represented. The researchers conducted 19 focus groups of students, academics and practitioners, and 30 interviews with academic and practice managers. These resulted in a rich and complex body of material, which was analysed in relation to the four themes – teaching and learning, resourcing, pathways between work and education, and the contemporary relationship of education to the profession. These are addressed in seven chapters in this report.

BROAD CHANGES OVER THE LAST DECADE

The last decade has seen a number of substantial shifts in architectural education in Australasia. The scale of endeavour has increased significantly – several programs have grown substantially, there are five new architecture programs, and more are planned. Overall, student numbers have increased by 30% since 2007. In 2017 there were 7,251 full-time-equivalent students of architecture in Australia and New Zealand. The numbers of continuing academic staff have not kept pace with these burgeoning enrolments, increasing by approximately 13%. This means that many schools rely heavily on sessional staff to deliver their programs.

The proportion of women among those teaching architecture has improved. Women are now almost half the lecturers in Australia, and 42% in New Zealand. Most striking is the increase of women in senior leadership positions – in Australia in 2018, 19 of the 57 professors were women.

Architectural education is rapidly internationalising, particularly in Australia. In 2018, international students comprised all 35% of students enrolled in Australian architecture programs and 45% of masters students. There are 1,000 architecture students from China, and significant cohorts from Malaysia, Indonesia, Vietnam and India. In New Zealand, the proportion of international students remains lower, at 11%. The large cohort of international students has increased the diversity of perspectives in classes and the richness of the learning environment. It also helps sustain the universities financially. However, some participants in this study also expressed concerns about whether associated support services were properly resourced.

The types of architectural degrees on offer have expanded. Some schools now offer broader undergraduate degrees and/or more opportunities for specialisations or sub-majors; others continue the traditional approach of five years of staged architecture-focused study. Following the University of Melbourne’s example, a number of schools offer, or are planning to offer, a three-year Master of Architecture for high-performing students with Bachelor degrees other than architecture.

\(^{1}\) Michael J. Ostwald and Anthony Williams, *Understanding Architectural Education in Australasia, Volume 1: An Analysis of Architecture Schools, Programs, Academics and Students* (Sydney: Australian Learning and Teaching Council, 2008).
THE CURRICULUM

Architecture programs in Australia and New Zealand teach a broad-based curriculum, including design, architectural history and theory, technology and construction, communication and professional practice. There is a strong focus on design, which comprises around 40% of total program content in most schools, although studio teaching methods are shifting away from one-on-one studio tutorials and towards group teaching. This emphasis on design within the curriculum is matched by the high value placed on it by academic, practitioner and student participants in this study. Most believe that graduates typically develop strong conceptual design skills and a passion for the design process through their education.

Critical thinking and problem solving were highly valued by academics and practitioners alike, particularly in the context of the rapid environmental, technological, economic and social changes faced by the profession. The study findings emphasise the importance placed on the ‘right balance’ within the curriculum – balance between design and other areas of study, and between disciplinary knowledge and practical skills. Practitioner and academic respondents were aligned about the importance of most curriculum areas – the exceptions are architectural history, which was more highly valued by academics, and construction/project management, which practitioners rated more highly. Employers expressed a related desire for graduates to have a more thorough understanding of construction, buildability and architectural practice.

Technological change is having an impact in multiple areas of the curriculum and its delivery, including online teaching, digital design and fabrication; and practitioners expect graduates to be highly software literate. Technology is also seen as an important driver of future curriculum areas, as are topics pertaining to ethics and social responsibility.

ACADEMIC AND STUDENT EXPERIENCE

Academics in this study expressed a high level of job satisfaction. The study reveals a high level of commitment from educators who feel they are making a worthwhile contribution. However, a notable proportion struggle with logistical challenges and inadequate resourcing. Students were generally positive about their decision to study architecture and the prospect of an architectural career, but also identified many pressures, often associated with course workload and expectations and living costs.

Academics were asked about the key challenges for architectural education. Many referred to the nature of architecture itself, the conceptual challenges of teaching architecture in all its nuance and complexity, and the need to continually integrate new and growing bodies of knowledge. These factors are not seen as a negative, but they are compounded by practical constraints – reduced resourcing and shortened timeframes in which to deliver the curriculum.

Changing patterns of student engagement, such as low lecture attendance and limited participation in extra-curricular activities, are common across disciplines and present further challenges. They can, however, also provide impetus for schools to re-imagine teaching methods and approaches. Many academic participants referred to the difficulties of maintaining teaching quality in an environment of reduced contact hours. They also expressed concerns about the reliance on a large sessional workforce and concomitant difficulties with ensuring consistency and quality of teaching and assessment. In this context, many teachers are exploring inventive approaches and working very hard to maintain a high standard of education.

Student focus groups expressed concerns about high workloads, the costs of materials and resources, the challenges of combining work and study, and the limited support available for software learning, language and part-time work in architecture. Australian students raised concerns about future careers, whereas students in New Zealand appeared more relaxed about employment pathways after graduation.
RESOURCING

Resourcing was identified as a major concern by many participants in this study, with challenges occurring in four areas – staffing, space, amenity and time. Continuing academics, sessional teachers, students and practitioners all provided extensive commentary about the challenges of providing a high quality education with diminishing resources. Most Heads of School explained that architecture programs are not badly off in the broader context of higher education; however, staff felt there were areas of significant vulnerability.

Many staffing resourcing issues arise from the substantial increase in students, which has not been matched by an increase in ongoing staff appointments. The reliance on sessional staff to undertake a large proportion of teaching was frequently mentioned, along with the difficulty of finding enough experienced sessional staff. Sessional staff described being systematically underpaid for preparation, teaching, marking and administration. Academic staff outlined the difficulties of managing conflicting demands from growing teaching loads, increasing administrative commitments and pressure to produce more research output. Both groups argued that architecture programs depend on over-servicing by staff, particularly by working longer hours than contracted.

The spaces for teaching architecture, particularly design, have undergone substantial change over the last decade. Few schools now offer permanent individual studio spaces, and those that do find that students no longer use them as intensively or frequently as in the past. This study reveals that the nostalgia expressed by many respondents for individual studio space is not matched by contemporary patterns of use. Instead, the provision of dedicated space for permanent use by the architecture program emerges as the most significant need – with capacity for pin-up and to change spatial configuration.

Time pressures manifest in the compression of semesters to 12 weeks, the related reduction in contact hours and decreasing staff/student rations. Students also face time pressures in terms of part-time work and/or the need to accommodate other external commitments.

Overall, decades of flat or falling funding appear to have led to serious resourcing challenges, which appear to be being normalised in Australian and New Zealand architecture schools. Short semesters, large classes, low numbers of contact hours and sometimes threadbare facilities are accepted as the reality of tertiary education.

WORK AND STUDY

The interaction between work and study in architectural education is complex. Study must both prepare students for their immediate futures and provide a comprehensive understanding of the profession and discipline that will prepare them for long careers in a field that is undergoing rapid and continual change. Architectural programs must include content that provides students with the skills to complete practical tasks when they enter the workplace, introduces them to the disciplinary, cultural and regulatory contexts within which this work is undertaken, and teaches the conceptual, design and critical thinking skills that will sustain them throughout their careers – not all of which will be in conventional architectural practice.

Practitioners, educators and students all considered it important for students to have some familiarity with architecture’s working environment, but the emphasis and significance placed on this knowledge varied. Broadly, practitioners considered exposure to practice to be more important than academics, and would like graduates to have a better understanding of practice and construction. This finding was partly based on reflections on their own educations. When asked which area should have been given more attention in their studies in relation to work skills required after graduation, an overwhelming 92% of practitioner respondents identified practical matters of some kind. Similar responses were given in relation to a question about graduate knowledge – respondents were satisfied with graduate knowledge in areas such as design, communication and the history and theory of architecture, but would like more practice-based knowledge.

The key qualities sought when employing graduates are enthusiasm, humility and a willingness to learn, along with the ability to collaborate and work effectively in teams. Many practitioner respondents were also keen to see graduates who had worked part time in practice while studying.
In general, focus group participants described positive experiences of finding work as graduates, and 75% of practitioner survey respondents said they found work in a practice within three months of graduating. Data from other sources also indicates that architectural graduates are succeeding in the workplace. The Graduate Outcomes Survey found that 78% of architecture and built environment masters graduates were fully utilising their skills and education in their job.

Fewer than half of Master of Architecture graduates go on to become registered architects in Australia and New Zealand, although many pursue careers in the built environment sector or other design fields. Some participants speculated that cultures of long hours, low pay and hierarchical workplaces discourage graduates from staying in the profession. There is scope for further research to increase knowledge about graduates career pathways.

THE CONTEMPORARY PROFESSION AND ARCHITECTURAL EDUCATION

Many participants in this study had successful careers in architecture and were passionate about their work and the profession. Nonetheless, a palpable concern about the future of the architectural profession emerged in the surveys, focus groups and interviews. Indeed, when participants were asked about the most significant challenge facing architectural education, 35% of practitioner and 14% of academic respondents spoke of the current state of the profession and the effect of future trends on the discipline as a whole.

The built environment sector and its technological and regulatory context are changing quickly. The financial precarity of the profession and fee cutting were identified as persistent and ongoing challenges. Undermanaged workplaces and an acceptance of poor workplace conditions exacerbate the discontent within the profession. Competition from other groups moving into formerly core elements of the architect’s domain is also an area of significant concern, as is the erosion of confidence in the professional role of the architect.

There was a general feeling that the profession needs to be more active in public discourse, while some participants felt there was a responsibility for architects to advocate on issues such as sustainability and built heritage. Participants also saw opportunities for the future profession, and suggested that the education system has an important role to play, both in identifying new possibilities and in equipping graduates with the critical thinking skills needed to navigate and develop these.

FUTURE AGENDA

Architectural education must navigate between the growing complexity of the built environment industry and changing higher education sector in Australia and New Zealand. Student numbers have grown, but this expansion has brought additional challenges, including pressure on traditional design studio.

The role of the architect may be under pressure – perhaps even “in crisis” as some suggest – but is likely to remain a crucial part of the built environment sector for the foreseeable future. Moreover, there will be many opportunities for architectural graduates in roles with government, builders, developers, consulting firms and not-for-profits other than as registered architects. Many facets need to be considered in shaping the future of architectural education: a curriculum that balances fundamentals with emerging subject areas; teaching approaches that embrace new technologies while remaining critically engaged; resourcing of architecture schools that is adequate to a growing and increasingly diverse student cohort; graduates that understand the work of practice and are broad and critical thinkers; and employers who are prepared to do their part in employing and developing graduates towards registration, if that’s the path they wish to take.
Architectural Education and the Profession aims to increase understanding of the structure of architectural education, current patterns of participation, and the experiences of students, graduates and those who teach and employ them. It increases knowledge about current circumstances, commitments and challenges, and thereby supports future planning. It aims to encourage greater connections between schools of architecture and the profession, and identifies the need for future research on graduate pathways and the nature of the contemporary architectural profession, and the context in which it operates.

This report is the outcome of a large-scale study of architectural education and its relationship to architectural practice in Australia and New Zealand. Initiated and led by the Architects Accreditation Council of Australia (AACA), this is the first time that all stakeholders in Australasian architecture have joined forces in an extensive research and data collection exercise across educators and practitioners. This study builds on earlier work undertaken by Michael Ostwald and Anthony Williams in 2008. It uses a similar approach and methodology, while introducing new material pertaining to the relationship of education to the changing practice environment. This develops a longitudinal understanding of architectural education, creates new knowledge about changes that have occurred over the last ten years, and expands the frame of reference.

1 Michael J. Ostwald and Anthony Williams, Understanding Architectural Education in Australasia, Volume 1: An Analysis of Architecture Schools, Programs, Academics and Students; Understanding Architectural Education in Australasia, Volume 2: Results and Recommendations (Sydney: Australian Learning and Teaching Council, 2008).
THEMES

The study has collected and analysed a range of new and updated material on the demographics, experiences and opinions of architectural academics (both ongoing and sessional), practitioners and students. It presents information about current debates on teaching and learning approaches in architecture, the funding environment, and the relationship of architectural education to external processes such as professional accreditation. These are explored through five themes across eight chapters.

DEMographics and Context of Architectural Education

What are the demographics of architectural education, and what are the broader contexts in which education occurs? How do these intersect and impact on architectural education? What changes have occurred over the last decade? How are regulatory and accreditation systems changing, and what does this mean for architectural education?

- Chapter 2 outlines key changes in the architectural education sector in Australia and New Zealand and the shifts within the profession over the last decade.
- Chapter 3 discusses the demographics of the student and academic bodies, detailing trends over time.

Learning and Teaching

What are the key contemporary issues in architectural teaching? How are approaches to teaching and pedagogy evolving in the face of technological changes and reduced contact time? What has been the impact on design teaching in particular? How do education programs balance multiple curriculum elements, and what are the desired areas of focus? How do the perspectives of academics and practitioners differ? Is the increasing proportion of international students changing expectations of teaching and curriculum?

- Chapter 4 focuses on curriculum structure, including design studio, and the perceived significance of various subject areas and skill sets from academic and practitioner perspectives.
- Chapter 5 considers the experiences of academics and students.

Resourcing

How have changes in higher education regulation, practice and funding models affected the resources available to architectural education over the past decade? How has resource allocation changed? What are the impacts on architecture schools and how are teaching practices responding?

- Chapter 6 concerns resourcing, including staffing, space, amenity and time.

Work and Study

What are the pathways into and out of architectural education? How do architecture programs balance preparing students for their immediate futures and providing a comprehensive understanding of the discipline that will equip them for long careers in a changing field? How ready are graduates for practice and the path to architectural registration? What do employers look for in graduates, and what focus would they like to see in courses of study?

- Chapter 7 discusses work and study, including the relationship between study and practice-based knowledge, work experience, graduate employment, satisfaction and career pathways.

The contemporary profession

What are the key forces impacting on the contemporary architectural profession and how do these reflect back on architectural education? What are the challenges and opportunities for the profession? What role can education play in identifying and supporting new professional futures?

- Chapter 8 considers contemporary challenges for the architectural profession and how architectural education may respond to these.
SETTING THE SCENE – THE 2008 STUDY

It is over a decade since the last detailed research into architectural education in Australasia, Understanding Architectural Education in Australasia, which examined the 16 accredited programs in Australia, three in New Zealand and one in Papua New Guinea. 

Authors Michael Ostwald and Anthony Williams found that architectural academic staff divided their time between 40% teaching, 27% research, 23% administration and 10% other activities. The staff/student ratio was around 1:25. Many academics felt under pressure from university management to be more research active, while maintaining high teaching and administration loads. An additional challenge was the aspiration that architecture academics retain a connection to professional practice, with 56% no longer practising and nearly half of these having last practised over a decade ago.

In terms of curriculum, Ostwald and Williams found that a range of factors had led to decreased diversity in teaching programs and a “de-facto national curriculum”. This maintained national standards, but created a somewhat homogenised student experience with limited scope for non-disciplinary electives. There was a strong expectation that design studio should continue to form the core of architectural degree study. As universities faced reduced funding per student, many architecture schools sought to preserve the design studio by making cuts in other areas. Other schools were starting to move away from the traditional model of dedicated studio space with low staff/student ratios.

The research found that significant increases in student enrolments, coupled with fewer resources and time to teach, had many academics concerned for the future of architectural education. In addition, academics were often conflicted as the demands of teaching made it difficult for them to achieve a sustained research track record, a requirement for success in the tertiary education system.

Overall, 17 recommendations were made to improve the resilience of architectural education. The main themes and associated recommendations were:

- Funding – the need to increase funding levels for teaching, which had declined markedly and had implications for design studio (R1 & 10);
- Curriculum – the need to address overcrowding, fragmentation, uniformity, generic graduate skills at the expense of architecture skills, the lack of sustainability and social justice units, and variable access to electives (R2,4,5,6,15 & 16);
- Academia and the profession – the need to clarify roles in education, ‘academic-practitioner’ precarity, and industry experience for students (R3,7 & 13);
- Shared repository – to develop a collection of architectural education research and resources (R8,9 & 17);
- Assessment process – to address issues in assessing design, creativity and group work (R11 & 12); and
- Alignment of teaching-research nexus – may be a problem for a professional degree (R14).

Ten years on and the shape of architectural education continues to evolve alongside changes in social values, technology, the role of the architect and reforms to universities and other higher education institutions. Most of the concerns articulated in the Ostwald and Williams report remain pressing. Other challenges have emerged or evolved over the last decade.

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2 Ostwald and Williams, Understanding Architectural Education.
3 Ostwald and Williams, Understanding Architectural Education, Vol. 1, note 1, 96.
4 Ostwald and Williams, Understanding Architectural Education, Vol. 1, 93.
5 Ostwald and Williams, Understanding Architectural Education, Vol. 1, 142.
ORIGINS AND GOVERNANCE

In April 2018, the AACA determined to undertake a study to understand the changes in architectural education over the past decade. This coincided with the tenth anniversary of the two-volume report Understanding Architectural Education in Australasia, by Michael Ostwald and Anthony Williams. The AACA then convened a roundtable of major stakeholders on 1 June 2018. The study was launched in August 2018, and the majority of the research work was undertaken between July 2018 and July 2019.

The project was initiated and undertaken by the AACA. Support was provided by stakeholder organisations and universities. Management oversight and administrative support was provided by Kate Doyle, AACA CEO, and the project was guided by an expert reference group.

Majority funding was provided by the AACA, with cash contributions from the Association of Architecture Schools of Australasia, the Australian Institute of Architects, Australian Deans of Built Environment and Design, and New Zealand architectural stakeholders. In kind support was also provided by collaborating organisations.

METHODOLOGY

A multipronged approach was taken to research the large and diverse topic of architectural education and its relationship with the profession. This occurred in three phases.

- Literature review and collection of existing data.
- Surveys of architectural academics and practitioners.
- Focus groups and interviews with academics, students and practitioners.

LITERATURE REVIEW AND INITIAL DATA GATHERING

The review of significant Australian, New Zealand and international work on contemporary architectural education began with the 2008 Understanding Architectural Education report and included subsequent work on design studies and collaborative education. Literature relating to higher education reform, teaching and learning modalities, and the professional skill needs of architectural practices was also surveyed.

Key staff and student data was obtained from 24 universities in Australia and New Zealand in 2018. Staffing levels were determined through a census of schools of architecture, which included an estimate of part-time and sessional or casual staff in addition to full-time staff. This presents a more comprehensive picture than the Ostwald and Williams report of 2008, which only recorded full-time staff and those on over 0.6 fractional appointments. Additional data was obtained from the Australian Department of Education and Training, the Institute of Architects in each country, the Association of Consulting Architects (Australia), Architects Registration Boards and international bodies.

There are two particular difficulties with counting architectural staff, which were noted by Ostwald and Williams and also affect this study. The first is undergraduate cross-disciplinary degrees, which mean that academics from a range of disciplines are teaching into architecture schools. The second is the presence of honorary teaching staff – emeritus, adjunct and conjoint staff and industry/professional fellows. These roles are generally fractional appointments that sit outside the traditional academic promotion track or are architects of standing in the profession who contribute to the teaching. In addition, some universities also have teaching-only continuing positions.

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9 Ostwald and Williams, “Academic Staff Profile”, Understanding Architectural Education. This report also tracked staff numbers over time using the Architecture Schools of Australasia handbooks produced annually by the Australian Institute of Architects. The Institute ceased production of these in 2015 and for this research report we have not attempted to emulate the longitudinal surveys of 2008.

SURVEYS OF ARCHITECTURE ACADEMICS AND THE ARCHITECTURE PROFESSION

Two online surveys were conducted over November and December 2018, one directed to those teaching architecture, the other to professionals working in architecture in Australasia. Developed in collaboration with the Expert Reference Group, the surveys included demographic information, scaled responses and open answer questions. Responses were collected using a ‘snowball’ method and elicited 478 useful responses from educators and 2,773 responses from practitioners. It is important to note that data collected from these surveys cannot be used to make population-wide assumptions – these findings only represent the set of people who responded.

Academic survey

The survey of educators sought input from those involved regularly in the teaching of architecture, including ongoing academics (full-time and part-time) and sessional staff. The latter group was directed to a subset of the full questionnaire.

The survey was circulated to ongoing and sessional staff via the participating schools. The survey had approximately 40 questions and took an average of 13 minutes to complete. It included a combination of factual questions (What is your highest qualification?), Likert scale questions (In an architectural degree, how important do you consider group work on a scale of one to five?), list questions (Which of the following professional development activities did you undertake in 2018?) and a small number of open questions (What is the number one challenge facing architectural education?). Approximately half of the questions from the 2008 study’s survey of academics were retained. This allows for comparison points on key issues.

Practitioner survey

The survey of practitioners repeated many of the questions of the academic survey, with additional questions on areas such as experiences of supervising architecture graduates. The survey was widely advertised through AACA communications channels, and those of the Architect Registration Boards, the Australian Institute of Architects, the Association of Consulting Architects and other stakeholders. This included distribution through social media.

The survey consisted of a range of demographic questions to be answered by all respondents, followed by opinion questions that could follow different streams depending on a person’s answers. This survey also included Likert scale questions, list questions, and open-ended opinion questions. Like the academic survey, the survey of practitioners followed some of the questions asked in the 2008 Ostwald and Williams study. Some of these were altered for clarity, and additional questions were included.

Survey analysis

Survey data was cleaned and analysed. The data derived from opinion questions used a Likert-type five-option scale and was translated to an average mean figure. This was done by designating ‘Extremely important’ or ‘Strongly agree’ at 5 and ‘Not important’ and ‘Strongly disagree’ at 1. Responses to discursive answers were coded to identify the frequency of themes.

INTERVIEWS AND FOCUS GROUPS

Semi-structured interviews were conducted with a range of key stakeholders. Interviewees includes Heads of Schools and Deans; Registrars of Architect Registration Boards; senior office holders of organisations including the Australian Institute of Architects, Association of Consulting Architects and Government Architects Network of Australia; and employers of architects. Overall, 30 interviews were conducted, mostly in person, with some by phone or Skype. The structure of interviews was informed by the research themes, the initial literature review and the data gathered, along with the results of the two surveys.

Nineteen focus groups were conducted, with cohorts of academic staff, current students, and practising architects (see the following table). Focus groups of up to 16 people were held in six locations, ensuring a sizeable proportion of architecture academics, students and practitioners in Australasia were given a chance to contribute. The content of focus group discussions was informed by the literature review, data and the survey results.
Summaries of each interview and focus group were prepared by the research team and analysed for frequency of issues arising. In some cases, de-identified quotes from these interviews and focus groups are used in this report text. These quotes provide a rich source of commentary on many issues, reflecting a diverse range of views, attitudes and beliefs.

<table>
<thead>
<tr>
<th>City</th>
<th>Groups</th>
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<tr>
<td>Brisbane</td>
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<td>Wellington</td>
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The data from the surveys, focus groups and interviews was analysed by the research team for recurrent issues relating to the research themes, and forms the basis of the following chapters.

WHO RESPONDED?

Detailed demographic data obtained through the surveys provides a clear picture of the range of respondents. Similar information is not available for participants in the focus groups, although the impression from the researchers conducting these sessions was that there was a fairly representative range of age groups. The surveys provide a significant body of material for this study. It is important to understand the demographics of those whose opinions and experiences are reported. This is presented in detail in Appendix A. The results of both surveys should be interpreted with the following demographic patterns in mind.

Overall, older and/or senior professionals dominate the practitioner survey responses, while the opinions and experiences of early career architects are underrepresented. A large proportion of these respondents work in small firms or as sole practitioners, and a second substantial group of responses come from those working in practices with 50 or more employees. The profile of the survey respondents does not align with the demographics of the profession obtained through the Australian Census in terms of location or age. The ACT and SA are well represented (with 41% and 25% of the Census-identified architectural population respectively). The most numerous responses came from New South Wales and Victoria, but these only represented 15% and 13% of the architectural population of those states. The New Zealand survey garnered responses from 11% of its architects.

Just over one third of the respondents were women (34% for New Zealand and 35% for Australia). This is slightly higher than the proportion of the Census-identified architectural workforce in Australia, which in 2016 was 31%. Seven respondents (0.3%) identified as non-binary.

The responses to the academic survey were nearly evenly split between ongoing and sessional staff (55% were from sessional staff). Responses from continuing staff comprise approximately 47% of those recorded by the staffing census (46% of Australian academics and 54% of New Zealanders). Of note, one in seven of the ongoing staff were part-time. The proportion of sessional or casual staff who responded was lower, at around 22%. There were 33 partial responses that gave very minimal information and answered no opinion questions, which made the final useful count 478. Sydney universities were well represented in the academic responses, and Victorian universities less so.

11 The number for Australia is approximate as one large school of architecture did not provide casual staff numbers.
Architectural education and the profession in Australia and New Zealand

Figure 1.1 State/country of practitioner respondents, number and comparison to proportion of 2016 Census

Figure 1.2 Age of practitioner respondents, number and comparison to proportion of 2016 Census

Figure 1.3 Position held in organisation, practitioner responses
CONCLUSION

This study presents a significant new body of material that provides important insight into architectural education in Australia and New Zealand and its connection to the profession in both countries. Academics, practitioners and students were generous with their time and presented a broad range of views. There was often consistent messaging across the cohorts, but not always. The pages that follow outline the full range of views and, where possible, give some understanding of the weighting of different opinions.

This research builds on the foundation provided by the Ostwald and Williams study, and reveals the need for further research into the shape and structure of the contemporary profession, and graduates roles and experiences within and beyond architectural practice. Comprehensive data is currently available on the participation of individual in the profession, as understood through the Australian Census. However, there is little rigorous understanding of the shape of the profession and the challenges faced by architects and architectural practices. Reliable data is needed about the number of practices in Australia, their size, practice model, and types of work undertaken. More information is needed on the length of time between graduation and registration, and about graduate destinations and career pathways.

Architectural education in Australia and New Zealand is embedded in the broader university and higher education sector and is subject to the changes, developments and pressures across this sector, nationally and internationally. Simultaneously, architectural education is closely connected to the profession and, by extension, the wider construction industry. The higher education sector and the architectural profession have both seen substantial change in recent years, and this is likely to continue. Architectural education processes and providers are affected by, and must respond to, changes in each field.

Overlapping links between the academy and the profession of architecture manifest formally through the accrediting of architectural degrees, and informally through a multitude of interactions – students graduating into the profession, architects and graduates returning to teach sessionally, and many academics and practitioners involved in the institutions, frameworks and cultural systems that support the discipline.

The intersecting – and potentially conflicting – needs of the academy, the profession and practitioners are explored extensively in the literature, research and scholarship on architectural education. It is a constant theme, which stretches back to the development of the first recognisable courses in architectural education at the end of the 18th century. Recent books, such as Educating Architects, Studio Futures and Radical Pedagogies, illustrate the diversity of perspectives both within and across the academy and practice.

This chapter outlines the changes in the education sector in the last decade, placing architectural education in the context of the regulation of higher education and international practice. It provides an overview of the contemporary structure of the architectural profession and explores the key forces impacting on it. Lastly, it describes the interrelated systems through which architects are registered and education programs are accredited, and the evolution of these regulatory frameworks.

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The profound and continual changes occurring in the higher education sector impact architectural education. These relate to scale, internationalisation, rapid technological developments, pedagogical practices, quality assessment processes and funding systems. They have affected architectural education and brought challenges with them – almost one tenth of the academics surveyed for this report considered the university context to be the most significant challenge facing architectural teaching and learning.

GLOBALISATION AND MASSIFICATION

Globalisation and massification have had significant impacts on higher education in the 21st century. Two main themes emerge from the extensive existing commentary on these topics:3

• Universities now compete for international standing to attract leading staff, research, funding and students. They no longer operate within the confines of their city, state, territory or country.4 English is the dominant language and preferred mode of global communication, which means Australia and New Zealand are attractive options for international students.5

• Massification (or mass higher education) is considered a defining feature of higher education in the 21st century (although it is not new).6 The expansion of developed and developing nations’ commitment to increased participation in tertiary education is a response to the growing importance of the knowledge economy and ensuring future prosperity.7 Increased participation creates challenges for universities in terms of facilitating and absorbing expanding educational needs while being cost effective.8

These trends have different implications for different countries within a highly varied global higher education system.9 In the UK, New Zealand and Australia, subsequent governments have reduced public funding and allowed market forces to impact the tertiary education sector.

Australia has seen a significant increase in the proportion of international students in architecture programs. This brings opportunities and challenges. A culturally diverse student body helps enable the internationalisation of the curriculum for all students, which is crucial in a globalised world. Diverse student cohorts also increase exposure to a broad mix of cultural knowledge, experiences and backgrounds. The internationalisation of education also increases the potential for students to travel or study abroad, with government funding or supplementing the costs of units such as international studios and study tours, and expanded opportunities for overseas student exchanges. The challenges associated with increased numbers of international students mostly concern the provision of adequate resources to support the education of all.

At the same time, government regulations aim to improve and sustain the higher education system for large cohorts of the population.10 These changes have occurred alongside the promotion of a greater connection to work and industry through programs for students’ preparedness, internships and research projects to support industry. The introduction of generic employability skills into the overall graduate profile is another emerging trend, which acknowledges that graduates may have multiple career paths over their working lives.


Critics identify more complex implications and consequences for universities arising from mass higher education and global competitiveness, including commodification and marketisation. Some commentators hoped that MOOCs (massive open online courses) would enhance social mobility and justice by increasing access to higher education and thought that MOOCs might disrupt existing universities. However, MOOCs have had limited impact to date, becoming more of a marketing and reputation building tool. The focus, instead, appears to have shifted to paid short courses for specific professional or lifelong-learning demands.

**TECHNOLOGY-ENHANCED LEARNING**

The increased use of tools for large-scale teaching and technology-enhanced learning, such as blended learning, flipped classrooms and flexible e-learning, is also significant for universities. The convergence of these trends with aspirations for student-centred and active learning has led to the targeting and prioritising of low- and high-order cognitive learning with appropriate and effective delivery. With an increased amount of content delivered online or remotely, the way class and face-to-face time is used is also changing, with a focus on discussion, action and inquiry among students, rather than didactic transmission through lectures. These modes of teaching also involve a shift to peer-to-peer learning approaches, finding ways to support reflective learning with less guided contact time, and the possibility of more work-integrated learning.

**COMMODIFICATION AND MANAGERIALISM**

The commodification of higher education has led to concerns about the student-as-consumer phenomenon, which may manifest as entitlement, poor student engagement and strategic learning approaches (such as choosing the easiest and/or most conveniently scheduled electives). This has particular ramifications for teamwork learning, which relies on everyone in a group contributing. Academics in the 2008 *Architectural Education in Australasia* study identified this as a problem. They also noted that competition for students had resulted in a shift in power towards students, with reputation and funding being sensitive to informal and formal review mechanisms. Some academics have been critical of the extent to which universities rely on keeping students happy to maintain their income, and the potential impact on educational quality and outcomes.

Academics also report having less authority and empowerment due to managerialism and performance regimes. This was clearly evident in both the 2008 *Architectural Education in Australasia* study and in this current study – participants mention high levels of bureaucracy, a claimed neo-liberal emphasis, and the casualisation of teaching. Overall, control over resources has been increasingly centralised, but multiple administrative tasks are delegated to the academic staff.

Increasing levels of reporting and the high complexity of university systems, and the frequency that these systems are changed is a drain on energy and motivation.

Academic survey respondent


17 Altbach, Reisberg and Rumbley, *Trends in Global Higher Education*.

QUALITY ASSURANCE

The focus on quality assessment (QA) is another feature of contemporary higher education. Often regulated by both government policies and market forces, it typically requires quality assurance systems and standards to be met through evidence-based assessment. This can be a challenge to core areas of architectural education, such as design teaching, which many argue are difficult to measure or quantify. Some academics questioned how quality can even be perceived as measurable by quantitative means, while others spoke of the increased demands for all manner of reports required by these QA processes. In this context, the impact of the new Australasian accreditation of professional degrees process – which focuses on threshold standards being met – is not yet clear.

Overall, there are multiple concerns that the quality of higher education is increasingly challenged by the globalisation of the curriculum and qualifications, and the mass delivery and commodification of higher education. These have particular implications for architectural education that are further explored in the following chapters.

THE ARCHITECTURE PROFESSION AND THE BUILT ENVIRONMENT SECTOR

The built environment sector is a major contributor to the economies of Australia and New Zealand, and is one of the largest employers overall. Architecture is a small element in terms of employment in the sector, but plays a vital role in built outcomes. Issues of environmental sustainability, housing affordability and urban liveability mean that architectural design is likely to remain a pressing, contentious and politicised issue for the foreseeable future.

Limited available data suggests that the shape and structure of the architecture profession is in flux. The 2018 edition of the AACA Industry Profile noted an increasing gulf between larger practices and smaller ones, and reiterated the opinion that medium-sized practices are disappearing. Architecture is also emerging as a profession with significant export potential, in parallel to the export of architectural education. Large globally oriented firms are increasingly focused on major public infrastructure in Australasia and overseas, while several thousand sole traders work primarily in residential design, hospitality and some small-scale multi-unit and commercial developments. Some of these small businesses compete with building design firms that are not run by registered architects.

Rapid change is occurring on multiple fronts. Projects are increasingly more complex (even smaller ones), and many architects now work in specialist areas, rather than the established generalist model. There is also a proliferation of other professionals and semi-professionals operating in specialist fields of knowledge, some of which are seen as encroaching on the architect’s traditional domain. Procurement models and digital and information technologies are changing the architect’s role in the design and delivery of projects. The built environment sector is becoming increasingly litigious and risk is shared unevenly across the sector. Building sector regulation and compliance is also a key issue for federal, state and territory governments.

Overall, professional, legal, public good and ethical responsibilities are unsettled and the implications for architectural practice are unclear. One practitioner survey respondent describes the situation as follows:

There is now SO much that comes into the practice of architecture, [it] is so hard to have enough time to adequately cover it all. This is true of both practice and education. [...] There is more and more legislation, faster changes in building materials and technology, more information to absorb, more consultants and disciplines involved in projects, more onerous and time-consuming hoops to jump through in obtaining approvals, successfully constructing projects, and running a business. Practitioner survey respondent

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19 Michael J. Ostwald and Anthony Williams, Understanding Architectural Education, Volume 2: Results and Recommendations, 37.
21 Industry Profile (AACA, February 2018), 7.
DEMOGRAPHICS OF THE PROFESSION

The number of registered architects has gradually increased over time. In 2017, there were 11,800 registered architects in Australia and 1,900 in New Zealand. A larger group of 16,991 people nominated their occupation as ‘architect’ in the 2016 Australian Census. Of these, 62% were based in Sydney or Melbourne, 80% were working full time (half of whom worked more than 40 hours per week), and 34% were business owners or sole traders. The 2016 Parlour Census Report shows that women remain underrepresented in practice, comprising 31% of census-identified architects despite comprising nearly half of architecture graduates. There is a dramatic fall off in women’s participation with age compared to men, and few women reach the senior levels of the profession.

THE STATE OF THE PROFESSION

Understanding the state of the architecture profession in Australia and New Zealand is limited by the paucity of research. A study by the South Australian Branch of the Association of Consulting Architects in 2014 provides the most comprehensive account of the structure of the profession, the size of practices, the kinds of work undertaken, and the way it is delivered. However, it should be noted that South Australia is a small part of the market for architectural services in the region, and the findings of this report have not yet been tested in other jurisdictions.

The South Australian research found that 82% of the 80 architectural business respondents were providing “full service” for an average of 60% of their work (assessed by income). However, many respondents commented on the ongoing shift away from full service, which was concentrated in sectors such as education and single residential work. Collaboration between practices was common, with smaller practices typically working with other South Australian practices, and larger practices tending to work with interstate or overseas practices. A significant number of surveyed practices undertook unpaid work, predominantly as speculative work for existing clients or potential new clients. Pro bono work accounted for approximately 35% of the unpaid work.

This research confirmed that net income for architectural firms was low in South Australia, particularly for sole practitioners and small practices. Fee shrinkage was identified as the greatest challenge facing the profession, closely followed by the greater risks architects are expected to bear and competition from other sectors. The majority of people were employed full-time, with very low numbers working part-time or flexibly. This may in part explain the low participation of women working in architectural practices in South Australia.

Commensurate research across Australia and New Zealand would significantly increase knowledge about the wider profession and industry, and support future planning.

CHALLENGES IN THE CONSTRUCTION INDUSTRY

The wider construction industry is also undergoing rapid change, and experiencing substantial associated stress. Architects are caught up in this. Problems have emerged in relation to the quality of construction and the use of non-compliant materials, and questions about responsibility and liability under procurement models, such as novation and design-and-construct. For example, the judgement from the 2014 Lacrosse building fire in Melbourne attributed proportionate liability for damages to the architect along with certifiers and fire engineers due to the use of non-compliant cladding. The evacuation of residential towers in Sydney in late 2018 due to cracking has focused attention on design and construction quality and compliance. In New Zealand, the problem of “leaky buildings” (which...
mainly affected residential buildings] led to revision of the Architects Act and Building Code in the 2000s, and further revision to encompass multi-storey buildings looks likely in the wake of investigations into building collapses during the Christchurch earthquakes.26

In 2017, the Australian federal Building Ministers’ Forum commissioned an examination of the effectiveness of compliance and enforcement systems within the building and construction industry across Australia following the implementation of the National Construction Code. The final report, Building Confidence: Improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia, was delivered in April 2018. Widely known as the Shergold Weir Report, it detailed a suite of major concerns.29 Key issues identified included serious compliance failures; insufficient supervision, auditing and expertise in the industry leading to weak oversight; and inadequate documentation. The report’s 24 recommendations include the registration and training of all parties in the construction industry, effective regulation, and application of the National Construction Code. Initial implementation of these recommendations across states and territories has been highly variable. In March 2019, the Building Ministers Forum released a collective response in the Building Confidence Report Implementation Plan [BCRIP].30

As a profession, architecture is already more strongly regulated than many, and meets many of the recommendations. For architects, the impact of the Shergold Weir report and its implementation could include nationally consistent continuing professional development requirements and disciplinary arrangements. Professional bodies such as the Association of Consulting Architects and the Australian Institute of Architects also see the current state of play as an opportunity to advocate for effective integrated procurement models that reduce fragmentation, and to clarify and redefine the architects’ professional role.31

REGISTRATION OF ARCHITECTS

Processes of registration and the accreditation of architecture schools provide important formal links between the domains of architectural education and practice. The National Standard of Competency for Architects is essential to both processes. In Australia and New Zealand, the title ‘Architect’ is legally protected by Architects Acts in each Australian state and territory and by the Registered Architects Act in New Zealand. These are principally framed in terms of consumer protection. However, registration is also culturally significant for many in the profession and is regarded as a significant milestone.

Registering as an architect requires a minimum of five years study, a period of professional practice (typically two years) and an exam.32 There is a range of pathways to attain registration. Under the ‘conventional’ model, graduates with an accredited architecture degree from a university in Australia or New Zealand [and Hong Kong or Singapore through mutual recognition arrangements] may proceed towards registration as an architect in either country. Other pathways can be described ‘equivalence’ (for those with a qualification from another country), ‘alternative’ (for those who have substantial experience but no qualification) and ‘experienced’ (for those with more than seven years’ experience either locally or internationally). The majority of architects become registered through the conventional pathway, while the other pathways help to increase access for a wider group of appropriately qualified or experienced professionals.

26 Interview with NZRAB registrar, Paul Jackman, 6 May 2019.
In Australia, the conventional model involves three stages: documenting a specified minimum of practical experience, a written examination and face-to-face interview. Each stage must be passed in order to progress to the next. In New Zealand, applicants submit documented experiences and a case study, which are then discussed in a face-to-face interview.

**Table 2.1 Pathways to registration as an architect in Australia**

| PATHWAYS TO REGISTRATION AS AN ARCHITECT |

| National Standard of Competency for Architects |
| AACA develops and reviews the National Standard of Competency for Architects on behalf of Architects |

All pathways require applicants to demonstrate the application of knowledge and skills in architectural practice as specified in the National Standard of Competency for Architects.

Various courses help students prepare for registration, but are not compulsory. These include the NZIA APL Registration Programme, and the PALS and PARC courses in Australia.33

32 I completed the PALS course a few years after graduation and I found this to be profoundly informative and a pivotal point in my understanding of the role and responsibilities of an architect. Practitioner survey respondent

Gaining the necessary mix of experience to demonstrate the required competencies can be difficult for some new graduates and may take longer than the two years typically required.34 This can depend on the scale and structure of practice, the type of work undertaken, the degree of specialisation, and the procurement and delivery models most commonly used.

There is little research into the transition from architectural graduate to registration in Australia and New Zealand.35 Most available studies seek to understand the lag in female graduates becoming registered architects. All show that a significant proportion of graduates do not go on to register as architects in Australia and New Zealand, and that this group includes a higher proportion of women than men.

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34 A study of South Australian graduates reported that, for the cohorts studied, the average length of time from graduation to registration was five years. Susan Shannon, Naomi Webb, Yishu Zeng and Jenna Holder, “Why Architecture Graduates Do Not Register as Architects: A Quantitative and Qualitative South Australian Study 1999–2011”, Creative Education 5 (2014), 1547, http://www.scirp.org/journal/ce.

Susan Shannon et al’s study of graduates’ paths to registration in South Australia (1999 to 2011) found that more than 70% of male and female graduates did not become registered. A New Zealand study across a longer period (1987 to 2010) found that approximately half of the New Zealand graduates became registered architects in New Zealand and Australia, or graduate members of the NZIA. Both studies emphasise the importance of further research to understand where graduates go. They hypothesise that the reasons graduates do not register include living and working overseas, being employed by architectural practices without the need for registration and membership, or pursuing an alternative career. In the UK, the Architecture’s Afterlife Survey suggests that 66% of architectural graduates will not become registered architects. Broader research by the European Association of Architectural Education followed, recently extending to North America.

Continuing pressure from practitioners for highly skilled staff and the increasing costs of studying architecture may push further innovation in education. In the UK, an “earn while you learn” apprenticeship model has been set up by a consortium of practices and is viewed as a promising way to bring diversity to the profession, retain architects in regional areas, and reduce costs for aspiring architects. The program was a result of a government levy on all businesses over a certain size to fund apprenticeships. Rather than viewing the levy as a financial burden, some architectural practices have used it as an opportunity to innovate.

**ACCREDITATION OF ARCHITECTURAL COURSES**

Eighteen universities in Australia and three in New Zealand currently offer accredited Master of Architecture degrees. All also offer a pre-professional bachelor degree in architectural studies, as does Charles Darwin University in the Northern Territory. Three institutions in Australia have commenced offering architecture programs and have indicated they will be seeking accreditation (Notre Dame University, Swinburne University of Technology, Western Sydney University). Auckland University of Technology in New Zealand is planning to begin an architecture program in 2020.

Accredited university architecture programs in Australia and New Zealand require ten semesters of study, typically comprising two academic qualifications: a three-year / six-semester bachelor degree followed by an accredited two-year / four-semester Master of Architecture. In general, the minimum time required for students to complete ten semesters of study is five years full time, although some universities allow for completion of ten semesters in less than five years.

In 2018, a revised Architecture Program Accreditation Procedure in Australia and New Zealand was implemented, following an extended period of consultation. Under this procedure, Master of Architecture degrees are accredited by relevant state or territory Architect Registration Boards or the New Zealand Registered Architects Board. Bachelor degrees are not accredited. New architecture programs can be considered for accreditation in the final semester before the first Masters cohort completes their studies.

The new accreditation procedure focuses on evidence of graduate competency, which is assessed against 37 criteria outlined in the National Standard of Competency for Architects. Samples of assessed work are required at the threshold level (the minimum level required for progression, usually a pass), and can be augmented with more extensive exhibitions of work. Accreditation reviews are undertaken through independent peer review performed by an Accreditation Review Panel, which makes a recommendation to the relevant registration board. Each program must provide an annual report, outlining progress made
towards action items from their last accreditation site visit, numbers of students, links with the profession, and any significant changes to the program. Other changes include reducing the number of review panel members from nine to six, strengthening the pre-review self-assessment report, and streamlining the overall process.

The new process is quite different to accreditation under the previous procedure, which was based on assessing five-year architecture programs (consisting of the Bachelor and Masters programs) against the Australian Institute of Architects Education Standards and the 2008 National Competency Standards in Architecture. The change is in line with the Australian federal government’s view that professional accreditation should focus on minimum acceptable graduate outcomes, and should not duplicate the work of higher education standards agencies in promoting quality teaching and student experience.

At the time this research was conducted, five accreditation reviews had been conducted, and most of the heads of schools interviewed had not yet experienced the new process.

It is too early to form firm views on the new procedures, but one key practical outcome is already apparent. Staff resourcing, governance, quality assurance of learning and teaching, and the student experience are now beyond the purview of the accreditation process. Instead, they are understood to be the responsibility of the Tertiary Education Quality and Standards Agency in Australia and the Academic Quality Agency for New Zealand Universities (New Zealand Qualifications Agency for Unitec). This limits the potential for conflicting advice or directions. However, some heads of schools interviewed for this study were concerned that this narrower focus could limit the capacity of schools to use the accreditation process when advocating to protect or increase academic and physical resources, and to argue against unsympathetic restructuring of curricula.

Four education providers are currently developing new programs and planning for accreditation. These include a joint/discipline program, a program based on an integrated work and study model, and one that does not offer a preparatory bachelor program. This variety is more readily accommodated under the new system, with its focus on the minimum standards achieved by the graduating cohort.

CONCLUSION

The higher education system, the profession, and registration and accreditation procedures each contribute to the context in which architectural education is delivered, and impact on that delivery in different ways. Substantial change in each of these areas means that architecture schools and educators are responding to multiple intersecting pressures, some of which reinforce each other, others of which create impetus in different directions.

Some commentators see these changes as opportune for architectural education, a catalyst for “constructive change”.43 The rationale for change varies across these writers, and includes the strain on design studio resources; the need to develop new approaches to design studio teaching and a new focus on healthy studio cultures and teamwork; and updating pedagogical models to exploit different media, processes and tools.43 These themes also emerge in this study and are examined in the chapters that follow.

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Demographic data and statistical analysis provides an important means to understand large-scale patterns in participation in architectural education, and helps identify shifts and trends over time. This chapter looks at the demographics of two core groups – the student body and those who teach them, both ongoing academics and sessional staff.

A number of major patterns emerge from this analysis. First, the numbers of students studying architecture in Australia and New Zealand has increased by around 35% since 2006, but the number of staff teaching has not increased at a commensurate level. There has been a 14% increase in the number of staff employed in a continuing capacity over the same period. Second, the numbers of international students being educated in Australian university architecture programs has increased significantly, with 44% of the total student cohort over the last decade being international students. Third, women make up a significant proportion of the student cohort – in 2018 they were 45% of all graduates – and have done so for some decades.

The demographic make-up of those teaching architecture has also changed in terms of advances towards gender parity. Women are now almost half of lecturers in Australia, and 42% in New Zealand. Most striking is the increase of women in senior leadership positions. In Australia in 2018, 33% of professors were women, a significant increase since 2012 when women occupied only 12% of Australian professorships. In contrast, Indigenous Australians are substantially underrepresented in the student cohort, and the number of students from low socio-economic backgrounds also remains very low. This type of demographic data on teaching staff is not available.
DATA COLLECTION AND LIMITATIONS

The data analysed in this chapter is drawn from a range of sources. The universities collect some data on the student body, particularly overall numbers, gender and international student enrolments. This information has been used in this study, and augmented with data from government sources. Staffing levels in architecture schools were determined through a census of schools of architecture conducted in 2018, which included an estimate of part-time and sessional or casual staff in addition to full-time staff. This current analysis presents a more comprehensive picture than the Ostwald and Williams report of 2008, which only recorded full-time staff and those on over 0.6 fractional appointments.¹ Information drawn from this census is complemented by the survey of academics conducted in late 2018, which drew 511 respondents – approximately 47% of the continuing staff recorded by the staffing census (46% of Australian academics and 54% of New Zealanders). The response rate for sessional or casual staff was lower, at around 22% (21% for Australia and 23% for New Zealand).² There were 33 partial responses that gave very minimal information and answered no opinion questions, which made the final useful count 478. Of note, one in seven of the ongoing staff members responding to the academic survey were part-time. It is important to note that the survey results cannot be used to make population-wide assumptions – they simply represent the set of people who responded.

There are two particular difficulties with counting architectural staff, which were noted by Ostwald and Williams and also affect this study. The first is undergraduate cross-disciplinary degrees, which mean that academics from a range of disciplines are teaching into architecture schools. The second is the presence of honorary teaching staff – emeritus, adjunct and conjoint staff and industry/professional fellows.³ These roles are generally fractional appointments that sit outside the traditional academic promotion track or are architects of standing in the profession who contribute to the teaching. In addition, some universities also have teaching-only continuing positions.

THE ARCHITECTURAL STUDENT BODY

In 2018, there were 11,461 students enrolled in undergraduate and professional masters degrees in Australia and New Zealand. This is an increase of approximately 35% since 2006, when Ostwald and Williams estimated there were around 7,500 enrolments in architecture in Australasia.⁴ Recent years have seen an increase in pathways into Masters study, and a concomitant increase in the number of students enrolled at Masters level – up 17% from 2015 to 2018 (Table 3.1 and 3.2).

The numbers of those graduating from professional Master of Architecture programs in Australia has remained relatively stable over the past five years, despite this increase in enrolments. In New Zealand, graduation rates have increased by 20% over the same period (Table 3.1 and 3.2). The reasons for the stability in graduation rates in Australia are not known, and are worth further investigation. It is also not known how these attrition rates compare to other areas of professional study.

¹ Michael J. Ostwald and Anthony Williams, "Academic Staff Profile", Understanding Architectural Education in Australasia, Volume 1: An Analysis of Architecture Schools, Programs, Academics and Students (Sydney: Australian Learning and Teaching Council, 2008).
² This report also tracked staff numbers over time using the Architecture Schools of Australasia handbooks produced annually by the Australian Institute of Architects. The Institute ceased production of these in 2015 and for this research report we have not attempted to emulate the longitudinal surveys of 2008.
³ Ostwald and Williams, Understanding Architectural Education: Vol 1, 39.
⁴ Ostwald and Williams, Understanding Architectural Education: Vol 1, 104.
### Table 3.1: Enrolment and graduation proportion data, Australia

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Male : Female</th>
<th>Dom : Int</th>
<th>M Dom : F Dom</th>
<th>M Int : F Int</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor Enrolments</td>
<td>2018</td>
<td>6,651.8</td>
<td>50 : 50</td>
<td>66 : 34</td>
<td>53 : 47</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>6,235.5</td>
<td>51 : 49</td>
<td>68 : 32</td>
<td>53 : 47</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>2,002</td>
<td>49 : 51</td>
<td>64 : 36</td>
<td>53 : 47</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>2,929.0</td>
<td>53 : 47</td>
<td>60 : 40</td>
<td>56 : 44</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>2,785.7</td>
<td>55 : 45</td>
<td>62 : 38</td>
<td>56 : 44</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>2,748.4</td>
<td>55 : 45</td>
<td>63 : 37</td>
<td>58 : 42</td>
</tr>
<tr>
<td>Masters Graduation</td>
<td>2018</td>
<td>1,298</td>
<td>55 : 45</td>
<td>58 : 42</td>
<td>58 : 42</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>1,234</td>
<td>54 : 46</td>
<td>60 : 40</td>
<td>56 : 44</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>1,256</td>
<td>56 : 44</td>
<td>62 : 38</td>
<td>57 : 43</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>1,250</td>
<td>55 : 45</td>
<td>63 : 37</td>
<td>56 : 44</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>1,292</td>
<td>53 : 47</td>
<td>66 : 34</td>
<td>55 : 45</td>
</tr>
</tbody>
</table>

Enrolment data is in EFTLS – Equivalent full time student load; Graduation numbers are for persons.

### Table 3.2: Enrolment and graduation proportion data, New Zealand

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Male : Female</th>
<th>Dom : Int</th>
<th>M Dom : F Dom</th>
<th>M Int : F Int</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor Enrolments</td>
<td>2018</td>
<td>1,000.1</td>
<td>56 : 44</td>
<td>87 : 13</td>
<td>55 : 45</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>1,014.6</td>
<td>56 : 44</td>
<td>88 : 12</td>
<td>56 : 44</td>
</tr>
<tr>
<td>Bachelor Graduation</td>
<td>297</td>
<td>54 : 46</td>
<td>84 : 16</td>
<td>55 : 45</td>
<td>51 : 49</td>
</tr>
<tr>
<td></td>
<td>341</td>
<td>50 : 50</td>
<td>85 : 15</td>
<td>50 : 50</td>
<td>47 : 53</td>
</tr>
<tr>
<td>Masters Enrolments</td>
<td>2018</td>
<td>581.8</td>
<td>51 : 49</td>
<td>90 : 10</td>
<td>51 : 49</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>549.1</td>
<td>55 : 45</td>
<td>91 : 9</td>
<td>56 : 44</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>544.4</td>
<td>56 : 44</td>
<td>92 : 8</td>
<td>57 : 43</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>502.1</td>
<td>53 : 47</td>
<td>91 : 9</td>
<td>54 : 46</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>208</td>
<td>53 : 47</td>
<td>93 : 7</td>
<td>50 : 50</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>220</td>
<td>50 : 50</td>
<td>91 : 9</td>
<td>52 : 48</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>179</td>
<td>53 : 47</td>
<td>97 : 3</td>
<td>53 : 47</td>
</tr>
</tbody>
</table>

Note: The data for Bachelor degrees is complicated by the generic nature of some degrees. For example, some universities omitted enrolment numbers for the first generic year of the degree, while others included everyone. Bachelor numbers are therefore indicative. For further enrolment and graduation data for Australia and New Zealand, see Appendix Tables D1 and D2.
DIVERSITY

Within contemporary architectural culture, there is an ongoing and increasing interest in ensuring that the architectural profession is as diverse as the communities it designs for, and a clear understanding that there is some way to go on this in Australia and New Zealand. Understanding the demographic diversity of those that choose to study architecture, and those who complete these studies, is an important step in increasing the diversity of the profession as a whole.

Australasian universities collect data on gender and international/domestic enrolments, and there is partial data available on socio-economic status. These datasets provide the useful information; however, it is difficult to gain a picture of diversity in the architectural student body beyond these characteristics.

GENDER

Women have averaged over 42% of the Australian graduating cohort since the mid-1990s and comprised 45% of all architectural graduates for the last decade. The numbers of women studying and graduating have been steadily increasing for decades, and these participation rates are substantially higher than in the profession.

Overall, the proportion of women studying architecture this century is historically higher in New Zealand, where it has averaged over 50% for the last decade. The University of Auckland School of Architecture consistently shows the highest proportion of women graduates of all the Australasian schools.

Sources: 1989–2013 data from Gill Matthewson, “The gendered attrition of architects in Australia”, arq: Architectural Research Quarterly 21, no, 2 (2017); 2014–2018 data from Table 3.1. Note: The data has been ‘smoothed’ by taking the average for a three-year period to mitigate yearly fluctuations and missing data for 1993. This allows longer-term trends to be seen.

Figure 3.1 Proportion of women graduates 1989–2018, Australia

1 Note that non-binary gender numbers are only just beginning to be collected by universities. In 2018, in Australia the provided data counted just one person, who was enrolled in a Bachelor degree. This number should rise over the next few years as this currently invisible cohort is formally counted.
3 Data originally sourced from Architecture Schools of Australasia (Barton, ACT: Australian Institute of Architects National Office, 1988 to 2015 editions). This annual handbook was not published in 1994, affecting 1993 graduation data.
Analysis of enrolment and graduation figures in recent years indicates a number of patterns in relation to gender-based attrition and retention. Enrolments for Bachelor degrees show gender parity over the last two years, and indicate that women graduate from these degrees above parity. However, this limited data is not sufficient to confirm trends, and it is also probable that undergraduates in generic design degrees complicate or confuse these numbers.

The four years of data on women enrolling in professional Masters programs indicates that numbers are below parity at this level of study. However, women appear to graduate from these degrees at roughly the same rate as their enrolment. This indicates that, while there are some signs of attrition moving from Bachelor to Masters programs, women are equally successful in completing these degrees.

The participation and presence of women in architecture has been a major issue for many decades and gained renewed impetus in 2011 when the advocacy groups Parlour: women, equity, architecture and Architecture + Women • NZ were founded. Parlour has mobilised statistics along with surveys and online capabilities to demonstrate that gender bias constrains the ability of women to move into and within the profession. In response, both groups have provided support, advice and mechanisms to improve the situation and are generally credited with substantially raising the profile and participation of women in architecture.


Figure 3.2 Proportion of women graduates 1989–2018, New Zealand

Analysis of enrolment and graduation figures in recent years indicates a number of patterns in relation to gender-based attrition and retention. Enrolments for Bachelor degrees show gender parity over the last two years, and indicate that women graduate from these degrees above parity. However, this limited data is not sufficient to confirm trends, and it is also probable that undergraduates in generic design degrees complicate or confuse these numbers.

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INTERNATIONAL STUDENTS

Numbers of international students have increased dramatically in Australia over the last decade. By 2018 they comprised 45% of the masters student cohort, with the highest proportion enrolled in Victoria – 55%. Indeed, the growth in international student enrolments in architecture in Australia accounts for all the growth in enrolments at Masters level over the last ten years. However, international enrolments vary radically from university to university and from state to state.

This increase is an outcome of a number of factors, some financial, some cultural. Universities and other higher education institutions have increased their drive for full-fee paying international students in response to changes (mainly cuts) in government funding to the tertiary education sector in Australia and New Zealand. Cultural factors include the broader agenda to internationalise, which is partly realised through the recruitment of international students, and the ongoing effect of longer-term engagement with Asia through initiatives such as the Colombo Plan.

Data from the Australian Department of Education and Training suggests that China is the major country of origin for international students studying architecture, and that numbers have grown rapidly (rising from 31% in 2013 to 69% in 2017). This is suggestive but not definitive, as some major universities do not supply data disaggregated to degree. Data about student visas from the Department of Foreign Affairs and Trade repeats the pattern of students from East Asia dominating architecture enrolments and commencing student numbers, followed by those from South East Asia. (Figure 3.3) Once again, it should be noted that this data again does not cover all universities.

Figure 3.3 Breakdown of architecture students on international study visas 2018, Australia

10 Note that the requirement for international students to be enrolled full time to meet their study visa obligations may affect this data, as domestic students have the option to enrol part time (the reasons they might do so are discussed later in the chapter).
11 Data supplied on request by the Department of Education and Training.
Enrolment and graduate patterns differ between Bachelor and Master degrees. In 2018, over a third of the enrolments in Bachelor degrees were international students (34%; see Table 3.1), but they were as high as 57% in more than one university. International enrolments in Masters degrees are higher – 45% in 2018 across Australia. This reflects a trend for both domestic and international students to travel further afield for Masters study. There is strong variability between states and universities, with four schools reporting over 60% international enrolments at this level in 2018 and four under 30%. Victoria is the favoured state for international students studying architecture.  In 2018, 55% of all Victorian Master of Architecture enrolments were international, and 40% of Bachelor enrolments. New South Wales was the next most popular, with international enrolment proportions of 45% Master and 39% Bachelor in 2018.

These enrolment patterns are reflected in graduation data. In Victoria, 44% of students graduating from the Masters degree in the last decade were international. In NSW the figure is 35%. This contrasts with Queensland, where the average proportion was just 16%. However, this is rapidly changing. In 2009, Queensland graduated just 6% international students; by 2018, that proportion was 27%.

The growth of international student numbers has not been even or consistent over time. (Figure 3.4) There was a notable reduction after 2005 and a levelling off in the middle of this decade. However, by 2018 the proportion of international graduates appears to be strongly on the rise again.

New Zealand has a significantly lower proportion of international students (Table 3.2). New Zealand heads of school described university-wide policies of a maximum of 20% international students; however, the schools of architecture are not close to that target. The reasons for these much lower numbers is not known.

Gender and international enrolments

Splitting the Australian graduation data by international and domestic enrolments reveals that international graduate numbers are rising, while domestic graduates have slightly declined in recent years. (Figure 3.5) There is, however, some volatility in the data and more research would be required to determine if this is an ongoing trend or a blip.


Figure 3.4 Proportion of international Masters graduates 1989–2018, Australia

The growth of international student numbers has not been even or consistent over time. (Figure 3.4) There was a notable reduction after 2005 and a levelling off in the middle of this decade. However, by 2018 the proportion of international graduates appears to be strongly on the rise again.

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Analysing this data by gender reveals further interesting patterns. International women students are now lifting overall levels of female participation to above parity. At both Bachelor and Masters level, Australian domestic female students are enrolled at slightly under parity while women make up more than half of international enrolments. This is a relatively recent phenomenon. Prior to 2010, international female graduations slightly depressed the overall graduation rate for women. (Figure 3.6) The converse is true for men.
SOCIO-ECONOMIC BACKGROUND

There is no current data from schools of architecture regarding the socio-economic background of students; however, data from the Australian Department of Education and Training provide some insight into three equity criteria – Indigenous students, those from regional or remote areas, and those from low socio-economic status (SES) backgrounds. (Table 3.3) This covers 12 of the 18 accredited architecture schools in Australia and strongly suggests that architecture schools do poorly in terms of these equity criteria, compared to other areas of tertiary study across all three criteria.

Table 3.3: Equity data for architectural study compared with equity data for all university study. 2017

<table>
<thead>
<tr>
<th></th>
<th>Enrolments in Architecture</th>
<th>All Enrolments</th>
<th>Completions in Architecture</th>
<th>All Completions</th>
<th>Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous</td>
<td>0.9%</td>
<td>2.1%</td>
<td>0.7%</td>
<td>1.14%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Regional/Remote</td>
<td>12.8%</td>
<td>22.0%</td>
<td>11.3%</td>
<td>18.27%</td>
<td>33%</td>
</tr>
<tr>
<td>Low SES (SA1)</td>
<td>11.3%</td>
<td>17.1%</td>
<td>7.8%</td>
<td>13.71%</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Department of Education and Training, Selected Higher Education Statistics: Students, 2017

Participants in the focus groups and interviews suggested that Australian domestic students appear to be predominantly from private schools rather than public ones, although this pattern varies from university to university. The impact of high course and living costs was also raised, and is discussed further in Chapter 5. All universities offer scholarships for Indigenous, Maori, Pasifika and regional students; however, some are relatively recent and the uptake in architecture is unclear. Some schools also explained that their universities do ‘roadshows’ around secondary schools in areas with low tertiary attendance, and some engaged directly with these schools in outreach programs. Diversity initiatives often occur at the university level, and some heads of schools noted that they had limited agency to affect the make-up of the student cohort.

INDIGENOUS STUDENTS

The available data reports relatively few self-identified Indigenous students studying architecture in Australia. A number of schools have embarked on “Indigenising the curriculum” projects, sometimes as part of a university-wide Reconciliation Action Plan. Attention to recruitment of Indigenous students is often part of this. The extent and success of these measures is too early to assess.

In New Zealand, the Vice Chancellor at Victoria University of Wellington speaks of the missing 1,000: that is, if Maori and Pasifika students were attending the university in the same proportions as the general population, there would be another 1,000 students across the university. New Zealand academics noted that the problem was less in attracting students of diverse backgrounds to architecture than keeping them enrolled and progressing. High attrition rates for Maori and Pasifika students were noted at all three New Zealand schools. The New Zealand profession has a strong interest in architects with Maori backgrounds and/or high levels of cultural competency. This is partly because iwi/tribes have become significant clients as a result of Te Tiriti o Waitangi (Treaty of Waitangi) settlements and subsequent investments. Government funding for Maori students is also higher.

Some participants in the focus groups and interviews noted that university-bound Indigenous and Maori students often gravitate towards medicine or law studies, as these are perceived as relating directly to the wellbeing of their people. Participants felt that architecture still has an image of an “elitist” profession that is not closely related to most people’s everyday lives – “the outward face of the profession is rich people’s houses”. There was a consistent message from the surveys and focus groups that more could and should be done to promote the public service aspects and opportunities of architecture, and the breadth of careers within architecture and the built environment sector more broadly.

13 Interview, Andre Brown, Head of School, Victoria University of Wellington, 7 May 2019.
14 Academic focus group participant.
THE ARCHITECTURAL TEACHING WORKFORCE

The past decade has seen significant shifts in the demographics of those teaching architecture. The percentage of women has increased – from 24.5% of the full-time staff in 2006 to 37% of continuing staff and 41% of casual staff in 2018. There has also been a substantial increase in the number of professors who are women – 33% in 2018 as compared to 12% in 2012. The rate of increase of permanent staff has not kept pace with the 35% growth in student numbers and a very high proportion of those teaching architecture are in casual positions.

The 2018 census conducted across all architecture schools in the study identified 446 continuing staff and at least 1,340 sessional or casual staff (Table 3.4). This is a 14% increase in numbers of continuing staff from 12 years earlier. In 2018, this count included full-time and part-time continuing staff and those with a contract of more than 12 months. (In 2006, there were 392 full-time staff in Australasian schools of architecture or substantively teaching into architecture.)

Table 3.4: Academic staff numbers, 2018

<table>
<thead>
<tr>
<th></th>
<th>Continuing Staff</th>
<th>Casual Staff</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>Australia</td>
<td>212</td>
<td>136</td>
<td>348</td>
</tr>
<tr>
<td>New Zealand</td>
<td>58</td>
<td>29</td>
<td>87</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>9</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>279</td>
<td>167</td>
<td>446</td>
</tr>
</tbody>
</table>

* RMIT casual staff not included in data
+ Non-binary

Sessional staff numbers are high, with at least three sessional staff for every continuing member of staff. In 2008, Ostwald and Williams argued that architectural academics often manage sessional staff rather than teach themselves. The 2018 ratio suggests that this pattern continues.

GENDER

The number of women teaching as both permanent and sessional staff has increased in recent years. In 2018, women comprised 37% of continuing staff and 41% for casual staff – an increase on 2006, when women were 24.5% of full-time staff. Australia has a higher proportion of female continuing staff (39% compared to 33% in New Zealand); however, New Zealand had a higher proportion of female casual staff (44% compared to 40% in Australia). The discrepancy in New Zealand between continuing and casual staff merits further examination. The Australian situation is more equitable overall (39–40% of each type of position) but varies substantially from school to school.

One person was identified by the schools as non-binary in 2018. In the survey of academic staff, five persons were so identified. This discrepancy may be because not all universities currently record non-binary gender identities as a category in their systems.

15 The percentage increase is an approximation as the 2018 figure includes an unknown number of staff on less than 0.6 fractional appointments.
17 RMIT sessional staff numbers were not supplied.
18 Ostwald and Williams, Understanding Architectural Education, Vol. 1, 100.
Architectural education and the profession in Australia and New Zealand

Table 3.5: Staffing by level of appointment

<table>
<thead>
<tr>
<th></th>
<th>Australia</th>
<th>New Zealand</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>NB</td>
</tr>
<tr>
<td>Assistant lecturer</td>
<td>10</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Lecturer</td>
<td>47</td>
<td>45</td>
<td>92</td>
</tr>
<tr>
<td>Senior lecturer</td>
<td>64</td>
<td>42</td>
<td>106</td>
</tr>
<tr>
<td>Associate professor</td>
<td>31</td>
<td>14</td>
<td>45</td>
</tr>
<tr>
<td>Professor*</td>
<td>38</td>
<td>19</td>
<td>57</td>
</tr>
<tr>
<td>Teaching-only/</td>
<td>18</td>
<td>4</td>
<td>22</td>
</tr>
<tr>
<td>Industry fellow</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Casual**</td>
<td>687</td>
<td>465</td>
<td>1,153</td>
</tr>
</tbody>
</table>

* May include some emeritus / honorary appointments **RMIT casual staff not included in these numbers

SENIORITY

The Australian university system has five levels ranging from assistant lecturer to professor (Table 3.5). The New Zealand system is roughly comparable. Women account for almost half of lecturers in Australia and 42% in New Zealand, while 33% of Australian professors are women. This latter figure is a significant lift from the situation in 2012 when an audit by Parlour found women comprised just 12% of professors.19

There is a high proportion of casual staff. More than 77% of the Australian architectural teaching workforce is casual, while in New Zealand it’s 68%. (Table 3.5) However, it is important to note that these sessional staffing numbers do not reflect full-time positions – the proportion documents the number of individuals teaching, not equivalent-full-time participation.

QUALIFICATIONS

More than half of the continuing academics who responded to the survey held PhDs or higher (56%). Another 15% were enrolled in PhDs, as were one in five casual staff. PhDs were also held by 4% of casual staff (6% of the women and 3% of the men). Appointments of continuing staff positions are usually dependent on holding a PhD, although equivalent industry experience is valued in some institutions.

Registration figures among survey respondents were strong – 47% of the continuing staff are registered architects, as are 63% of the casual staff. Of the registered continuing staff, one third are registered in countries other than Australia and New Zealand, which may have different registration or licensing regimes.

19 Matthewson, “Numbers in a Nutshell”; this audit worked with full-time equivalents, not headcount, so they are not directly comparable.
CONCLUSION

The tracking of demographic data over time is essential to understanding the current state of architectural education, and provides an important base for future planning. The demographic make-up of student and teacher bodies, and the interaction between these, has a significant impact on the culture and experience of architectural education.

The data presented in this chapter alludes to some positive stories, particularly in relation to gender parity in student demographics and in the junior levels of teaching staff. The significant increase in women at the senior levels of academia is also a very positive sign.

In contrast, the lack of socio-economic diversity in the student body suggests that active planning is required. The high attrition rates for Indigenous, Maori and Pasifika students point to the need for considered and engaged support, as well as ongoing attention to relevant curriculum development. This is essential to ensure that the architectural profession more fully represents the communities it serves, and is able to benefit from architects with a wide mix of experience and knowledge. Likewise, the growing numbers of international students must be met with adequate support and associated relevant curriculum development.

There is no data available on diversity among architectural educators other than gender. This is an area that warrants further data collection and analysis. The impact of the declining ratio of continuing staff to students needs to be better understood, as does the strong reliance on sessional staff. The following chapters explore some of these trends in detail.
Architectural education must incorporate a very wide range of knowledge and modes of thinking and working, from the very practical to the highly conceptual. Subject areas include design, architectural history and theory, architectural technology and construction, communication and professional practice, and various electives. The degree structure through which this knowledge is delivered has developed in recent years, and the range of degree options and pathways available to students has broadened.

Architecture programs in Australia and New Zealand maintain a strong focus on design, and this is highly valued by academic, practitioner and student respondents alike. The primacy of design has not changed over the last decade, and architectural educators are firmly committed to design studio. However, the methods of studio teaching and facilities that accommodate it are evolving in response to diminishing resources, technological developments and increased student mobility. Few schools allocate individual studio spaces, and teaching processes are shifting towards group teaching.

The balance between different subject areas, and between practical and conceptual considerations, was a key concern for many participants in this study, but there was some difference of opinion as to what constitutes the “right balance”. Most curriculum areas are highly valued by all participants, but practitioners placed greater value on construction and/or project management, and were keen to see a stronger emphasis on practical knowledge and practice-based skills. In contrast, academics placed higher value on architectural history and theory than their practitioner counterparts. Critical thinking, problem solving, communication, time management and collaboration skills were highly rated by all. Technology is seen as an important driver of future curriculum, as is the ethical and social responsibilities of the profession in a changing world.

This chapter examines the curriculum and the “right balance” of educational areas and skills. It outlines the various patterns of study and degree pathways available in Australia and New Zealand. It reports on the value placed on subject areas and generic skills by practitioner and academic participants, and explores the key factors identified as shaping future curriculum development.
BACKGROUND

Architectural education was admitted into higher education at the end of the 19th century and the start of the 20th century. Its inclusion was delayed, as practices connected with craft and artistry were thought to be lower in learning status and unscientific. Previously, architectural education had taken the form of pupillage with a practising architect or an apprenticeship and the profession was learnt by copying and by doing. The development of the education of architects typically followed a pattern moving from office into university: from self-taught to pupillage or articles, from classes that supplemented articles to courses that complemented them, from classes and courses being casual to formal, and from part time to full time.

There is a substantive volume of literature into architectural education and the scholarship of teaching and learning. Design and design studio teaching remain priority areas of research in architectural education. Other areas of investigation include the conflicting needs of the academy and the profession in architectural education, the crit process, curriculum, gender imbalance and equity, and the student experience. Many of these themes have reoccurred over the past 40 years. A significant number of articles rely on anecdotal evidence and do not situate the work within learning theory.

PATTERNS OF STUDY

Most Australian and New Zealand degrees follow a similar study pattern to accredited architecture degrees from comparable university systems, such as the UK, Singapore and Hong Kong. In this model, the first three years are mostly spent on foundational design, conceptual, technical and communication skills. The final two years lead the student into more comprehensively developed designs and place the work of the architect (and architectural businesses) into the context of the broader built environment sector. This format is now most often taught as two degrees – an undergraduate degree followed by a two-year professional Masters degree. It is increasingly common for Australian students to complete their two qualifications at different universities, and overseas students often complete a Bachelor degree in their home country followed by a Masters in Australia. There is also a degree of flexibility in admitting students from different backgrounds to Masters programs.

3 Mark Crinson and Jules Lubbock, Architecture: Art or Profession? (Manchester: Manchester University Press, 1994); Michael J. Ostwald and Anthony Williams, Understanding Architectural Education in Australasia, Volume 1: An Analysis of Architecture Schools, Programs, Academics and Students (Sydney: Australian Learning and Teaching Council, 2008).
7 de la Harpe and Peterson, “Through the Learning and Teaching Looking Glass”.

Australian and New Zealand architectural programs include design studio work from the first year, with design courses typically comprising around 40% overall of the five-year program. All degrees also include core units in architectural technology, history/theory and architectural communications. Professional studies and research skills are typically introduced in later years, and industry placement is not a core requirement at most institutions.

As a generalisation, Australian and New Zealand degrees tend to include somewhat more history/theory subjects and fewer technical subjects than many other countries. There are typically fewer stand-alone units in urbanism, planning, environment and sustainability; however, this content may be integrated into other subjects. Australian and New Zealand degrees also tend to contain few electives, although some universities now include cross-disciplinary electives (also known as breadth subjects) in early degree stages.

Prior to 2007, the main pathway to an architectural career (and then registration) was a five-year Bachelor of Architecture. Much of the content of the current Master of Architecture is similar to years four and five of the former Bachelor degrees. However, the introduction of the professional Master degrees has meant a greater emphasis on research. In general, this means that these degrees culminate in what is typically described as an architectural design research project. This varies from school to school, but tends to emphasise design as a theoretically based process of investigation, critical observation and experimentation.

DEGREE OPTIONS AND PATHWAYS

Students in Australia and New Zealand can access a range of pathways to professional degrees, along with different types of degrees at both undergraduate and professional Masters levels.

Recent years have seen a significant trend towards more generic Bachelor degrees. These offer a range of design majors that feed into specialist Masters degrees, including the accredited architecture degree. In these undergraduate degrees, the first year and some subsequent units are often common to all majors. Some universities limit these majors to closely aligned professions, such as urban design and interior and landscape architectures (for example, Victoria University of Wellington’s Bachelor of Architectural Studies and the University of Adelaide’s Bachelor of Architectural Design). Others offer a wider range of majors with the possibility of double majors or minors and allowing a change of direction during the course of study. The Bachelor of Design at the University of Melbourne offers students a choice of 12 majors, ranging from computing to mechanical systems to architecture. Some universities that currently provide single-track architecture Bachelor degrees are considering broadening their offerings.

There is growing provision for entry into a Master of Architecture from non-cognate degrees. Typically a three-year program is offered to those without an architecture-focused Bachelor degree. These usually upskill students in the first year and then merge them into the traditional two-year Masters. This pathway tends to attract mature students and those with industry experience. There has been lively debate in the sector about these three-year programs, but no detailed evaluation of their outcomes.

A number of non-university pathways into the professional Masters degree have opened up in the past 10 years, and TAFEs and private colleges are also offering potentially cognate undergraduate design and/or building degrees. The number of students taking this pathway is low.

Finally, universities are offering an increased variety of postgraduate degrees, some offering double degree options and others providing specialisations as post-professional degrees. For example, Deakin offers a combined Project Management and accredited Architecture program. Swinburne will seek accreditation for a combined Urban Design and Architecture degree. Architectural Engineering bachelor degrees are also on offer across Australia and New Zealand – all of which allow for accreditation as an engineer. Other new double degrees include an offering from the University of Auckland that combines a professional Master of Architecture with Heritage Conservation, Urban Design or Urban Planning. The last is professionally recognised by the NZ Planning Institute but is not on the list of accredited architecture programs.

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8 Ostwald and Williams noted the increase of research components in the final years of the degree at the time of shifting to the Master’s model. Ostwald and Williams, Understanding Architectural Education, Vol. 1, 26.
DESIGN STUDIO

Design is a fundamental component of architecture degrees, and the teaching of design is regarded as central to architectural education. The design studio profoundly characterises architectural education, and distinguishes it from many other pursuits in higher education. This is reflected in the amount of time devoted to design studio within the curriculum and the wider cultural emphasis placed on design. The prominence and familiarity of these ideas mean that ‘studio’ appears to be very widely understood within the architectural community. Nonetheless, the current research found significant variation among descriptions of studio across architecture programs. The last decade has seen substantial changes in the way design studio teaching is delivered, the resources allocated, and the spaces in which this occurs. These topics are discussed in further detail in Chapters 5 and 6.

Design knowledge is often produced and conveyed within communities of practice, and experiential learning plays a significant role. It is considered crucial for students to develop and become familiar with design processes through working on design projects, critical discussion, reflection and enculturation. This incorporates studio spaces, studio-based teaching methods and ‘crit’ processes through which student work is critiqued and commented on, both at the desk, and in public design juries. This hands-on approach is partly a means to encompass the highly varied range of approaches, processes and outcomes encompassed by architectural design.9

The traditional model of design studio teaching involves one-on-one sessions with an experienced designer who provides guidance on the student’s project in a shared environment. Between sessions, the student reflects and works on the design project, preferably in the shared studio space where students can support each other. The amount of time per session and time between sessions also allows for the maturation of design as a skill. Experienced sessional staff, time allocations and appropriate facilities are essential to effective delivery and student learning. Many architects and academics taught using this model have very fond recollections of the intensity of their education, and a heartfelt commitment to this model of teaching.

Research by a number of authors suggests that design studio teaching is often based on personal approach and values, including the tutors’ experiences of their own design education, rather than being informed by educational theory and an understanding of how students may learn.10 Some commentators observe that this emphasis on personal experience means that design studio teaching appears to resist or be slower to evolve alongside changes in teaching practice, especially those wrought by technology.11 Research by Louise Wallis suggests that architecture academics tend to maintain traditional teaching methods and habits until they are no longer viable.12 Nonetheless, the nature of the design studio has changed substantially in many institutions over the last decade. At the same time, studio-based teaching models are also being adopted by other disciplines, but this is not always known or understood by academics in architecture and practitioners.

The traditional form of studio has been loosening and changing for some time. In 2018, few schools have individual studio spaces allocated to students, and studio time and resource allocations have been compressed. Teaching processes are shifting towards group teaching and away from the intensive one-on-one tutorials. The way students engage with studio spaces has also changed – even for those few institutions that maintain individual spaces. Interviews with heads of schools demonstrate that the commitment to design studio remains strong, but the way in which this is delivered is changing. See “Teaching design studio” in Chapter 5 for more detail.

THE “RIGHT BALANCE”

The “right balance” of skills and subjects was a consistent theme for both academics and practitioners in the short answer responses to the surveys. However, the idea of balance meant different things to different groups. For academics, this referred to the sense of being able to do a good job in teaching architectural education. They often reflected on the difficulties associated with a lack of resources (time, space and staff) and concerns about the quality of student engagement (attendance, commitment and language problems), which could act as barriers to the depth of learning.

Practitioners referred to the “right balance” of educational areas and practical work-ready skills. From their perspective, some subjects taught in schools were becoming too abstract and some of the basic skills were being neglected. As one survey respondent explained, there is a concern that the fundamentals are not adequately covered.

SUBJECT AREAS

Both academics and practitioner survey respondents were asked a series of questions about the importance of specific subject areas and skills. The 13 nominated areas were: design studio, architectural technology, design communication, architectural history, environment/sustainability, architectural theory, urban studies, professional practice, electives (architecture discipline), Indigenous studies, project and/or construction management, law/business/economics and electives (non-disciplinary). Respondents were asked to rate these on a 1 to 5 Likert scale – from ‘extremely important’ to ‘not important’. (Figure 4.1)

Design communication had the closest alignment between continuing academics, sessional staff and professionals, with the pattern of responses and the average being very similar. Practitioners valued design technology slightly less than academics as a whole, and less than continuing academics. This is inconsistent with typical short answer responses elsewhere in the survey. (It may have resulted from confusion with nomenclature and what is or not included in this educational area.)

Design studio was identified as extremely important by under half of practitioners and over three-quarters of the academics. This is consistent with short answer responses from practitioners. In general, practitioners rated most subject areas lower than academics did. The least-aligned area of importance was project and/or construction management, with practitioners considering it of much higher importance than academics. Practitioners also rated professional practice and law, business and economics more highly. (Appendix B2) On average, Australian practitioners rated these professional practice areas slightly higher than in New Zealand. There was little variation between age cohorts among practitioners, with the exception of architectural history, which the older age groups consider slightly more important than the younger.

The priority of subject areas is generally similar in 2018 and 2007, with some slight variation in the ordering of some of the subject areas. New areas were not considered as important as more traditional areas in 2018 – these include urban studies, Indigenous studies, project and/or construction management, and law, business and economics. Urban studies was rated more important by continuing academics in Australia (4.0) than by their counterparts in New Zealand (3.6) (Appendix Table B2–1). Practitioners from both countries averaged the same value of 3.6.

Losing sight of the essence of the profession. Changing technologies do mean our processes need to evolve to utilise a new set of tools. However, our approach to developing a design response, problem solving and communication remains the same. Let’s make sure we are teaching the fundamentals. Practitioner survey respondent

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13 At least one practitioner explicitly stated that they did not know if this included construction and/or computer aided design.

14 Architectural technology, design communication and professional practice have all risen in importance from 2007 levels; however, for some of these subjects, changes to the nomenclature could possibly have affected results. Architectural technology was previously referred to as construction technology, and design communication as communication and presentation.
### Figure 4.1 Importance of areas of architectural education

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- **Legend**:
  - Red: Academic ongoing
  - Blue: Academic casual
  - Gray: Profession
GENERIC SKILLS

There is more agreement between academics and the profession in relation to the importance of generic skills, and every skill has increased in importance since 2008. (Figure 4.2). Critical thinking and problem solving rate as extremely important across the board, and as high as design studio. Communication (verbal and written), time management and collaboration also all rate reasonably highly. While there is general agreement on the importance of these skills, how they are taught is a more difficult question and one that has vexed academia and the profession for many years. This is discussed later in this chapter.

Collaboration/teamwork is clearly valued by both academics and practitioners, with academics increasing the value they place on this skill. (This jumped from 4.2 on the Likert scale in 2008 to 4.6 in 2018; Appendix B3–2). The need for effective collaboration skills is amplified by the trend to adopt a “transdisciplinary” approach to educating future architects, as a means of ensuring architects will be included in future teams solving complex problems involving ecology, economy, culture and technology.\(^\text{15}\) The challenge will be to provide sufficient opportunities for students to become familiar with the dynamics of working in teams, including working with other disciplines in authentic ways.

One way to achieve this is through “live” projects, design/build and community design studios. A number of universities run such programs, but general barriers to collaborative and transdisciplinary opportunities persist within higher education.\(^\text{16}\) These include curriculum, timetabling, cost and the limit on the size of the class.

\(^{15}\) Salama, Spatial Design Education, 323.

Ostwald and Williams identified the need for research into teaching and assessing teamwork in 2008, while Wilson and Zamberlan argue for the importance of collaborative creativity and the need to incorporate this into university assessment. Research by Tucker et al. provides a detailed description of the components influencing the success of teaching and assessing teamwork skills with case studies based in an Australian context.

There is some difference in the valuing of generic skills between Australia and New Zealand, along with differences in opinion between continuing academics, casual academics and practitioners (Table B2–3). Of all the generic skills, entrepreneurial/business is considered to be of lower importance; however, it was valued a little more by practitioners than academics, particularly in New Zealand.

### TECHNICAL SKILLS

The valuing of technical skills reveals much more variability between academia and the profession (Figure 4.3). There is general accord about the top two skills – digital modelling and freehand drawing/drafting, with drawing skills ranking a close second to digital modelling. Drawing is valued more highly by older cohorts, with the average steadily rising from 3.8 for the youngest age cohort to 4.3 for the oldest. The converse was true of digital modelling, with an average of 4.5 for the youngest group dropping to 4.1 for the oldest.

![Figure 4.3 Importance of technical skills](image)


18 Richard Tucker et al., Enhancing and Assessing Group and Team Learning in Architecture and Related Design Contexts (Sydney: Office for Learning and Teaching, Department of Education, 2014).
Architectural education and the profession in Australia and New Zealand

Comments from the academic focus groups reveal a number of relevant issues. Research expectations are considered unclear when compared to teaching workload and many find it difficult to manage and quarantine one day of the week for research. The current research measurement focus on income and outputs are challenging, and better suited to science and engineering. It is difficult to compete in this environment – and success partly depends on the college or faculty in which the architecture program is situated.

EMERGING CURRICULUM

Research participants were also asked to identify emerging areas of study important to the future of architectural education. In response a quarter of the practitioners detailed consolidation of the “basics” rather than new areas for study. New subject areas were suggested by 14% of respondents. These include property development, urban design, heritage conservation, adaptive reuse, health and well-being design, facade detailing design, crime prevention through environmental design, biophilic/biomimicry design, aged care, humanitarian design, design management, and climate resilient design and sustainability. Some areas identified are existing specialisations, such as urban design and landscape architecture.

Future and current digital technologies were the most commonly noted emerging areas for study – with 44% of academic and 33% of practitioner comments alluding to these fields. Some respondents suggest that a solid understanding of computation and coding would be a shrewd investment for future architects. Related areas included artificial intelligence, and artificial reality (including augmented and virtual reality). The potential for physical fabrication and prefabrication was also discussed, along with new materials and construction methodologies such as automation and robotics. These were also noted for their effect on procurement processes.
Building Information Modelling (BIM) was the most commonly mentioned emerging technology (15% of practitioners). To some extent this relates to the call for greater practical building knowledge. More importantly, it has potential to integrate multiple aspects of buildings and construction processes, including collaboration with consultants. Another 6% of practitioners and some academics described the need to come to grips with big data and data management, particularly in relation to smart cities and smart housing/buildings.

The arch industry (in my opinion) is getting disrupted on many levels – need to understand these disruptions – new methods of delivery, construction, design, robotics, AI, automation, etc. Practitioner survey respondent

Further suggestions point to the changing context of procurement and the shifting role of the architect within this. Some respondents identified procurement systems such as novation as one of the means though which architects have been sidelined in the construction process and pushed out of their traditional fields of expertise. To counter this, a small group of respondents [around 1% of practitioners and 3% of academics] suggested students be taught procurement, while 3% of practitioners suggested the teaching of “new” specialisations to target these areas.

Social responsibility, identified by 33% of academics and 26% of practitioners, focuses on the future of the discipline from an ethical standpoint. Sustainability and resilience were most commonly mentioned, while some also argued that skills in collaborative design and advocacy and engagement with communities were critical to the future of the profession. A smaller group of respondents mentioned the importance of Indigenous communities and traditional ways of thinking about, interacting with and regenerating the environment. Of particular note was an emphasis on social science – ranging from psychology and politics, to sociology and anthropology, ethics (social justice), and social sustainability.

A small group of respondents simply spoke of the ‘shock of the future’ and the need for an architectural education to prepare graduates to be resilient, flexible and adaptive (3%).

In light of the current rate of sociological, societal and technological change, combined with the changing role of the architect, academies should focus on big picture thinking, design and design theory, history, society, etc. Less emphasis on the specifics of practice, construction technology etc, which vary dramatically in place and time and are best understood through applied learning. Practitioner survey respondent

This wider view of what architectural education should and could be doing seems to stand in direct contrast to calls by other practitioners for more focused practice-oriented education, as discussed in Chapter 7. Yet both are concerned with equipping students with the skills and knowledge to handle whatever might be facing them in the future.

CONCLUSION

The traditional framework of architectural education – centred on design, history/theory, technology, communications and professional studies – remains broadly relevant, but substantial change has occurred in how courses are structured and education delivered. This is continuing to develop, often in response to external changes and resourcing pressures. The architecture curriculum must also continually evolve and adapt to include emerging and developing subject areas, such as new technologies, research skills, environmental sustainability and social responsibility. It must also respond to new disciplinary knowledge and the changing roles of architects and the broader profession. An ongoing focus is getting the "right balance" between the practical and the conceptual, among a broad range of subject areas, and between diverse skillsets.

The fast-changing nature of the profession, along with broad and rapid environmental, technological, economic and social changes means that ‘soft skills’ such as critical thinking, collaboration and problem-solving skills are increasingly highly valued.
ACADEMIC AND STUDENT EXPERIENCES

Academic and student experiences provide an important lens on architectural education. In this study, both groups expressed significant commitment and were generally passionate about the opportunities in architecture. There is a reasonably high level of job satisfaction among academics, and students were generally pleased with their decision to study architecture. However, both groups also flagged ongoing challenges with workload, class sizes, assessment and other resourcing issues.

Academics describe some of the key challenges for architectural education in terms of conceptual challenges of teaching architecture in all its nuance and complexity. This is not positioned as a negative, but practical constraints compound the challenge – for example, reduced resourcing, shortened timeframes in which to deliver the curriculum, and the reliance on a large sessional workforce. Challenges identified by students are dominated by concerns related to workload, the strain of balancing study and work, living costs and the expense of studying architecture, and worries about employability.

This chapter documents the experiences of ongoing academics, sessional teachers and students. It considers the job satisfaction of academics, the challenges of teaching architecture, changing patterns of student engagement, the connection of research to teaching, and the experiences of those studying architecture.
ACADEMIC EXPERIENCES

An understanding of the experiences of those teaching architecture is drawn from two groups, those in ongoing academic positions and those teaching sessionally into architecture programs. Experiences vary between these two groups, and there are some notable differences in responses from continuing academics and sessional staff. These warrant further consideration, particularly in terms of the support provided to sessional staff, and communications with them.

JOB SATISFACTION

Continuing academics were surveyed on job satisfaction and asked to rank their experiences in six areas in response to specific statements, with options ranging from ‘strongly agree’ to ‘strongly disagree’. This group expressed a reasonable level of satisfaction overall (at the top of the ‘agree’ range). They were particularly confident in their ability to make a positive difference to students, and generally agreed that there were good opportunities for professional development and advancement, and reasonable support services in place for those experiencing personal or professional difficulties. (Figure 5.1) Experiences of leadership and direction by university management were more mixed. Half the respondents agreed that appropriate leadership was available, but it is notable that almost one quarter of respondents disagreed with this proposition, and another quarter were neutral. The lowest levels of satisfaction related to the provision of adequate staff resources. Half the respondents felt that staffing levels were not at a sufficient level to meet the demands of the program, and another quarter were neutral on the subject. The topic of resourcing challenges was reiterated in the discursive comments and in the practitioner survey. This is discussed in more detail in Chapter 6.

Overall, the impression is of a group who enjoy their work and feel they are making a worthwhile contribution, but a notable proportion struggle with the logistical challenges associated with inadequate resourcing and some feel there is a lack of leadership.

Figure 5.1 Continuing academics’ job satisfaction
CHALLENGES IN TEACHING ARCHITECTURE

The challenges of teaching architecture were explored through two open-ended questions posed in the academic survey. The first question asked all respondents – ongoing and sessional – to reflect on the most significant challenges related to architectural teaching and learning, based in their experience. Responses fell into three main groups: general matters associated with teaching architecture, including the complexities innate within the discipline and changing teaching methodologies; curriculum-based challenges; and resourcing problems. Sessional staff also identified challenges associated with student engagement and language and communication. Ongoing academics did not raise these issues, suggesting that there may be a need for more support of sessional staff in this area.

The second question asked ongoing academics to identify the most significant issue faced by their institution regarding design studio courses in particular. Two distinct themes emerged – resourcing and quality.

The complexity of architecture

A range of commentary identified architecture itself as a particular challenge in terms of teaching and learning. It’s a subject area that has a full and complex disciplinary history and culture, and a significant role as a professional practice – which is itself seen as being in a state of rapid change with an uncertain future. Another complexity that enriches the discipline and presents potential challenges for educators is the conjunction of theoretical understandings, hands-on making and drawing, and digital technologies. Navigating between and among these complexities and tensions is at the core of architectural education.

Respondents also referred to the difficulties of achieving real-world connections to practice, and of students “learning how to face and adjust to uncertain futures, and how to coordinate the broad range of knowledge that continues to expand” required for architectural practice”.

Bridging the gap between university and practice was a particular concern for continuing academics. One respondent described this as “balancing the technical requirements of the industry with teaching students design skills and critical thinking”. Another spoke of the “disparity between the theoretical and critical needs of architectural education and the reality of industry and practice”.

There needs to be a greater connection between the ‘ideas’ of design in the academy and the potential for ‘ideas’ of practice. Academic survey respondent

The conceptual challenges of teaching architecture in all its nuance and complexity, and as a discipline and a practice, are compounded by practical constraints – reduced resourcing to do the work, and shortened timeframes in which to deliver the curriculum. A large number of responses told of reduced time for teaching and growing administrative workloads; others spoke of content overload or the loss of content. These resourcing issues are discussed in detail in Chapter 6.

For respondents from some universities, growing class numbers were also associated with lower entry requirements, and there was a belief that the “ATAR entrance scores should be made higher”. One person suggested that a solution might be found in the structuring of the curriculum: “the provision of more independent, critical thinking and design-oriented tasks in the earlier years to develop these abilities in students whose secondary education has been more focused on satisfying prescriptive curricular requirements”. For others, “the standard of basic reading, writing and mathematics” was an impediment to teaching.

Technology and learning

Changing pedagogical models and teaching methodologies also presented difficulties for some respondents, with conflicting teaching ideologies and the loss of face-to-face contact that can accompany the adoption of digital teaching models.
Teaching in the contemporary university often includes an increased focus on blended learning or "flipped classroom" models, where technology enabled learning facilitates multi-modal delivery. This means that students can access learning online in the form of short video lectures, combined with other web-based resources. Attendance on site at university involves active targeted studios or workshop classes. Most Australian architecture programs have been exploring and implementing e-learning as a part of their delivery, with significant developments being mandated or encouraged by university policies over the past decade. Curtin University has developed an online architecture course, which became an accredited course in 2018.

To date, little research has been published or disseminated on the performance of these approaches, although technology enabled learning was the focus of an Association of Architecture Schools of Australia invited symposium and workshop in 2017. Academics surveyed were concerned about the impacts upon student engagement – in particular, the potential for universities to shift to e-learning for financial reasons and to increase flexibility of delivery, without considering its appropriateness for the different learning activities involved in architecture and design. While this model may enhance the quality of face-to-face teaching time, the concomitant push for ‘efficiency’ in many institutions has translated to less face-to-face teaching time for many on the ground.

**Student engagement and skills**

Another significant challenge experienced by those teaching in architecture programs was student engagement, or its lack (29% of respondents). The Ostwald and Williams study also identified student engagement as an ongoing concern a decade ago, and it continues as a common theme in architectural education literature. It has also been identified as an issue for higher education more broadly. In the context of this study, however, it is important to note that the majority of these responses came from sessional teachers who felt that the levels of student participation and/or motivation were not as high as they should be. Difficulties identified include the following:

- **Students’ time away from university – they mostly work 2–3 days and have a very compartmentalised approach to University, out of necessity, but detracting from an immersive experience.** *Academic survey respondent [sessional]*

- **Engaging the students in the design of anything beyond the architectural concept. Building technology, thermal comfort, sustainability, safety, etc. are not their concern. This originates [from] the extremely poor building quality in Australia.** *Academic survey respondent [sessional]*

In contrast, continuing academics identified the gap between university and practice, and lower entry scores as more significant concerns. This difference in perception of engagement may be a result of sessional staff teaching into discrete courses, rather than into the context of the full program. They may also be comparing the student engagement to the recollections of their own education. This perception of lack of engagement, and particularly the contrast between the impressions of continuing and sessional staff, warrants further consideration by universities.

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Language and communication

Language and communication is another area that revealed substantial differences between the experiences of sessional staff and those of continuing academics. Sessional staff identified language problems with some students for whom English was a second language. By contrast, few continuing academics nominated language problems as a significant challenge. These problems were seen to be exacerbated by increasing class sizes, declining contact hours and reduced support services.

These responses suggest that some sessional staff need greater support to work effectively with international students. For example, increases in tutorial class sizes and the proportion of international students may mean educators can no longer rely on past studio peer techniques for learning. The findings reinforce the need to recognise different student backgrounds and skills, to support those experiencing language challenges, and to explore effective teaching methods.

A recent study of linguistic and cultural barriers experienced by international students in Australia offers some suggestions.4 This study involved students responding to a short design problem. It found that having a different culture, language and value structure impacted on learning, and the authors suggest that limitations in English language skills tended to guide students’ design thinking towards pragmatic elements. The report made a range of recommendations, many of which describe good learning and teaching practices that are explicit and structured.

Challenges identified by Australian survey respondents mostly relate to the variable English language skills of international students. The perception that language skill thresholds are too low for a profession that requires high communication levels was expressed in the academic and practitioner surveys and the focus groups, although the evidence for it has never been convincingly established. Other comments claim there are lowered entry and passing standards or point to the unfair treatment of those international students who are poorly supported.

Teaching design studio

Design teaching has long been regarded as central to architectural education, and is firmly embedded within the broader culture of architecture. Design knowledge tends to be produced and conveyed within communities of practice, and experiential learning plays a significant role. Students develop design skills through critical discussion, reflection and enculturation.5 Previous research suggests that design teaching methods are often based on personal approaches and values, rather than being directly informed by an understanding of how students learn.

Academic focus groups held in Australia and New Zealand indicated that the content and method of design teaching has not changed substantially over time, but the tools, technology and resources for this teaching are changing. Two overall themes emerged in the responses from ongoing academics to the question about specific issues facing their institution regarding design studio – resourcing and quality.

Resourcing issues

Resourcing was identified as an issue by 56% of respondents. Challenges identified include time, human resources, availability and timetabling of physical teaching spaces, class sizes and overall enrolments, and pressure on the teaching budget.

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4 Ning Gu, Michael J. Ostwald, JuHyun Lee and Maria Roberts, Developing Pedagogical Solutions to Linguistic and Cultural Barriers in Design Education Supporting Asian Architecture Students (Canberra: Office of Learning and Teaching, 2018).
Concerns about the restricted time available to work with students, raised in the 2008 study, were reiterated in 2018. Constrained time allocations can detract from small group teaching practices, which are often at the core of design studio, and rely on working with students individually and in groups to explore and challenge the proposed design outcome and the process of designing.

Resourcing concerns coincide and overlap with an increase in centralised systems and an associated reduction in autonomy. A substantial group of survey and focus groups participants pointed to the impact that this has on studio teaching.

[One challenge is] providing enough time with each student to critically analyse the student’s work and provide support for furthering a student’s work.  Academic survey respondent

Support from above seems to have evaporated and the hoops have increased; Risk aversion is increasing; Health and safety is an issue for visiting building sites, [making them] increasingly difficult and onerous. Academic survey respondent

Universities compliance [expectations] on learning and teaching, increased levels of fixed requirements to specify rubrics, description of units of learning, can be up to 100 pages online prior to unit beginning. You cannot change from the approved program, extensions managed external to the academics – the ‘legislative nature’ of delivery learning. Concerns that it does not serve students well in learning as they are “spoon fed”.  Academic survey respondent

Issues of quality

The second large set of responses related to design studio can be grouped under the theme of ‘quality’ [51%]. Concerns included some students’ attendance and engagement in design learning, along with a lack of preparedness for university exhibited by some. For example, one academic survey respondent referred to the “large gap in capacity between high achievers and pass-level students”. Quality issues were sometimes bound up with resourcing. For example, concerns were expressed about the quality of the time available to engage with students, access to experienced sessional staff, and the capacity of ongoing academics to support sessional staff in terms of teaching practice and assessment parity. Survey respondents and one academic focus group pointed to the difficulty of finding and attracting qualified and experienced tutors. The availability of practitioners has long been affected by the demands of economic and construction cycles, but these responses suggest there are now additional factors including remuneration (the rate of pay has halved in some programs), contact time, and the size of the tutorial group.

Quality assurance across many vertically integrated studios, often staffed by sessional professionals with little formal training in teaching and learning. Academic survey respondent

Budget constraints, a lack of trained teachers (industry professionals often do not have any formal teaching training) and this results in hit and miss teaching outcomes. Academic survey respondent

Assessment

Assessment is a key part of learning and teaching, and different assessment models can have a significant influence on a student’s approach to learning. However, this research project has not identified conclusive trends in relation to assessment and only a small number of participants raised assessment as an area of concern.

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The 2008 Ostwald and Williams study identified concerns about the push to introduce procedures and documentation to provide a level of objectivity around assessment. These concerns did not reappear substantially in the current study. Existing research into assessment in architecture education is primarily focused on the processes of design critique – the ‘crit’ – and the design jury. These processes received little comment in this study in relation to assessment, suggesting that they are accepted as the status quo. Despite the small amount of material, it is worth reflecting on the topic briefly.

The comments made in relation to assessment return to the question of time and resources. The reduction of time available was a concern, as was the increase in student enrolments, with less time to assess, provide constructive feedback and to clarify the veracity of the work.

Some practitioner focus groups expressed concerns about how students are passed or failed, and one respondent connected this to an increase in pressure to pass students:

- Marking time is underestimated and places a large impact of stress on academics who teach more than one subject. **Academic survey respondent**

- The stripping of funding from universities – resulting in sessional staff teaching very significant numbers of students, contact and marking hours being insufficient to get the best. **Academic survey respondent**

The experience outlined above may relate to increasing pressure in the university sector to improve pass rates and increase the retention of students, as key indicators of quality learning and teaching. Both Australian and New Zealand government policies require such metrics and this may impact on assessment processes in some institutions.8

Those teaching architecture are also regularly assessed through surveys conducted by universities to evaluate courses and teaching quality. These evaluations were not raised in this study, but other research suggests that these processes are very susceptible to bias. The performance of individual academics, the program and the university reputation rests upon these processes.9

Student engagement

Student engagement explored in this study covers a wide range of factors, including students’ ability to manage multiple commitments, attendance and preparedness for university. These were canvassed through the survey of ongoing academics and via academic and practitioner focus groups.

In the survey, ongoing academics were asked to express their agreement or disagreement with a range of statements related to student engagement, using a five-point Likert scale. The highest high level of agreement, scoring a 4.05, was that “Students often have challenges integrating study with work and...”
other commitments”. Respondents also agreed that the “limited academic preparedness of students” had led to more time spent on basic skills in first year (3.7) and that the increased proportion of international students required more time commitment from staff (3.6). Fewer academics agreed with the statements about students feeling their workload was too high (3.5) and respondents only somewhat agreed that student absenteeism was a problem in their classes (3.3).

The Ostwald and Williams study of 2008 also asked questions about workload and the impact of absenteeism on individual learning. This found a lower level of agreement about workload complaints (3.0 in 2007 as compared to 3.5 in 2018). The 2008 question about absenteeism was different to that posed in 2018 – it related to its impact on student learning, and found a higher level of agreement (4.3). The earlier study also made the overall finding that the efficacy of the design studio in many architecture schools was undermined due to a lack of student commitment.10 (Appendix Table B3–5)

The shift in opinion about absenteeism may be a result of the change in question [from impact on individual learning to being a problem “in my classes”). However, changes in teaching delivery could also have an impact, as classes now require different types of engagement. There is greater flexibility for students to access lectures and resources online, and this is complemented by more targeted face-to-face contact through tutorials or workshops. This suggestion is backed up by the findings of two recent studies, which report that student engagement levels have improved with changes to teaching delivery and the quality of their learning environment.11

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**Figure 5.2 Academics’ experience with students**

Student engagement was also discussed in the academic focus groups. Here it was generally acknowledged that most students have some form of employment during their studies. An increase in student anxiety problems and the impact of poor English comprehension from some international students were also discussed.

Practitioner and academic focus groups discussed the value of students working part-time in an architectural practice during their studies. Though perspectives varied, on the whole practitioners were more likely to be supportive. A minority, however, indicated that they thought it was important for students to be engrossed and involved in student and university life, as it was a unique opportunity to form friendships and networks, and to become a well-rounded person. Both practitioner and academic groups spoke of a reduced level of student commitment to, or even confidence in, architecture, the built environment and sustainability. There was concern about the lack of involvement in extra-curricular activities and public lectures, which were sometimes better supported by practitioners. There was a general grappling with how to connect with the younger generations to ignite their enthusiasm.

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10 Ostwald and Williams, Understanding Architectural Education: Vol. 2.
Research and professional engagement

Research is a critical part of an academic’s job, with government funding and university promotion processes emphasising research outputs. Ongoing academics were canvassed about the types of research they undertake. Perceptions were captured through responses to a series of statements about research, with options ranging from strongly disagree to strongly agree on a 5-point Likert scale. These included the perceived importance of research and qualifications to career progression, the significance and valuing of design-based research, and the relationship between research and practice. (Figure 5.3) While these questions were somewhat different to those posed in 2007, equivalent questions received mostly similar answers. Research is seen as critical to career development, as is holding a PhD. Design work is identified as a form of research, but the perception persists that this is not as highly valued as traditional research modes.

There was a marked shift in responses to the statement that research should be linked to practical problems. In 2018 this scored 3.2 on the Likert scale, compared to the 2008 rating of 2.2. This suggests a developing interest in researching issues that arise in the context of practice. A separate question asked academics how important it was to be involved in research collaborations, consultancies and other engagement with the profession. The average response was 4.0, marking it as very important. These results appear to indicate an interest to engage substantively with the profession.

In terms of research methodologies and outputs, traditional scholarly work resulting in books and journal articles was most common, followed by design-practice-as-research. Nearly half the respondents also worked as consultants producing reports and other publications.

The surveyed academics were involved in a wide range of external engagement. Committee or board service was the most common activity, and a significant 44% were engaged in architectural practice. More than a third had contributed to social media in a professional capacity.

In terms of professional development activities, the overwhelming majority of academics read both academic and practice publications, around two-thirds attended academic conferences and seminars, and around half attended industry conferences and/or undertook field trips or study tours.
STUDENT EXPERIENCES

An understanding of student experiences was explored through focus groups with students held in four Australian capital cities and at the three accredited programs in New Zealand. Students were not invited to participate in the surveys, although some appear to have contributed to the practitioner survey. Focus group discussions covered a range of issues, with a particular emphasis on workload.

BACKGROUND

Student experience in Australia is monitored by both universities and the federal government through unit and course surveys. In 2008, architecture students rated their experience poorly compared to other subject (discipline) areas. In the intervening decade, experiences of studying architecture, as measured through these surveys, have slowly improved.

The quality of the student experience is also a common theme repeated in education literature over the past four decades. A number of studies have investigated the implications of the design studio pedagogy on student learning, especially processes of public critique (the ‘crit’), studio culture and the idea of the hidden curriculum – that is discipline norms that are not clearly articulated within learning frameworks, but which impact on disciplinary education.

A common finding across these studies is that students may adopt a passive or compliant approach in response to instruction and critique, which can negatively impact their learning experience. Creating competition among students as a means to improve the quality of the overall work produced has also been shown to have some negative impacts on students’ health and motivation to learn.

SUBJECT AREAS

All student focus groups emphasised the importance of the design studio in their architectural education. Two focus groups suggested that there was greater potential to incorporate other subjects into the design studio learning. Another focus group referred to alternative studio models such as live projects or final year projects occurring in an office setting as a good example of how to make studies more engaging. Students’ approach to technical and practical skills typically appeared to relate to the culture or value that the school gave to work readiness.

WORKLOAD

The heavy workload of architectural study was the main issue identified by students in the focus groups. Experiences of this pressure were mixed. Some students identified it as part of a competitive student culture and commented that some teachers try to discourage it. Other students felt that over-work was established as a cultural norm in first year or first semester of study.

Students reported feeling pressure to work all night on projects in the lead up to the end of a studio project. Some architecture schools have sought to discourage all-nighters, and encourage better student time management and meet the university’s duty of care. One technique to address this is to limit all-hours access or to close access at 11pm or earlier. However, some students pointed out that this created other problems. Towards the end of semester, restricted hours can increase pressure on facilities already in high demand, such as 3D-printing, laser cutting and large format printers. This can,

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in turn, increase the stress on students trying to complete projects. One survey respondent expressed intense frustration at contradictory requirements and an apparent lack of understanding of the conflicting commitments experienced by some students:

They’re advocating for ‘work/life’ balance for students. Except we’re all trying to hold down part-time jobs in order to pay rent and buy food, and then we’re not able to work on specialised computers or make models because we’re kicked out from our spaces… Oh, and we all live in [tiny] apartments, so there’s no room to make a model at home. It’s utterly ridiculous and the people in power … come from the era of free tertiary education, low rent, the actual potential of owning a home, and none of the financial impossibilities that new-age students face. Practitioner survey respondent

Efforts to discourage overwork and poor work habits need to involve cultural change – often among both students and those teaching them. Restricting access in isolation from the more difficult and thorough project of cultural change is unlikely to be effective.

LIVING COSTS

Most student focus groups discussed the impact of the high cost of studying and living, as did academic and practitioner groups. The expense of materials was also a subject of discussion. Some students pointed out that these seemed excessive in some studio options, and this could prevent students without resources from achieving their best. Costs can also vary between schools, and in some all materials were free.

Many students work part time in order to survive. However, the student focus groups also explained that many teachers emphasise the need to spend long hours studying and suggest that students with a full-time load should not have a part-time job.

Students described a variety of responses to competing demands of work. Some domestic students elected to enrol part time to help even out the time demands of architectural study. Another tactic is to take advantage of electives offered during summer or winter breaks, or trimesters, to lighten the workload in normal semesters, but this strategy can be affected by the electives available to be selected.

For some, multiple priorities were stressful. A recent masters graduate explained that they felt they had compromised everything, being unable to perform as they wished across work, study and family.

I felt like no-one was happy with me. Employers were unhappy as I spent 2.5 days at uni. Uni was not happy as I spent 2.5 days at work. My parents were not happy as they didn’t see me… It is difficult to balance. I don’t know what to do… It is like, jump another hurdle. Practitioner survey respondent

International students had fewer options if their visa conditions required full-time enrolment. Studying full time and working part time places a heavy strain and stress on these students. One spoke of the fear of receiving the mid-semester warning letter of risk of failure. As an added difficulty, desperation for an income can mean that these students accept being paid under the minimum wage. Another student, who wore a hijab, expressed concern about prejudice and racism from Australian employers. She asked if it was true that Australian employers may prioritise white males, then white females, then coloured males and then coloured females.
Survey respondents and student focus groups noted the high costs of studying architecture. The five-year duration of study, material and printing costs all contribute to the expense in addition to the high cost of living. High living costs particularly affected those in Sydney, Melbourne and Auckland. Academics noted that students were increasingly travelling from the periphery of large cities, resulting in long commute times and less attendance on campus. In contrast, the University of Tasmania’s school gains enrolments from those attracted to the lower living costs of Launceston. Coupled with relatively low (for the length of study) salaries for graduates, the expense of study may be deterring those from lower socio-economic backgrounds.

In New Zealand those studying a Masters program are not eligible for the student allowance, which creates an additional financial burden. The negative impact is likely to be felt by those from lower socio-economic groups. Some graduates felt very strongly about this issue:

My perspective is coloured by my own experience. I found it difficult to find time to live a balanced lifestyle, given the financial constraints of earning enough to buy food and pay for rent in cities such as Sydney and Melbourne, [which also] precluded my eligibility for government assistance. Other students who had support from their parents were not only eligible for government support; they also had more time to dedicate to their studies. It seemed that the ones who needed help more were those who were discriminated against.

Practitioner survey respondent

These concerns are not limited to Australia and New Zealand. High course costs and concomitant financial burden is also a subject of concern elsewhere – for example, student representatives in the UK wrote an open letter to universities about financial hardship in 2018.17

MENTAL HEALTH AND WELLBEING

The mental health and wellbeing of architecture students is an emerging topic in Australia and internationally. Surveys by the American Institute of Architecture Students, the UK Architects Journal and the Graduate Architecture, Landscape, and Design Student Union at the University of Toronto all indicate architecture students experiencing challenges with mental and physical health.18 Research into mental health across disciplines suggests that students from the humanities, and art and design are particularly susceptible to mental health concerns.19 Another UK study shows that the numbers of students responding with mental health concerns has risen from 2016 to 2018, across the greater university student body.20

The survey of architecture students in the United States attracted 1,343 responses from 130 schools in the US, and identified workload, cost, course duration and studio culture as contributing factors.21 The results show a culture of frequent stress linked to workloads, lack of sleep, and reviews and presentations. On average, students reported 5.7 hours of sleep during term with at least 23 “all-nighters” per semester (that is staying awake working past 2am) in addition to other unhealthy habits around eating and lack of physical exercise. More than 50% of respondents had contemplated abandoning their studies.
These surveys highlighting mental health concerns are complemented by a number of opinion pieces; however, there has been little detailed research on architecture students and mental health to date.22 At the time of writing, the research project Mental Wellbeing of Architects and Architecture Students: Culture, Education and the Workplace is under development by Professor Naomi Stead.23

EMPLOYABILITY

Australian students often discussed employability, while New Zealand students appeared to seem less concerned about this. The reasons for this discrepancy are not clear, and the sample size does not provide sufficient data to suggest a trend. The three NZ focus groups described three different cultures at the three programs. One group thought that their university was not about preparing them to be job-ready but to think and be creative. Another group expected that architectural practices would understand the steep learning curve for graduates entering the workforce, but thought more opportunities and experience would be beneficial. The final group explained that they were required to obtain significant hours of work experience for their undergraduate and postgraduate degrees.

Students also varied in their impressions about the value of working in an architectural firm during their studies. One focus group described the utmost importance of such employment, as the experience gained was a “polar” opposite to what they learnt at university. A group of international students indicated they were not concerned about gaining work experience in Australia. They understood they were unlikely to gain employment as they were only in the country for a short time and they had already gained architectural work experience prior to enrolling in their masters.

REGISTRATION

Student focus groups were asked about their likeliness to register as an architect in the future. Most responded positively, although some expressed concern about the associated pressures. Two young women were concerned that it may not be possible, particularly if they wanted to have a family. One group took this question as an opportunity to question the lag of practice compared to their education and the possibilities of parametric design.

OTHER ISSUES

Students were also asked about ‘other issues’. One consistent topic across a number of student focus groups was the need for more instruction in using various computer aided drafting (CAD) programs and other software. Many universities do not teach this as a core part of learning and students typically thought this was problematic. They felt that it was important to have the correct foundations for practice. Other topics were locally focused and did not correlate across different locations and issues. These included: timetabling, concerns about senior students tutoring and marking first year students, suggestions that tutors need to be paid more so that they would mark properly, sessional tutors being unapproachable outside class time, the desire for more opportunities to connect with engineering or town planning students, and greater application of professional practice.

CONCLUSION

The study emphasised the high levels of commitment from students, continuing academics and sessional teachers, but also identified many stresses. While enjoyment of the work among academics remains reasonably high, they are hampered by a number of challenges within universities, largely driven by limited funds and resourcing.

Students are not immune to the pressures of a rapidly changing educational landscape and profession, and are also challenged by the need to combine paid work with their studies in order to meet the rising costs of living. The student focus groups revealed the difference between programs and the culture of schools in relation to facilities, curriculum and accessibility. This is a change from the 2008 study, which identified an increasing similarity between programs. Students were highly sensitive to the access and additional cost of their studies. With paid work almost a necessity for most students, the difficulties associated with this are compounded for international students who cannot easily modify their load as domestic students can.
The availability and allocation of resources has a significant impact on the delivery and quality of architectural education. The question of adequate resourcing was raised by a high proportion of participants in this study, with extensive commentary from continuing academics, sessional teachers, students and practitioners about the challenges of providing a high quality education with a diminishing pool of resources to draw from.

Four areas of resourcing are examined in this study – staffing, space, amenity and time. The first three were also identified as areas of concern in the 2008 Ostwald and Williams report. In 2008, staffing numbers were seen as the main issue (42% of respondents), followed by studio space (25%), and then workshops and equipment (13%). Time was not discussed in that study, but it emerges very clearly in the current research.

Time pressures manifest in the compression of semesters, the reduction in contact hours, pressures on students who are also working part-time or meeting other external commitments, and pressures on academics combining research and administration obligations with teaching. The challenges associated with staff resources relate to the fact that the increase in students has not been matched by an increase in ongoing staff appointments, and the challenges associated with ensuring an adequate number of experienced qualified sessional staff.

Increasing centralisation of space allocations, timetabling and financial management appear to have had major impacts on teaching within architecture schools, and present a particular challenge to the traditional design studio format.

The current research reveals a shift in the way space is used in architectural education, particularly in the teaching of design. This is an outcome of a range of factors: the increased use of technology and associated mobility of students; decreased space allocations, particularly the reduction in individual studio spaces; changing teaching methods; and time pressures on students resulting from commitments outside of education. The nostalgia expressed by many respondents for individual studio space is not matched by contemporary patterns of use. Instead, the provision of dedicated space for permanent use by the architecture program – with provision for pin-up, and the capacity to change spatial configuration – emerges as the most significant factor.

Interestingly, most heads of school, while cognisant of the issues associated with resourcing, generally did not consider schools of architecture to be badly off in the wider university context.
UNIVERSITY RESOURCE ALLOCATION

Australian and New Zealand universities are funded from a range of sources, including national government domestic student grants, domestic and overseas student fees, government program funding (for example, for Indigenous programs or university infrastructure), research block grants (for example, grants allocated by formula), competitive research grants, and commercial/investment income. Each university is largely self-governing and makes decisions about how this income is divided between the university administration and the various academic units. There is a degree of fungibility in funding sources, which means that internal cross-subsidisation commonly occurs between activities. Participants in this project commented that research funding does not meet the full cost of research activities, and must be cross-subsidised from teaching funds or other sources.1 There is also often cross-subsidisation between faculties within universities.

Over the past two decades, university departments and schools of architecture have been placed under pressure by falling levels of national government grants and the resulting tendency of university administrations to centralise activities and facilities.2 Almost all of the heads of architecture schools interviewed for this study explained that architecture schools have limited agency over the process of resource allocation. Each university receives a certain amount of funding, which is calculated in relation to coursework student numbers (domestic or international), research degree student numbers, research outputs, and certain other activities. A proportion of the funds earned from the various sources go to architecture programs and a proportion is retained by university administrations for overhead costs associated with running the university as a whole, such as libraries, IT services, grounds and facility management, HR, student advice services, marketing and other services. The percentage of funds distributed and retained varies from university to university, as does the extent of centralisation/localisation of services, and the systems and procedures for allocating and distributing funds.

At the time of writing, a government freeze on the indexation of Australian Commonwealth Supported Places has been in place since 2017.3 The 2019 funding for a domestic student is $19,999, of which $9,359 is repayable by the student through the HECS system.4 Architecture is in a medium-cost HECS group, along with subjects such as maths, computer science and public health. It therefore receives less Commonwealth support than science, engineering, pharmacy, nursing and allied health programs. This means that once the central university component is taken out, an architecture school is likely to receive less than $10,000 per domestic student. In this context, it is worth remembering that the first recommendation of the 2008 Ostwald and Williams report was to lobby to shift architectural education into a more appropriate funding group.5 To date, any such lobbying has not been successful in effecting this change.

Financial issues permeate all university departments to some extent. The push for more students and research outputs from a fixed base of human and physical resources is sector wide. Some commentators describe this as improving productivity; others see it as running down staff and facilities.6

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1 Universities Australia, University research: policy considerations to drive Australia’s competitiveness, November 2014.
5 Michael J. Ostwald and Anthony Williams, Understanding Architectural Education in Australasia, Volume 2: Results and Recommendations (Sydney: Australian Learning and Teaching Council, 2008), 27.
RESOURCING ARCHITECTURE PROGRAMS

The findings of this study suggest that architecture departments in Australasia face particular resourcing issues that compound the sector-wide challenges outlined above. These can be categorised as educational, research and engagement, and administrative and facilities issues. They are summarised below, and examined in detail in the following sections.

Educational resources:

• Time compression in allocations for teaching and learning, particularly for studio
• High and increasing international student numbers in Australia, who may need more support than domestic students
• Apparent flat or falling domestic student enrolments at current entry-level standards
• Decreasing staff/student ratios
• Increasing dependence on senior/postgrad students and junior practitioners, employed sessionally, to deliver the teaching program

Administrative resources and facilities:

• Loss of architecture-specific studio and library facilities
• Loss of technical and administrative support staff
• Location of architecture in a medium-cost HECS funding bracket.

Research and engagement:

• Low rates of success in securing competitive research grants; concentration of success amongst those individuals and institutions that have already been successful
• Moderate levels of ‘world class’ research output concentrated in a few schools
• Difficulty for some schools in getting non-traditional research outputs recognised
• Mixed levels of enthusiasm or opportunities for commercial activities and partnerships

EDUCATIONAL RESOURCES

In the 2018 survey, academic respondents were asked three questions that elicited answers relating to resourcing. The first related to “the most significant challenge facing architectural teaching and learning”. Resource matters were nominated by 30% of respondents. (Some respondents argued that a single significant challenge cannot be identified, as learning, teaching and resourcing issues are entwined.) The second question asked respondents to identify “the most significant challenge to teaching and learning faced by your institution regarding design studio courses”. Resourcing was mentioned in nearly two-thirds of responses (64%). The third question asked about “any other issues affecting your work as an academic”. Resourcing was raised by 64% of respondents. Practitioners were asked the first and the third questions; 16% identified resourcing as the most significant challenge, while 22% identified it as an “other issue”. Resourcing matters were also discussed in interviews with the heads of architecture schools. Most did not think their schools were particularly disadvantaged in the broader higher education context. As one explained, “We would always want more resources, but it’s a function of costs of space and facilities and staff. And you can tip over on one and that creates problems in another.” Many staff did not share this perception of adequate resourcing, and some practitioners also expressed concern.

TIME

Time was the most pressing resource issue for 43% of respondents to the academic survey, and 20% of the practitioners. Time has two aspects in relation to educational resources: reduced study or education time for students resulting from the reduction in semester lengths; and time allowances for individual subjects. A third matter, time allocation for sessional staff, is considered in the staffing section below.

Semesters

In 2008, Ostwald and Williams noted that semesters had shrunk from 16 to 14 teaching weeks over the preceding 20 years, with a number of universities shifting to 12 weeks. By 2018, 12 weeks was the norm. This concerned some practitioners and academics responding to the survey:

It is hard enough to teach the core material in 14 weeks let alone reference/ integrating secondary material without the continuing deterioration of core subjects to time and scheduling opportunism. Practitioner survey respondent
Some universities use this reduction as an opportunity to fit a full third semester (or trimester) into the year. Griffith and the University of New South Wales use this approach, which is argued to be an attractive proposition for students wanting to complete their studies in the shortest possible time or to spread their study load over more of the year and work part-time. Other universities offer summer and/or winter single special units as a means for students to vary their enrolment pattern and continue to study year-round.

**Class time allocation**

Reduced semester lengths are linked closely with reduced time allocation for subjects. Weekly contact hours between students and staff have been reducing for some years. This was commented on by 43% of the academics, who saw resourcing as the most significant teaching and learning issue, and by one in five of the practitioners. This reduction in contact hours is partly due to university policy and the opportunities provided by digital delivery of content. For some subjects, it has been unproblematic. However, the impact on studio is more contentious. Of those academics who identified resourcing as the most significant teaching and learning issue for studio, more than a third (36%) singled out the decreasing amounts of time spent with students as a problem, making it difficult to give all students the support and educational challenges they need.

More than three-quarters of all academics thought that the ideal length of contact time for a studio group was six or more hours per week (Appendix Table B1–6). Nearly half (42–43%) described eight or more hours as ideal. The splitting of those hours is also important. One school had recently shifted from 3 x 3-hour sessions per week to 2 x 4-hour sessions. The rationale was that four-hour slots allowed more time to investigate projects with the assistance of the studio leader, and two sessions per week were more attractive to practitioners teaching. However, some staff were concerned about the impact of fewer sessions per week.

Many of the respondents’ objections to changed studio exposure revolve around the disruption of traditional models of design teaching, with the emphasis on one-on-one guidance by an experienced teacher. In this context, the more sessions per week and the more weeks of tuition, the more guidance the students receive and the more learning can be achieved. The amount of time per session and time between sessions also allows for the maturation of design as a skill. For many, this model remains the ideal, particularly if they experienced it in their own studies. As one practitioner indignantly declared:

> Design courses in most Australian universities are limited to one day (or less!!) per week for 12 out of 13 weeks (or less!!) over 10 semesters of ‘formal’ learning [Bachelors and Masters]. That’s 120 days or 24 normal business weeks!! [period] for a graduate to emerge apparently ‘practice-ready’: this is NOT an education. Practitioner survey respondent

Those respondents concerned with shrinking time allocations and sessions for studio argued that this was strongly affecting the ability of students to learn the complexities of architecture – in particular, the integration of construction knowledge and other parts of the curriculum into studio projects appeared to be constrained by compacted time.

> Students are simply missing out on key knowledge and skills due to truncated teaching time and the demise of 24/7 studios at most universities. Practitioner survey respondent

The increase in student numbers is seen as compounding the negative effects of shortened studio time. Almost one third of academics in the survey commented that inadequate time and too many students affected their work. An additional problem appears to be that school policies on staff/student ratios are not well known – when asked about the typical staff/student ratio in studios at their university, the answers from academics were not consistent within a university. Most thought this ratio was 1:16–20, but some recorded ratios of more than 1:25 (Appendix Table B1–7).

> Class sizes are too large and teaching time too short – tutoring first year design this year I had a class of 20 students and only three hours a week of contact time. Insufficient time combined with very poor language skills for international students created a very challenging teaching environment. Practitioner survey respondent
Most contact with students is made by casual staff, and yet our work conditions are insecure, we are marginally trained (if at all), and often have very little knowledge of overall strategy/agenda of a faculty. Academic survey respondent

Transfer of all risk and responsibility and knowledge base to sessional staff. It’s a disgrace and has diminishing returns. Universities have become greedy businesses using individual’s labour, exceeding what happens in private practice! Academic survey respondent

10 Ostwald and Williams, Understanding Architectural Education, Vol. 1, 158.
Architectural education and the profession in Australia and New Zealand

Very low rates of pay mean that practitioners with experience aren’t able to take on a teaching role without taking a major financial hit. Academic survey respondent

I get $50 an hour to teach [contract administration] which is just embarrassing. I do this though because students need practitioners to teach them properly. So, for me, teaching is my form of community service. Academic survey respondent

Due to various constraints, taking on sessional teaching in the [local school of architecture] does not hold prestige. Contribution as a sessional staff member stops being financially viable once you are experiencing a small amount of business success. It seems that those who do contribute, do so with an attitude of ‘contribution to the greater good’. As designers, we need to be valued for our time and expertise – in practice, as well as when we’re teaching. Academic survey respondent

Pay rates were described as poor at some, but not all, schools and there were reported cases of universities juggling role titles to reduce the hourly rate further. One ongoing academic in a focus group described his embarrassment when asking someone to teach or visit the school and described the pay as an “honorarium”.

The difficulty of recruiting quality sessional staff is compounded by a perceived undervaluing of the contribution of these staff. This was identified as a concern by 15% of sessional academics responding to the open question about other issues that affected their work, and was the most frequently noted issue after “not enough time” and “too many students”.

Due to various constraints, taking on sessional teaching in the [local school of architecture] does not hold prestige. Contribution as a sessional staff member stops being financially viable once you are experiencing a small amount of business success. It seems that those who do contribute, do so with an attitude of ‘contribution to the greater good’. As designers, we need to be valued for our time and expertise – in practice, as well as when we’re teaching. Academic survey respondent

Full time faculty [some, not all] tend to look down on sessionals as if we’re second class teachers. Not to mention, the university places very little value on those who are registered and teaching. Academic survey respondent

Hours allocation for sessional staff

The hours allocated for sessional teaching, including contact time with students, marking and preparation, were typically considered insufficient, especially one-on-one studio teaching for increasingly larger classes. This was a factor even in universities with reasonable hourly levels of pay, and some respondents identified additional workload issues arising from online courses:

The contract hours do not reflect hours required to adequately prepare tutorials, mark work + provide constructive feedback. Academic survey respondent

Unpaid overtime – contracted hours are never enough to cover the amount of prep and weekly admin we’re expected to do. Academic survey respondent

As courses go online, student email queries are increasing which is time consuming and not factored into the contract hours. Plagiarism is increasing and collating evidence and addressing issue is also time consuming. Academic survey respondent [sessional]
Teaching by senior students

Senior students have long been involved in tutoring in architecture schools to some extent. However, this appears to be increasing in those universities with highly restricted teaching budgets, and some now rely on Masters students for much of the undergraduate tutoring. As one respondent explained, “they’re half the cost of practitioners”.

Such tutoring is always under the supervision of a continuing academic; however, practitioners, students and academics all raised concerns. Practitioners commented that it is no wonder graduates are ill-prepared for practice. Students felt cheated. They appreciated the easy rapport with other students as a way of learning the school culture, but were concerned that student tutors perpetuated what they learned within a narrow range. Academics were concerned about the lack of depth that can result from too much teaching by senior students.

The progressive erosion of sessional pay means experienced practitioners fall away. The universities then use cheap, recent graduates or, worse, more senior students to teach subjects where deep knowledge is crucial. Academic survey respondent

It seems there is a heavy reliance on graduates with 2 years experience as tutorial staff. This seems to be a ‘closed loop’ that fails to provide students with the benefit of greater practice experience – further distancing industry needs from graduate skills. Practitioner survey respondent

ADMINISTRATIVE RESOURCES AND FACILITIES

University policies around administrative support and facilities constitute a second area of concerns articulated in the open responses to the surveys and in the focus groups.

ADMINISTRATIVE

In focus groups, some academics argued that perhaps the single most effective action to support them in their work would be more administrative and professional staff assistance. Around 10% of academics responded to the open survey question about other issues by commenting on decreasing levels of support staff for administrative matters.

Workload related to administration activities is rapidly increasing and [the number of] administrative staff is decreasing. Academic survey respondent

Some administrative tasks were accepted as being more efficient for academics, but not all. As one academic focus group participant noted: “How is it good that someone on a professorial salary spends an afternoon photocopying?” Completing online “request” systems for administrative matters such as travel were cited as particularly time consuming, while demands for different reports from multiple sections of the university bureaucracy added further load.

FACILITIES – STUDIO SPACE

In many architecture schools, students have traditionally had dedicated studios with their own workspace. This grew out of the Beaux Arts atelier model and is how many contemporary practitioners were educated. Studio spaces deeply enculturate architecture students – as one focus group student put it, this is where students learn “what it means to be an architect”. The loss of such spaces is a concern to many. It is apparent, however, that the studio spaces that remain are no longer used as they were in the past, and the emphasis has shifted to the importance of dedicated studio space, rather than the provision of spaces allocated to individuals.

12 Noted by Ostwald and Williams, Understanding Architectural Education, Vol. 1, 100.
13 Noted by Ostwald and Williams, Understanding Architectural Education, Vol. 1, 100.
The amount, type and appropriateness of space for studio teaching is a major concern for practitioners and academics alike, with nearly one-quarter of academic survey respondents identifying the lack of adequate and appropriate space and facilities as the most significant teaching and learning issue facing their institution.

Table 6.1: Main areas of demands for facilities

<table>
<thead>
<tr>
<th>Q23. Considering the facilities at your architecture school, what is the number one area of demand for new facilities?</th>
<th>N=204</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studio space</td>
<td>51%</td>
</tr>
<tr>
<td>Computer labs</td>
<td>11%</td>
</tr>
<tr>
<td>Advanced fabrication facilities (e.g. 3D modelling)</td>
<td>11%</td>
</tr>
<tr>
<td>Exhibition space</td>
<td>5%</td>
</tr>
<tr>
<td>Workshops</td>
<td>5%</td>
</tr>
<tr>
<td>Common / breakout areas</td>
<td>4%</td>
</tr>
<tr>
<td>Tutorial rooms</td>
<td>4%</td>
</tr>
<tr>
<td>Staff offices</td>
<td>4%</td>
</tr>
<tr>
<td>Lecture theatres</td>
<td>3%</td>
</tr>
<tr>
<td>Meeting rooms</td>
<td>1%</td>
</tr>
</tbody>
</table>

More than half the respondents in the academic survey deemed studio space the number one area of demand for new facilities in their university. (Table 6.1) Respondents noted that this is an environment where students learn from peer support, discussion and work:

The studio, for those of us fortunate to have been schooled in it, is the single most important medium of social, cultural and academic integration, traditionally at the ‘heart’ of the discipline; a defining cohesion, the proverbial SENSE of PLACE !!! This is essential to counter-balance the increasingly fragmentary/specialisation trends of the digital age and a profession that is increasingly multi-disciplinary in nature. Academic survey respondent (sessional)

Students lack studio spaces to immerse themselves in their work in a shared environment where they can learn from each other and in effect extend the amount of learning time they have during their degree. Academic survey respondent (sessional)

I am increasingly concerned by the studio environment and how quiet and isolating it has become. A large part of both the profession and academia is communication and sharing of ideas and the studio now feels like each student is plugged into the computer and not taking part in creating a communal atmosphere. This then means they are shy about talking and drawing (by hand) in front of their peers and the ability to stand up and confidently share ideas in reviews is reduced. Practitioner survey respondent

Only seven of the 21 Australasian schools still offer dedicated studio workspaces for each student, and this has remained stable since 2008. New Zealand academics placed a slightly higher value on the studio environment and its facilities. This tallies with findings from 2007 and 2018 that New Zealand programs generally had both greater access to dedicated workspaces and a culture of use. However, these are coming under pressure with rising student enrolments and declining use of provided spaces.

Changing use of design studio spaces

The exploration of design studio trends in the focus groups included some surprises. Many architectural educators and practitioners consider the traditional design studio environment to be desirable, as it is believed to improve peer exchange and enculturation across different year levels. However, the few schools that maintain dedicated, high quality studio facilities have found that students do not always use them in the traditional manner. Reasons include part-time work commitments and the ability to work in multiple places due to extensive computer use. This observation surprised academics from programs without studio spaces—they had thought better (or even existing) studio facilities would help build a more visible studio culture.

A multitude of factors have made traditional studio space less tenable for many schools:

- Increasing architecture student numbers mean that dedicated space is hard to maintain or justify.
- Architecture students are much more mobile. Most have access to personal laptops and the necessary software, and are no longer tied to drawing boards.
- Teaching and studio-like spaces tend to be centrally managed.¹⁵
- Many students have part-time work obligations and are unable to devote the same time to studio; or they have long commutes to get to university.
- Health and safety precautions have limited 24/7 dedicated spaces.
- Concern with the implied long hours culture and overwork facilitated by 24/7 studios space for student health.

Requirements of the studio space

Studio culture and environment is still considered an extremely important part of architectural studies. However, the level of importance recorded for the type of physical space has altered since 2007. Academics are now more likely to consider dedicated studio facilities to be more important than each student having access to an individual workspace. Dedicated studio spaces are those that have the provision for pin-up, often located side-by-side with the possibility to open up for larger classes and exhibitions. Ideally, the architecture program has ownership over these spaces.¹⁶

Table 6.2: Importance of various aspects of the design studio

<table>
<thead>
<tr>
<th>How important are the following factors associated with the design studio?</th>
<th>Within an architectural degree, how important is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007 N=181</td>
<td>2018 N=172</td>
</tr>
<tr>
<td>An environment where students learn from peer support, discussion and work</td>
<td>4.6</td>
</tr>
<tr>
<td>The studio culture/environment where students learn from peer support, discussion and work</td>
<td></td>
</tr>
<tr>
<td>A dedicated studio space or building</td>
<td>4.0</td>
</tr>
<tr>
<td>Dedicated studio facilities for students</td>
<td></td>
</tr>
<tr>
<td>Discrete ‘Design Studio’ courses / curriculum</td>
<td>4.3</td>
</tr>
<tr>
<td>Discrete ‘Design Studio’ courses / curriculum</td>
<td></td>
</tr>
<tr>
<td>For each student to have a dedicated workspace</td>
<td>3.9</td>
</tr>
<tr>
<td>For each student to have a dedicated workspace</td>
<td></td>
</tr>
</tbody>
</table>


¹⁶ Wallis, “The Studio Concept”.
The 2008 report found that many academics considered a lack of useful and suitably equipped spaces to be undermining the efficacy of the design studio. For academic focus groups in 2018, the pressing issues were different – contact hours, staff/student ratios, and staffing. Concerns were still raised about access to space, but these related to the implications for timetabling and staffing, along with the strong need for dedicated studio spaces that was not timetabled for use by those outside of the school. The physical spaces for design learning and teaching now appear to be less important to academics participating in this study, which suggests a growing and more general acceptance of the types of facilities that exist for different programs.

Changes in the spaces provided for design teaching are occurring in the larger context of shifts in conventional teaching spaces in higher education. This includes the provision of spaces for small groups that also enable local demonstrations or presentations to easily be shared across screens and projections to a significantly larger number of students. Some architectural programs are starting to explore the potential of truly blended learning environments, which combine the conventional design classroom or studio with the virtual studio and the physical making workshop. There are also moves in both architectural education and practice to use 3D virtual worlds to collaboratively design. As yet, there has been little analysis of such approaches in the mainstream literature. Past studies have attempted to evaluate the student experience gained from learning in a traditional studio space, digital learning laboratory, or SCALE-UP studio space (Student-Centered Active Learning Environment for Undergraduate Programs). These do not conclusively indicate that a specific type or design of physical space is more favourable, but instead convey the complexity of teaching, student engagement and technological issues contributing overall to the learning environment.

Academics in this study were generally pragmatic; they considered the ability to facilitate and nurture the peer learning and enculturating environment of design studio of greater importance than the particular space in which this occurred. The challenge is how to foster this if the traditional spatial configuration of dedicated studio is not possible, or, even when it exists, is not used in this manner by students. The consequences for teaching design are still unfolding as experimentation continues with the possibilities of digital and virtual studio spaces.

WORKSHOPS AND EQUIPMENT

In the 2008 study, workshops and equipment rated as the third-most concerning resource, and participants identified a worsening situation in terms of model-making facilities, workshops, laboratories and associated equipment. By 2018, workshops and equipment were much less of a focus. Standard computer labs and advanced digital fabrication facilities were the second-most-needed resource identified by academics in the survey, but at 11% each they were well below studio space. (Table 6.1)

The expectation that all students will have their own computers has eased the reliance on computer labs. However, software for renderings and 3-D work still require the processing power of specialised computing equipment provided in labs.

Some schools have moved into new or renovated facilities, complete with sophisticated digital fabrication equipment – from laser cutters and 3D printers to robotic arms and CNC (computer numerical control) machines. Students tend to use and have access to the former, but the latter are typically limited to research use (staff and higher degree research students). Queues for laser cutters and 3D printers can be long towards the end of semester and calls for more machines to improve access are likely to continue.

“Learning through making” was identified as a strength of their school by 11% of academics. Space within which mess can be made, and crucially left undisturbed for a period of time, is essential for this mode of learning. Regional schools of architecture, where space is less of a premium, tend to have the advantage over capital city–based ones for supporting this activity.

RESEARCH AND ENGAGEMENT

Most continuing academics in architecture schools have teaching, research and administration duties, and the majority of survey respondents had a theoretical workload of 40% teaching, 40% research and 20% administration. However, mounting administrative loads, including that associated with increased students and managing sessional staff, meant that few were able to complete their workload within contracted hours.

CONTINUING STAFF WORKLOAD

A high proportion of full-time academic respondents worked longer hours than their contract stipulated (86%), and nearly half (44%) worked more than 50 hours a week. Some part-time staff worked more than 40 hours a week. This pattern of long work hours was repeated in comments made in the focus groups:

- “Long hours are the only way to deal with the workload.”
- “Universities basically survive on the over-servicing by academics – continuing and casual.”

Those working under the trimester regime observed that this had added considerably to staff workload/time concerns. The short turnaround at the end of each trimester for marking, results reporting and preparation for the next trimester is seen as even more demanding than the dual semester system. In contrast, a small proportion of respondents indicated that they worked less than 37 hours a week on average in a full-time continuing or contract position.

Some universities employ staff on fixed-term contracts to help boost continuing staff numbers, although one respondent considered that this did not always help:

In academia, the amount of staff on fixed contracts is increasing, resulting in high levels of stress, high staff movement and minimises the refined development of studio teaching and academic life. Practitioner survey respondent

RESEARCH

Time for research often gets constrained as teaching and administrative tasks increase. However, research output is critical to career progression. Some participants in the academic focus groups argued that promotion models were over-geared to research, with expectations that academics would “dip into their own time to circuit break the logjam” in order to be promoted. Participants maintained that it was “practically impossible to get promoted otherwise”.

I am concerned that the universities are placing too much value on the importance of research [for promotion purposes], which typically comes at the expense of the delivery of quality learning and teaching, and critical engagement with the profession of Architecture. Academic survey respondent

Sources of research funding underline this. (Appendix Table B4–1) The majority of research funding identified by survey respondents came from internal university sources (63%), but self-funded research was a very close second at 60%. The level of self-funding of research varies markedly from university to university, as do the systems for allocating internal funds. Some universities give academics choice in how they spend set funds, while others offer limited internal funding, or none at all. Some internal funding is competitive, which may favour those who are already research productive.

Conferences and research output

Support for conference attendance is decreasing or non-existent in many universities. Government measures for research outputs do not rank conference papers highly (ERA in Australia and PBRF in New Zealand). Many academics consider this lack of support to be detrimental to the development of researchers and research cultures. Conference attendance matters for establishing research credentials and relationships, and is particularly important for early career academics. Some academics working under the trimester systems are further locked out of these research cultures as they are seldom able to engage with the many mid-year conferences and symposia held in the northern hemisphere.
The research metric outcomes of Australian architecture schools are mixed overall, with pockets of excellence. Only 14 of the 21 Australian schools have Excellence in Research Australia (ERA) ratings. There is one “two star” school, eight “three star” schools, and five “four star” schools on the five-point rating system (four stars is ‘above world standard’). This is broadly in line with the QS World University Rankings, which placed five Australian programs in the top 50 architecture schools internationally.

Recent work suggested Australian architecture schools were drawing a modest $10 million a year in competitive grants.\(^{22}\) Competitive ARC project grants are unusual and increasingly difficult to attain, while only a few schools have substantial industry-linked research. As Michael Keniger has noted:

\[\text{With supplementary funding and academic career progression increasingly tied to research achievement, architecture has struggled to gain sufficient recognition for its particular core purposes, paradigms and achievements. Inevitably, the energy and time of the academic staff are increasingly directed to research activity, with teaching contact more and more dependent on the contribution of tutors drawn from practice on a sessional basis.}\(^{23}\)\]

Non-traditional research

There is ongoing discussion within the architecture academy about non-traditional research outputs (for example, design as research), with many considering that creative work is undervalued within the ERA and PBRF systems. Some interviewees noted that a substantial amount of non-traditional research was knocked back in recent ERA rounds. This was also noted in academic survey responses:

\[\text{Too much emphasis is placed on journal articles (text) as research currency due to the inclusion of the school of architecture within the university-wide concept of research; instead, practice-based research or design should be promoted as the most relevant research outputs for the discipline. Academic survey respondent}\]

\[\text{Architectural research/design research should be better defined in relation to research in other disciplines, in order to fairly evaluate the research output of architecture academics (e.g., including architectural competitions and other architecture-specific modes of design research). Academic survey respondent}\]

Consultations revealed a significant degree of anxiety about the place of research in architecture schools (less so in those schools with a well-established research record).

CONCLUSION

Resourcing for architectural education remains a major concern for academics and practitioners alike, although heads of school typically displayed a pragmatic streak in accepting the higher education funding environment as it is. The concerns have shifted somewhat since 2008, with less emphasis on the spatial demands of studio and more concern for ever-increasing staff–student ratios and decreasing contact time with students for studio in particular. The workload for continuing staff is perceived as heavy and unachievable without working long hours. Sessional staff feel undervalued, with low rates of pay and constant squeezes on the amount of time allocated by universities for the tasks of teaching. All these resourcing matters are of concern because of the impact they have on the quality of architectural education.

\[\text{22 Gerard Reinmuth et. al, Measuring Up: Innovation and the value add of architecture, NSW Architect Registration Board/University of Technology Sydney, April 2016.}\]

The interaction between work and study in architectural education is complex. The course of study must both prepare students for their immediate futures and provide a comprehensive understanding of the profession and discipline that will prepare them for long careers in a field that is undergoing rapid and continual change. Architectural programs must include content that provides students with the skills they will need to complete practical tasks when they enter the workplace, introduces them to the disciplinary, cultural and regulatory contexts within which this work is undertaken, and teaches the conceptual, design and critical thinking skills that will sustain them throughout their careers – not all of which will be in conventional architectural practice.

Opinions vary as to the appropriate balance between these distinct but overlapping areas. Architectural education has long experienced tension between the need for a university-based education to teach the disciplinary framework and context, and the emphasis from some practitioners for “work ready” graduates. Michael Ostwald and Anthony Williams called it “the perennial debate”.1 A key question for this research project was, therefore, how much workplace practicality should university architectural degrees incorporate and how ready should we expect graduates to be to enter practice. This study provides new insight and nuance into this ongoing discussion.

The exploration of potential connections between architectural education and the world of practice often comes down to the most appropriate way to combine the teaching of conceptual design skills with exposure to the business of a working architect.2 A combination of university-based and practice-based learning is typically posited as the ideal. But the means by which this can be achieved are diverse and subject to ongoing discussion.

Practitioners, as a group, would like the graduates they supervise to have a better understanding of practice and construction. They are, on the whole, satisfied with graduate knowledge in areas such as design, communication and the history and theory of architecture. The key qualities sought when employing graduates are enthusiasm, humility and a willingness to learn, along with the ability to collaborate and work effectively in teams. Employers are also keen to see graduates who have worked part-time in practice while studying. A high 75% of practitioner survey respondents said they found work in an architectural practice within three months of graduating. Data from other sources also indicates that architectural graduates are succeeding in the workplace. The Graduate Outcomes Survey found that 78% of architecture and built environment masters graduates were fully utilising their skills and education in their job.3

This chapter discusses the interface between architectural education and practice. It presents an overview of opinions about the importance of integrating practice and practical knowledge into programs of study, and outlines the various ways in which architectural students are introduced to the world of practice. This includes formal integration within the university curriculum and informal integration through students working part-time while studying. The chapter also outlines the skills and characteristics valued by employers and discusses the work experiences of recent graduates. It concludes with a discussion of the opportunities and challenges in this area.

1. Michael J. Ostwald and Anthony Williams, Understanding Architectural Education in Australasia, Volume 1: An Analysis of Architecture Schools, Programs, Academics and Students (Sydney: Australian Learning and Teaching Council, 2008), 14-16.
PRACTICE-BASED KNOWLEDGE AND ARCHITECTURAL EDUCATION

Practitioners, educators and students involved in this study all generally considered it important for students to have some familiarity with architecture’s working environment prior to graduation, but the emphasis and significance placed on this knowledge varied. As a broad generalisation, the practitioners considered exposure to practice to be more important than academics.

Students will have invested years in obtaining their qualification, they need to be exposed to the practice and reality of architectural life, in all its glory; delightful, addictive, dismaying, high pressured, and fulfilling. Practitioner survey respondent

This difference in perspective is revealed through the survey questions asking respondents to identify how important they considered various factors relating to the relationship of universities to the profession, with response options ranging from ‘not important’ to ‘extremely important’ on a 5-point Likert scale. The statement “Graduates being well prepared to enter a practice environment” resulted in a mean score of 4.2 from practitioners and 3.7 from academics. (Figure 7.1) The topic was also canvassed in focus groups, interviews and open-ended questions in the practitioner survey.

Figure 7.1 Relationship of universities to the profession, importance of various factors

THE VALUE OF PRACTICE-BASED LEARNING

Overall, practitioners involved in this study argued for more educational content about practice matters, and more awareness of the practicalities of working in architecture. This included knowing “how a building gets put together” and two key aspects of architectural practice: the internal management of an architectural business, and external processes of working with clients, construction contractors, regulators, and others in the broader industry. This reiterates the findings of a major British study published in 2010, which also identified the need for managerial skills and construction know-how.4

Students need to understand how to put a basic building together, how the building code and standards affect their design process and have a sound understanding of the legal framework they will be working within. Importantly, however, architects need to understand the business of architecture. Practitioner survey respondent

While university education should be a place for creativity and pushing the boundaries of design, it has to be combined with a realistic expectation of the working life of an architect. Practitioner survey respondent

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THE PRINCIPLES OF ARCHITECTURE

Other respondents – mostly academics and a smaller group of practitioners – argued that architectural education should focus on principles, with the specifics of architectural working life learnt after graduation. In this approach, exposure to practice during studying is mainly about students “knowing what they don’t know” in preparation for their continued education as working architects. One head of school argued in an interview that university education is about developing students’ ability to think about, draw and model the fundamentals of buildings, and that more advanced technical skills is quickly learnt in practice. Some participants also referred to the larger context in which education occurs:

Architectural education is about inspiring students, not just readying them for the decades of graft ahead. Practitioner survey respondent

The profession must recognise that the role of university is not to produce graduates ready for their next project, but to ensure they have the skills that prepare them for learning within practice. There is an important role for the profession to continue the architectural education of graduates in the work setting, to learn the skills that are virtually impossible to teach at university. Academic survey respondent

Respondents that valued an understanding of the processes, rather than the detail, sought a balance between the two approaches. For example, some argued that graduates should know what things like the National Construction Code are, where to find things in it, and the principles on how to develop solutions within code, rather than the detail of the content. Heads of school generally agreed that programs should cover these matters “in principle” through technology and professional practice subjects at a minimum, and some were interested to pursue work-integrated-learning more thoroughly.

PRACTITIONER ATTITUDES

Two sets of survey questions reveal more detail about practitioner concerns regarding student exposure to the day-to-day realities of architectural work. The first asked respondents to reflect on their own education and agree or disagree with a set of questions about satisfaction and pathways to work. An open-ended question then asked them to reflect on the content of their own education in relation to work skills required after graduation. A second set of questions was directed to practitioners that regularly supervise architectural graduates. This cohort was asked to agree or disagree with a range of statements about graduates, followed by the open-ended question about the one area to which they would most like students to have more exposure. Practical knowledge ranked highly in these responses to both sets of questions.

EXPERIENCES OF ARCHITECTURAL EDUCATION

Practitioners were asked a range of questions relating to their own education, and the degree to which it prepared them for life in practice. When asked to respond to the statement “Overall, I was satisfied with the quality of my architectural education”, they generated a mean score of 3.7 (on a 5-point scale from strongly disagree to strongly agree). However, the mean dropped to 3.3 for the statement “My architectural education provided a good foundation for work in the profession”.

The overall practitioner score is broadly consistent with the Graduate Outcomes Survey (now part of the Quality Indicators for Learning and Teaching or QILT dataset), which aggregates architecture graduates with other building professionals. The Overall Satisfaction Index for architecture and built environment masters graduates in QILT was 77% (compared with an average for all fields of study of 82%). Architecture and the built environment is the third lowest rated field of study for satisfaction after creative arts and dentistry.
ARCHITECTURAL EDUCATION AND THE PROFESSION IN AUSTRALIA AND NEW ZEALAND

SATISFACTION WITH GRADUATE SKILLS

The 1,426 survey respondents who supervised graduates were asked to agree or disagree with a series of statements about the skills and capacity of Australasian-educated graduates (Figure 7.3). The mean level of overall satisfaction was 3.06. Skills in design, communication and teamwork ranked more highly at 3.4 and 3.2, and historical and theoretical understandings of the discipline gained a mean response of 3.03. Levels of agreement dropped to 2.5 in relation to students’ appropriate understanding of the practice environment of architecture, and 2.34 for building technology.

Figure 7.2 Practitioner experiences of studying architecture

Figure 7.3 Supervising practitioners’ opinions of graduates
Table 7.1 Practitioner requests for more student exposure to subject areas

<table>
<thead>
<tr>
<th>What is the one area you would most like graduates to get more exposure to during their university studies?</th>
<th>Percentage of all answers to this question</th>
</tr>
</thead>
<tbody>
<tr>
<td>More practical altogether</td>
<td>76%</td>
</tr>
<tr>
<td>How buildings go together</td>
<td>53%</td>
</tr>
<tr>
<td>Construction</td>
<td>26%</td>
</tr>
<tr>
<td>Creativity under constraints</td>
<td>8%</td>
</tr>
<tr>
<td>Detailing</td>
<td>6.1%</td>
</tr>
<tr>
<td>Building code compliance</td>
<td>5.2%</td>
</tr>
<tr>
<td>Documentation</td>
<td>4.9%</td>
</tr>
<tr>
<td>Building site experience</td>
<td>4.7%</td>
</tr>
<tr>
<td>Drafting / drawing</td>
<td>2.7%</td>
</tr>
<tr>
<td>Structure</td>
<td>1.6%</td>
</tr>
<tr>
<td>Practice knowledge</td>
<td>30%</td>
</tr>
<tr>
<td>Understand what an architect does</td>
<td>14%</td>
</tr>
<tr>
<td>Practice work experience</td>
<td>9.2%</td>
</tr>
<tr>
<td>Business</td>
<td>4.0%</td>
</tr>
<tr>
<td>Client wrangling</td>
<td>1.4%</td>
</tr>
<tr>
<td>Financial literacy</td>
<td>1.2%</td>
</tr>
<tr>
<td>Legal literacy</td>
<td>1.2%</td>
</tr>
<tr>
<td>Building + practice knowledge</td>
<td>7%</td>
</tr>
</tbody>
</table>

Note: Most answers triggered more than one coding.

Table 7.2 Graduate requests for more attention

| More practical altogether | 92% |
| How buildings go together | 61% |
| Construction | 23% |
| Detailing | 12% |
| Documentation | 11% |
| Building code compliance | 8.5% |
| CAD / BIM | 7.9% |
| Contract administration | 7.1% |
| Construction / project management | 6.9% |
| Drafting / drawing | 3.9% |
| Building site experience | 2.6% |
| Practice knowledge | 45% |
| Understand what an architect does | 19% |
| Business | 15% |
| Teamwork / leadership / communication | 7.1% |
| Practice work experience | 6.0% |
| Financial literacy | 4.0% |
| Client wrangling | 3.3% |
| Legal literacy | 3.3% |
| More practical | 8% |

Note: Most answers triggered more than one coding.
STUDY AREAS NEEDING MORE EXPOSURE

A strong emphasis on practical matters emerged in practitioners’ responses to the two questions regarding areas requiring more attention within architectural education, with similar patterns across both sets of answers.

When asked which area they would most like graduates to gain more exposure to during their university studies, over three-quarters of the 1,158 respondents identified a practical area of some kind. Answers ranged from awareness of how a project is shaped by local authority and other governmental codes, compliance and planning, to understanding building costs and their impact on architecture, to knowledge of how practices operate. The largest proportion of responses (53%) concerned the pragmatics and protocols of how buildings go together – including working with clients and contractors, construction detailing, budgeting and scheduling. More exposure to knowledge about running a practice was desired by 30% of respondents, while 7% wanted exposure to both practice and building knowledge.

When practitioners were asked what area they wished had been given more attention during their studies, the pattern of answers was very similar. Of the 1,630 respondents, 61% mentioned practical construction knowledge, while 45% mentioned more exposure to business, legal and registration issues. Some 15% wanted both practice and building knowledge covered more. In total, 92% of respondents wished there had been more focus on these practical matters in their own education. In general, practitioner respondents felt that university programs (with a few exceptions) did not provide a good grasp of the expectations of a working architect. There was a sense that the content can be “idealistic and unrealistic”, as one practitioner put it, with studio projects often focused on design isolated from the constraints of budgets and planning code requirements, much of which then came as a shock to graduates once in practice.

Graduates appear to have very little idea of how an architectural practice operates or how building sites and trades operate. There is a large gap between learning about design and the reality of working in the industry. Practitioner survey respondent

My own experience was that after leaving university I did not feel equipped to be working in the profession and had to learn very quickly on the job the realities and technical aspects of architectural practice and construction. More needs to be done during education to bridge this gap and make students more prepared for post university life. Practitioner survey respondent

EXPANDING FIELDS OF PRACTICE

Several survey respondents addressed the changes underway in the profession, developing modes and models of practice, and the increasing tendency of some graduates of architecture to pursue careers outside traditional practice and in roles other than as a registered architect. As one practitioner noted:

Design should drive everything, but in the real world we need to recognise the professional opportunities available to those whose skills lean more towards delivery and project management. It is extremely difficult to do, but universities need to ensure that students are exposed to the full range of professional responsibilities / possibilities during their education. Practitioner survey respondent

The divergence in architectural practice and practice models from small, residential-focused, full service architecture firms to large firms participating in a global construction value chain presents further complexity. Large firm work may increasingly involve multi-billion dollar projects taking a decade or more to complete and involving many companies and specialisations. Some critics say that the education of architects based around a small-scale practice model is increasingly irrelevant for many graduates. On the other hand, large practices can channel graduates into specialisations and not all provide the mix of experience needed to experience the full range of activity that architects traditionally cover.

Some respondents to the practitioner survey also felt a greater foundation in business skills would be beneficial. As one put it: “Architects have little or no training in marketing, leadership, finance, business and project management.” One head of school admitted that while younger architectural practices needed
to be nimble and highly responsive to create work opportunities and buildings, these skills are not a priority in the architectural curriculum. While basic business skills might better prepare graduates for diverse professional services contexts, business skills did not rank highly in subject area importance for either practitioners or academics.

Heads of school interviewed for this study maintained that it is not realistic to produce graduates who are competent to work in all possible environments, as well as having sound design and other core architectural skills. They pointed to the increasing range of certificate and masters degree options (such as project management or civil engineering) that can support specialisation and alternative career paths.

INTRODUCING ARCHITECTURAL PRACTICE TO STUDENTS

The introduction of practice matters to architectural students differs according to the university and the course of study. All masters programs in architecture have at least one mandatory professional practice unit; some programs integrate practical or practice-based content within design studio units; and some provide work experience through internship programs and other systems designed to accommodate periods of work in practice within the course. At two universities a specified period of work in practice is embedded in the degree requirements.

PROFESSIONAL PRACTICE

Each Australasian program has at least one compulsory masters-level professional practice subject, with the modes of teaching and range of subjects varying across the programs. All universities require at least one unit and approximately a third require two or more professional practice units. In addition, some universities have units with a more detailed focus on construction and/or project management.7

Professional practice subjects provide insight into architectural work, and often include contributions from senior practitioners, registrars and participants from other disciplines as appropriate. They typically offer an introduction to business structures, social and ethical context, fees and client agreements, intellectual property, cost planning, insurance and legal liability along with basic project management and the process of registration. Formats can include guest lectures, practitioner Q&As, office visits and development of mock business plans and project documentation.

These subjects can be a challenge to teach as students sometimes viewed them as “dry and unengaging”. The emphasis on this subject matter also varies across programs, with one practitioner survey respondent commenting “Professional practice was treated as something of an after-thought during my masters degree”.

INTEGRATING PRACTICE WITHIN STUDIO AND OTHER COURSES

There are a number of ways to provide practice experience within other units. One way to address the disjunction between design and practical concerns is to integrate such considerations into studio classes – for example, by setting ‘real-world’ briefs for students to respond to. This relies on skilled teachers, and requires sufficient time in studio to address multiple considerations (see Chapter 5). Design studios that seek to simulate workplace requirements might include factors such as dealing with clients, working in a team (including with specialist contractors), responding to the detailed characteristics of a particular site, examining through materiality and constructability in depth, working with council and building code requirements, and designing to a budget. A significant factor is risk management, including immediate contractual risks and broader design risk, which is coming under increasing scrutiny in the wider construction industry. Students participating in the study focus groups felt that the integration of practice with studio was generally poorly executed or not attempted at all.

A number of academics participating in the study expressed interest in developing courses with actual or simulated projects, clients and management oversight but still delivered within the university.8 Some universities also offer studios run by practitioners in their own offices, thereby embedding students in an office for a short period of time. However, some research participants, both academics and practitioners, expressed caution about architecture firms becoming too closely involved in course delivery, suggesting that this may cross a line regarding the independence of the learning and assessment process.

7 Based on the Australian Institute of Architects, Architecture Schools of Australasia Handbook 2015.
Site visits integrated into study were posited as another means to increase students’ exposure to practical matters. There was general agreement that site visits provide an important opportunity to get a working insight into the realities of the sector, and some focus group participants pointed out that students need to find out if they are actually interested in the construction industry before pursuing a career. However, health and safety issues were acknowledged as a major hindrance to increasing site visits for students. Formal risk assessments for all off-campus activities are mandatory in the sector and are increasingly complex and arduous. All possible hazards usually must be listed, which for an inherently risky place like a building site can be almost endless. Students can obtain an OHS White Card construction induction certificate, but this is not deemed sufficient to cover the risks for many universities.9

INTERNSHIPS AND OTHER WORK PLACEMENTS

In some university programs, students can gain work experience as a formal part of their study. Six universities offer structured internships in an architectural practice for academic credit, and these are mandatory at two. Two others require a period of work in architectural practice as part of the requirements of the architecture degree.

INTERNSHIPS

In other professions, structured internships are a well-established method to provide workplace exposure to students. Generally unpaid, part-time placements, they lead to academic credit typically equivalent to one or two university-based units. These internships have clear learning objectives and assessment requirements, but are not necessarily graded. Internships must meet requirements of both education and workplace regulation. The Australian Qualifications Framework and the New Zealand Qualifications Framework set clear expectations and requirements around learning and assessment for Level 9 courses such as the Master of Architecture. Under the Fair Work Act, there are exacting requirements about the conditions that must be met by unpaid internships and work placement programs, which provides exceptions for ‘vocational placements’ undertaken as a requirement of a course of study.10

Notre Dame University and Bond University – both small programs – include a compulsory internship as part of their architecture degrees. Several other architecture schools offer internships for credit as an elective (sometimes including international placements); however, heads of schools observed that only a small proportion of students pursued these opportunities. Some practitioner survey respondents identified internships as an effective way to increase student engagement with practice.

I would like to see more effective practice placement. It comes at a cost to practices, but practices must realise they have an important role to play in opening students minds’ to post university life. Practitioner survey respondent

School leaders interviewed for the study, however, were sceptical about the viability of delivering quality internships for high numbers of students. Monitoring the standard of placements can be difficult, and there would need to be some on-boarding of the practitioners who supervise the intern and who may participate in the assessment process. Several participants in focus groups commented that the profession would need to “lift its game” to make wider uptake of quality internships possible. Academic focus group and interview participants felt that the scale of education means that it would be very difficult for all students meet educational requirements on a consistent basis through internships.

Internships within architectural education also occur in a wider environment of concern about the rise of unpaid labour. In Australia, the Office of the Fair Work Ombudsman (FWO) has identified unpaid work in Australia as an emerging issue and commissioned a report into internship, which was published in 2013.11 Industry bodies such as the Association of Consulting Architects are also watchful and advise members to ensure that any vocational placement meets the Fair Work criteria and is part of a legitimate course of study.12

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10 Stewart and Owens, Experience or Exploitation.
WORK EXPERIENCE AND PLACEMENTS

It was once common for Australian universities to mandate a period of work in architectural practice as part of completing an architecture degree. This experience was often gained in a “year out” between the third and fourth year of study. In 2018, only two universities had this system: the University of Western Australia, which requires 16 weeks full-time equivalent practice experience; and Unitec in Auckland, which requires 480 hours. These are not formal internships and do not provide university credit.

Work requirements were removed by many other universities for primarily pragmatic reasons – for example, difficulties aligning such a requirement with student visa conditions for international students, the practicality of current student numbers accessing suitable work, and the cost of administering such schemes. There was also some concern about mandatory work requirements leading to students working for nothing in order to get the required hours.

The university needs to either take responsibility for placements [unlikely], acknowledge experience work as a unit [therefore full-time study] or eradicate it as a mandatory component altogether. Practitioner survey respondent

Some practitioner survey respondents felt that the loss of mandatory work requirement was a step backwards and was a contributing factor to the lack of student knowledge about practice.

It seems there is an imbalance between design and practice that has been increasing since the year out was removed and in some instances, the first three years of undergraduate is less focused on core skills. […] The lack of work preparedness does not assist the students in receiving a decent salary and adding value to a practice. Practitioner survey respondent

A small proportion (9%) of practitioners proposed work experience within education as the best way to increase knowledge of practical building and practice matters. As one practitioner put it: “I feel like it would help more to use an open elective as work experience in a firm than studying some unrelated subject.” A number of participants noted that it is unthinkable for doctors and other health professionals to graduate without significant time in a hospital, yet there are architecture graduates who have not spent time in an architect’s office or on a construction site.

Other approaches are also being explored. The University of Auckland has an “Open Desk” program where students are placed in selected practices for a fixed period of two weeks for no pay. (This can be acceptable under workplace law if the student’s presence is primarily “observational” rather than involving productive work). Students appear to enjoy this exposure to an office, which increased their confidence. Practitioners liked it because it did not incur costs and was for a short, defined period. They also often found it is a useful way to identify someone they wanted to employ. One student focus group also described the SONA mentoring program, which pairs students with practitioners, but commented that some practitioners did not want to commit the time to mentoring after the first few meetings.¹³

The desire for graduates to have practice experience during study was not unanimous. In some of the survey responses and in focus groups, a smaller number of practitioners expressed a preference for “clean” graduates who they could train up “the right way”.

There is no one solution to students gaining work exposure as an embedded part of their university studies, although the study revealed widespread agreement that this was an important aspiration.

In many ways, capable graduates with little to no office experience are great as they have no bad habits. Practitioner survey respondent

WORKING WHILE STUDYING

Working part time in an office is another common way for students to obtain practice experience during an architectural degree. In most situations, the students are studying full time while also working part time. Employers involved in this study valued such part-time work and a number of practitioner survey respondents felt it was regrettable that people can obtain a Master of Architecture degree without having worked in an architectural office. In contrast, students expressed mixed views about the value of working part time while studying.

There is no data available on what proportion of current students are working in practices. Of those practitioners participating in the survey, 86% indicated they had worked during their studies (72% in paid positions and 14% unpaid; 83% organised their own work and just 3% were placed by the university).

The capacity for students to find work varies with the state of the economy and construction industry, location, and the students’ capacities, networks and entrepreneurship. Most universities offer very limited assistance with finding work. This can mean that students with pre-existing connections into the industry are at an advantage, and international students in particular may struggle to find opportunities. Some research participants expressed concern that this can create a two-tier employment market for graduates, where those who have been able to obtain architecture-related work are greatly advantaged over those who have not.

When practitioners were asked about the importance of work experience, they gave a mean score of 4.1 on a 5-point Likert scale, while ongoing academics gave a mean score of 3.3. Students participating in focus groups articulated a range of opinions – some commented that they would sacrifice some university time as they thought a work history would be advantageous, while others preferred to concentrate on their studio units.

Employers also had mixed views about offering work to students. Some participants, usually from larger firms, saw this as an effective way to scope out the best candidates for graduate employment and to bring fresh ideas into their practices. Others saw time required for supervision and the cost of wages as substantial deterrents:

Employment law [leads to] the inability of practices to engage students of architecture in a way that is not a financial burden on the firm. The biggest loss is the students’ because they miss out on valuable experience gained in a practice. Practitioner survey respondent

The Architects Award mandates minimum wages for Students of Architecture and Graduates of Architecture, with rates adjusting with experience. A small number of employers participating in the study argued that it should be possible to take on students or recent graduates at no cost. Others suggested that there should be a system of apprentice wages for architects. These ideas, while intending to support skill development, are nonetheless problematic, given the central principle in Australian and New Zealand workplace relations that only formally structured / assessed workplace learning qualifies for payment below award wages.

Some practitioner focus groups and survey participants argued that the distinction needed to be clearer between work by employees who are students or recent graduates (which should be paid in line with relevant awards and agreements) and university-approved internships or other work-integrated-learning experiences (which may be unpaid if certain requirements are met). Participants suggested that unpaid opportunities called “work trials” or “work experience” continue to be commonplace. These have the potential to be exploitative and are likely to contravene workplace laws.

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In most situations, students working part time are also studying full time. However, a number of heads of architecture schools interviewed stated that they were currently expanding flexible learning options to promote part-time study, while the Curtin University – OUA online program is specifically designed with part-time study in mind.\(^5\)

Several practitioner survey respondents noted earlier targeted study opportunities for people working in the industry who might not be in a position to enrol in traditional university programs. These work/study “sandwich” programs were typically offered by the old Institutes of Technology. However, they have now morphed into the more usual tertiary study programs for a number of reasons, including changed government funding arrangements that no longer support this kind of split program, and the universities deeming such courses not academically rigorous enough. One practitioner survey respondent valued such courses for their connection to industry:

> I would love to see the UTS sandwich course return. It was an excellent way to learn. The reality of architecture is that it is not as glamorous as students think, and the exposure to the real world is crucial to make sure the education system is not just educating people who do not proceed in their profession. Funding, of course, will not allow part-time sandwich courses to come back, which is a real shame. Practitioner survey respondent

Such programs have, however, been maintained in other countries. In the UK, for example, the RIBA Studio for Students Working in Architectural Practice provides a flexible route towards registration for people working full time under the supervision of an architect.\(^6\) It is based around development of a portfolio plus self-paced study in a number of specified areas. In Australia, the NPrA allows access to the APE for industry practitioners without an architectural qualification.

**GRADUATE EMPLOYMENT**

Overall, 75% of practitioner survey respondents said they found a suitable role in architectural practice within three months of graduation, and the majority of practitioners participating in the survey and focus groups appear to have had positive experiences as graduates. Nonetheless, the period immediately after graduation was described as being dominated by uncertainty.

Research participants readily acknowledged that there are often many more architecture graduates than positions available. The number of positions is strongly tied to the state of the economy, and Australian and New Zealand masters of architecture graduates are often also competing with others – including overseas graduates, bachelor degree graduates with some work experience, and TAFE building design graduates. This means that those answering the survey are by and large the “survivors” of challenging recruitment processes. The fate of individuals depends on chance, social connections, the preferences of employers, and the vagaries of the economy. One practitioner focus group member described the transition between study and work as a “blind spot” in the profession, and one that reflected poorly upon it.

**GRADUATE EXPERIENCES**

It is clear from this study that some firms are very good at stepping graduates through the steep learning curve at the beginning of practice. Respondents described positive experiences at a range of graduate destinations. For some participants, small firms had provided more mentoring and exposure to different aspects of architectural work, while others had thrived in a large firm. Many employers also saw graduates as an important aspect of their business:

> In general, we happily employ graduates because they bring a level of freshness and enthusiasm to the practice, which would be missing otherwise! Practitioner survey respondent

> I have great respect for the grads we have employed recently and that unis have educated; they are impressive young people. Practitioner survey respondent


\(^6\) “RIBA Studio. For students working in architectural practice”, Oxford Brookes University, https://www.brookes.ac.uk/architecture/riba-studio/
Despite these positive stories, practitioner survey respondents also expressed concern that some practices were not supporting graduates to learn and experience the different aspects of practice. Respondents described firms that quickly assign graduates to tasks where their skills can earn the practice money – particularly as “CAD monkeys” or digital visualisers. There was concern that graduates can become pigeon-holed, with little opportunity to gain a mix of experience. Among other challenges, this can compromise the graduate’s path to registration.

There are increasingly few practices who mentor and don’t just throw you in the deep end. 
Practitioner survey respondent

It appears there are many practicing architects who do not want to teach graduates and are only focused on running a successful business where staff are deployed in roles where they think they will be the most efficient, not where they will learn the most. I believe the apprenticeship attitude has been lost. Practitioner survey respondent

It would be good to see practice more regularly acknowledge their role and responsibility in preparing graduates for the profession. Not every architecture student wants to or will end up in traditional practice, but for those that do there should be mentorship and guidance provided by practices (like it was when we went through!). Practitioner survey respondent

Low wages and poor working conditions were another cause for concern. Some survey respondents described this as propping up poor business practices, which also compromise built outcomes.

Lower salaries for architecture graduates are also revealed in the most recent national Graduate Outcomes Survey. This aggregates architecture graduates with other building professionals and shows that, overall, architecture and built environment masters graduates rank second to lowest of the 21 categories of professions, earning 25–26% less than the average income.18

RECRUITMENT

Recruitment processes play a significant role in determining opportunities for graduates. Many practices rely on informal networks and unsolicited portfolios as part of recruitment. Student focus groups noted that architectural firms do not participate in careers fairs hosted by universities, and practices rarely have formal structured graduate programs as occur in other professions. From the student perspective, finding a job often relies on personal networks, student contacts with teaching staff and connections with practitioners who teach sessionally. Most practices also report receiving unsolicited digital portfolios on a steady basis.

When practitioners in this study were asked what characteristics they look for first when employing graduates, the set of priorities expressed was somewhat different to the need for practical and practice-ready skills outlined earlier in this chapter. The emphasis was on enthusiasm, initiative, critical thinking and the ability to work in a team. Skills around teamwork are considered essential for working with other people in the practice, consultants and contractors. Design creativity was important to some firms, but was seen as secondary to “soft” skills. Graduates are also expected to have high technology skills and proficiencies, particularly in CAD (computer aided design) and graphics programs. Practitioners also want graduates with the ability to pick up different software very quickly – knowing how to teach themselves software is considered part and parcel of being a digital native. Ideal graduates are seen to be pro-active learners, with flexibility, agility and a passion to learn new things.

17 A number of recent initiatives have specifically targeted poor workplace practices in architecture, including The Architecture Lobby (http://architecture-lobby.org) and the Parlour Guides to Equitable Practice (Melbourne: Parlour, 2013), https://archiparlour.org/parlour-guides/.
The interview is seen as an opportunity to assess the "enthusiasm" of candidates (this word was frequently mentioned by practitioners), to understand whether someone will "fit" into the culture of the office, and how well they might embody the values and identity of the practice. Practitioners report that they are keen to see signs of humility and a willingness to work on all aspects of a project during a job interview. They noted that graduates have just spent at least five years developing their own approach to architecture at university, and that teamwork skills can be difficult to teach in a traditional university setting. References from previous work were also important to employers, as some soft skills, such as the ability to work in a team, can be difficult to assess in an interview.

All stages of the recruitment process can reinforce and reproduce the existing demographics of the architecture profession and potentially limit diversity. The widespread use of informal networks privileges those who are already connected to existing social, cultural and professional circles. Unsolicited portfolios can provide another way for graduates to connect, but using portfolios as a filtering tool can also reinforce existing patterns. The portfolio is a signalling device that encapsulates a graduate’s desired professional identity. As Dana Cuff explained in 1991, the portfolio demonstrates how well a graduate has absorbed – and is able to reproduce – the aesthetic concerns and norms of the profession.19

A narrow definition of cultural "fit" can also allow biases around gender, class, and race to enter the selection process.20 This can be managed if employers are aware of the potential problems – for example, understanding ‘fit’ in terms of contributing to diversity and bringing new perspectives.21 Concerns about potential bias were expressed by some participants in this study. For example, some international students felt that they were less likely to get a position in a local practice because that practice balk at investing time in someone who might not be able to stay, or because practices were perceived as having cultural biases in recruitment.

**BUSINESS PRESSURES**

Overall, the tightening business environment for architecture in recent years has made it much harder to employ and develop graduates. The current pressure on firm leaders to be more commercially focused in regard to employment came through strongly in the survey, interviews and focus groups. As one practice partner put it, “low fees don’t sustain incapable staff”.

There are no margins for a new graduate to be heavily supervised while they learn how to draw, detail, write letters. **Practitioner survey respondent**

Putting graduates on is really not good business sense currently because they need far too much training and supervision. As a director I don’t have the time to train unskilled graduates. It is already challenging remaining profitable in small practice. **Practitioner survey respondent**

Around 12% of the practitioner answers to the final open-ended survey question expressed negative sentiments about the quality of Australasian graduates (126 respondents). Of these, 41 specifically said that they would not employ recent graduates. These respondents considered new graduates to be an unsustainable drain on the time and resources of the practice: too inexperienced, too expensive, and too unskilled to take a chance on in an environment where fees are too low to sustain anyone who is not immediately paying their way.

A registrar interviewed for the study noted the tension between the ideals of many in the profession and "the commercial forces that, like the tide, always, always win".

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23 2018 Graduate Outcomes Survey, Table 32, “Postgraduate coursework level graduates reporting occupation does not fully use skills and education”, available at www.qilt.edu.au
CAREER PATHS

There are many pathways for architectural graduates within and beyond traditional practice. Little research has been undertaken about the career paths of graduates of Australian and New Zealand schools, so there is little detailed data on graduate destinations. Anecdotally, many architectural graduates pursue careers outside traditional practice but related to architecture and the built environment, while Australian registration data suggests fewer than half of architectural masters graduates will go on to be registered architects [excluding those overseas students who return to their country of origin]. Several heads of schools in interviews for this study made the point that graduates not a bad thing for the profession. The findings of the Graduate Outcomes Survey reiterate the broader value of the qualifications – 78% of architecture and built environment masters graduates said they were fully utilising their skills and education in their job [the average was 71% for all fields of study].

CONCLUSION

The transition from architectural education to work in architectural practice brings challenges for graduates and employers alike. This chapter suggests that architectural professional practice subjects within universities, internships, and other work-integrated learning (such as practice-embedded studios) all have a role to play in supporting the transition, as does part-time work during university study. Each school of architecture, and indeed each student, may prefer a different blend of approaches.

This research reveals a range of attitudes about the relationship between education and practice, and the role of university study within the profession. Many architectural employers consider that graduates do not have a sufficient foundation in practice, and some see this as an impediment to employing more Australian and New Zealand educated architecture graduates. This opinion was countered by heads of school, who made the point that universities are not technical colleges, and that exposure to practice must take its place among other priorities. These include developing design skills, critical thinking and research skills, and an understanding of the historical and theoretical foundations of architecture and its relationship with other areas of knowledge. These are also the areas that develop the soft skills and critical thinking that employer respondents all considered important when employing graduates.

There is an opportunity to strengthen relationships between architecture schools and practice – with potential for action from both. From the university perspective, there are already excellent examples across Australasia of best practice for professional practice subjects other than dry “chalk and talk”, some of which are based on simulated practice activities led by experienced practitioners. Links with local practices can be leveraged into opportunities for internship programs, site visits and other work-integrated-learning opportunities. Recognition of the current unequal playing field in relation to paid student work could lead to universities offering more help linking students to potential employers during the course of a degree.

Architectural employers can also help to facilitate the journey from education to practice. Anecdotally, a number of firms discourage their practitioners from participating in university activities, such as lecturing in professional practice courses. While appreciating the financial pressure that firms are under, as a sector there is much that could be done, starting with such simple steps as having a presence at career fairs, through to formalising and promoting graduate recruitment and development activities.
Architectural education and the architecture profession are both vulnerable to wider forces: the academy to the regime of university policies and cultures and government funding, and the profession to the economics and politics of the building industry and the broader economy. The financial precarity of the profession in the aftermath of the 2008 global financial crisis has had ongoing repercussions, with fee cutting identified as a persistent and ongoing challenge. Undermanaged workplaces and an acceptance of poor workplace conditions exacerbate the discontent within practices and the profession as a whole.

Many study participants expressed concern about the future of the profession and the role of the architect, with the arrival of new professions on site, the fragmentation of the construction process, and the apparent diminishing value of architectural skills proving to be significant obstacles for the profession. Also problematic are public perceptions of architecture and architects as elitist, impractical and service providers for the rich. Articulating the value of design to the broader community was identified as a key challenge that needed to be addressed. Participants in this study also identified opportunities for the profession of the future, and suggested that the education system has an important role to play, both in identifying new possibilities and in equipping graduates with the critical thinking skills needed to navigate and develop these.

This chapter explores perceptions of key forces impacting on contemporary architecture and how these reflect back on architectural education. The key question becomes how the architectural education can meet these challenges in their programs. Looking to the future, how can architectural education help to identify and prepare students with new skills and insights for a competitive, fast-changing profession?
A CHALLENGING PROFESSION

Many of the participants in this study clearly had successful careers in architecture and were passionate about their work and the profession. Nonetheless, a palpable concern about the future of the architectural profession emerged in the surveys, focus groups and interviews.

When asked to identify the most significant challenge facing architectural education, many survey respondents turned directly to the challenges of current practice and the future of the discipline (35% of practitioners and 14% of academics).

The role of the architect in construction is constantly changing, and the traditional role is constantly challenged with new/evolving procurement systems. Practitioner survey respondent

For many, the changes were overwhelmingly negative, and the challenges difficult to tackle. Some practitioners and academics articulated the view that the profession has stood by while architects have been stripped of significant roles in major projects and of their power to impact on the built environment. More broadly, there was concern that architects have lost their role in public debate, neglected to respond to environmental issues, failed to keep up with swiftly changing technology, and are generally floundering in the face of the increasing complexity of the built environment sector. There was a sense that these challenges meant it was difficult for some practitioners to engage in architectural education, or to offer students and recent graduates meaningful experiences and development opportunities. These views were deeply held, and align with commentary on other platforms in Australia and internationally. Given the paucity of data available on the business of architecture, it is difficult to assess the degree to which these experiences and fears align with changes within the profession as a whole.

Particular areas of concern were the negative effect of competition between architects [sometimes cited as a result of too many graduates], encroachment by other actors within the built environment sector, and the diminishing value given to architectural expertise. There were wide-ranging reasons given. Some laid responsibility at the feet of education for failing to properly teach students their worth; some blamed aggressive new professions [project management was most frequently cited] combined with declining skill levels in architecture; some criticised an over-emphasis on aesthetics, said to be perpetuated by schools and the architectural and general media; and others thought it was due to architects walking away from, or not doing well in, traditional models of architectural services and areas of work.

The gradual skill decline of architects has led other professions [design managers, project managers, sustainability consultants, miscellaneous other consultants] to arise and take over the areas of our role we did not do well. Practitioner survey respondent

There needs to be some focus on how future architects can come to the project with a mutual respect for all involved. The difficult, self-absorbed ‘hero of design’ attitude is getting tired and a little embarrassing. Practitioner survey respondent

Such feelings are not new: a pending crisis in architectural practice has been a feature of the profession’s self-image for a long time.1 Likewise, other researchers have noted a level of disillusionment among architects for decades.2 Perhaps the alarm should be treated with a degree of scepticism. Yet the feeling that the traditional business model of architecture is coming undone is widely enough held to require further consideration.

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POOR WORK HABITS

Some participants draw a direct connection between work habits encouraged by the cultures of schools of architecture (such as all-nighters), and a tolerance of poor employment and work conditions in the profession. Undermanaged workplaces were also seen to stymie the progression of graduates.

Students are coming out with really strong computer and computer presentation skills and therefore employers are taking advantage of this and the student then is pigeonholed into that particular skill set and barely used for other areas. Their skill set therefore never develops much beyond being a drafts person. Practitioner survey respondent

FINANCIAL PRECARITY

Many survey participants raised the financial precariousness of architecture, attributing it in part to the intense competition between firms and with other professions, and partly to the fact that fees have never recovered from the under-cutting the aftermath of the 2008 global financial crisis. Some respondents noted that fee cutting continues, and is paralleled by architects undervaluing themselves and their work. For many, the long absence of a national guide to architectural fees remains a problem. This was a consequence of the Productivity Commission Review into the regulation of architecture in the early 2000s, which deemed the Architects Fee Guide, then published by the Australian Institute of Architects, to be anti-competitive. Low fees and consequent low salaries are identified as one of the reasons the architecturally trained leave the profession or move into allied roles in the construction industry. There is also the shift in professional service models, whereby many architects are now expected to provide partial rather than full service, and procurement models such as novation are seen as problematic.

Architects are undervaluing themselves and slashing their fees to win projects from their peers. The graduates are the cheap labour they use to meet those deadlines with no support from senior staff, leading to poor documentation, unnecessary mistakes on site and a high turnover of burnt out staff. Practitioner survey respondent

We are increasingly being engaged for partial services only and losing control of projects as a whole and having that critical client interface. Architectural fees and the average wages for architects are so poor that you have to be very persistent and passionate about what you do to survive. Roles in project management or construction management are too lucrative with improved wages, workplace flexibility and are taking people away from the architecture industry. Practitioner survey respondent

PUBLIC PERCEPTIONS OF ARCHITECTURE AND ARCHITECTS

One in ten practitioners commenting in the survey included some variant of the opinion that there is a low level of understanding about what architects do and can do. This sentiment also regularly came up in the focus groups. For some, elevating public awareness of the value of architectural practice was the biggest challenge facing the profession. There was also a strong sense that, as a group, architects have failed to clearly articulate the value of design to the broader community.

This coincides with concerns, expressed in survey responses and focus groups, that architects do not have a good reputation among the wider public. For example, there is concern that architects are often seen as elitist and not practical; that they lack credibility as practical, constructive and cost-conscious professionals; that they are primarily assumed to serve the wealthy and powerful; and are often not considered a necessary part of the construction process.

Some survey respondents and focus group participants thought that the profession had been held back by those who are unwilling to evolve their practice in relation to the changing contexts.
THE FUTURE OF REGISTRATION

Concerns about the roles and futures of architects also manifested via respondents’ comments on registration. Although not a primary area of discussion, some survey responses and focus group interactions delved into the future of registration, with a range of views expressed. For some, registration seemed outmoded and no longer fit for purpose in a fast-changing industry; others argued forcefully for more regulation in the face of competition for services, low fees, and the devaluing of the architect.

There are now many modes of emerging types of practices [for which] registration is not necessarily important. Academic survey respondent

We need to value a registered architect. The registration process is out of date. It needs an overhaul. Universities also need to value registration and teach it. Practitioner survey respondent

Regulation focuses only on the use of the word “Architect”; however, clients still associate the title with the role undertaken by any building designer. This [conflation of architect and building designer] has hurt the industry and its professionals greatly! Practitioner survey respondent

These comments relate to changing roles within the procurement and delivery of projects, which increasingly involve specialisation of services and a complex mix of relationships, responsibilities and liabilities. In focus groups, claims were made that project managers and design managers often act as gatekeepers with clients, and limit the architects’ involvement to conceptual design only, with documentation completed by others who don’t necessarily have the same level of skill and experience. Many contemporary public sector procurement practices facilitate this separation of roles, but there is inadequate research on the extent and impact of these models on the quality of documentation and built results. One registrar reiterated calls for project managers to be regulated, and argued that all performing the work of architects in a practice should be registered.

Survey respondents repeatedly expressed the desire for clarification about the roles and responsibilities of the architect, and the relationship of this to registration and the broader regulatory environment.

The practice of architecture needs to be regulated along with mandatory licensing of all building industry personnel – this is for consumer protection primarily. Practitioner survey respondent

I would have a second-tier registration for those seeking high level architectural design/management roles. Similar to the Queens Council role for barristers. Practitioner survey respondent

Two areas for potential future discussion and research emerge from the limited sample of opinions about registration. The first question raised is whether registration of title alone (i.e. without a concomitant reservation of function) remains meaningful when many people working in architectural design have not sought registration, or may not be eligible to become architects, but nonetheless have successful careers. The second question relates to whether current registration processes – specifically the National Standard of Competency for Architects – are most relevant to small practices, and do not adequately cover the competencies applicable to the long term multi-disciplinary public infrastructure projects for which large practices are increasingly engaged.
WAYS FORWARD

Some respondents identified ways forward, including the exploration of alternative practice models, better workplace behaviours, and valuing the contribution made by those who had trained in architecture and were pursuing careers beyond models of traditional architectural practice.

When you look to young firms both here and overseas, doing great things to be transparent [and] operate differently, they’re getting loads of work as a result. As an industry, architects are missing a massive opportunity to be relevant. Practitioner survey respondent

Architectural education should be a pathway to a variety of careers, not just traditional architecture, as the design skills and solution processes we are taught can apply to many areas of society and the economy, and courses should reflect this. Design literacy across the economy is becoming increasingly important. Practitioner survey respondent

There was also a sense that architectural education could play an important role in identifying new and more robust futures for the profession, and in equipping graduates with the skills required to operate in a fast-changing and challenging professional world. These include strong design and strategic thinking skills along with critical analysis. There is also potential to foster ‘soft’ skills such as collaboration, communication, adaptability and resilience within the educational environment. One respondent argued that education is the place where the changes required could be most readily initiated.

It would be fantastic if we could realise that architectural education is where we are most likely to affect change on the issues plaguing the profession – underpaid, gender inequality, overworking and mental health. Practitioner survey respondent

In light of the current rate of sociological, societal and technological change, combined with the changing role of the architect, academies should focus on big picture thinking, design and design theory, history, society, etc. Practitioner survey respondent

CONCLUSION

Like many professions and industries in the 21st century, architecture has been significantly buffeted and bruised by disruptive forces – changing economic conditions, the powerful influence of globalisation and new technology, government policy around fees, new competitors emerging and usurping the role of the architect in the construction industry.

In a period of such upheaval, there is an opportunity for architectural education to play a significant role in tackling the challenges of the ever-changing professional landscape, to effect change on the issues troubling the profession, and to help forge new paths. It is time for the profession to be agile and open to change to ensure their role in the built environment remains significant. Education is fundamental to this.
APPENDIX A: SURVEY DEMOGRAPHICS

PRACTITIONER SURVEY DEMOGRAPHICS

There were 2,773 practitioners who responded to the survey: 319 from New Zealand, seven from Papua New Guinea and 2,447 from Australia. It is useful to compare these numbers to those obtained through the 2016 Australian Bureau of Statistics Census of Population. In 2016, the Census counted 16,991 people who identified as architects.1 This means that the 2,447 Australian survey respondents comprise approximately 14% of the overall architectural population.2 However, the distribution of survey respondents does not align neatly with the Census identified group.

LOCATION

The largest groups of survey respondents were from NSW (913) and Victoria (692). However, comparing the respondents’ locations to the Census data reveals uneven representation by state – for example, architects from the ACT, NT and SA are over-represented, while those from NSW and Victoria are underrepresented, despite being present in larger numbers. [Figure A1].

Thirty-eight of the Australian-based practitioner respondents had studied in New Zealand, and 13 of the New Zealand-based ones had studied in Australia. Another 247 had an architecture qualification from another country recognised for registration. Around 100 did not have a qualification (typically students).

GENDER

Just over one third of the respondents were female (34%, 35% for Australia) (Figure A2). This is higher than the proportion of the Census-identified architectural workforce in Australia, which in 2016 was 31%. Seven respondents identified as non-binary, 0.3%.

AGE

Practitioner respondents are skewed towards older age cohorts, with those aged between 35 and 44 making up the largest group – 689 respondents, 624 of whom were based in Australia. (Figure A3)

A comparison with the 2016 Census data shows that the respondents do not provide an even representation of age groups. Early career architects – those under the age of 35 – are not well represented, with numbers at approximately 11% of Census figures. In contrast, mid-career respondents (35–44) comprise roughly 30% of architects in that age group. There is also a relatively high proportion of those over the age of 65.3 In Figure A3, the red dot indicates the number of Australian respondents as a proportion of the number of architects recorded in the 2016 Census.

The owners of architectural practices make up 45% of all survey respondents (Partners, Directors, CEOs and Principals). However, in the Australian Census just 34% of architectural workers were owners. While this means that owners are over-represented, they provide important perspectives about architectural education, as they are employers of graduates.

PRACTICE SIZE

The respondents came from a range of practice sizes, but those from smaller firms and sole practitioners dominate.4 This corresponds with anecdotal evidence that much of the profession works in small firms. There is also a high number of responses from firms with 50 or more staff. (Figure A5)

QUALIFICATIONS

The dominance of older respondents is reflected in the number of respondents holding Bachelor qualifications. (Figure A6) This cohort would have graduated before the two-year Master coursework programs replaced the original five-year Bachelors of Architecture. Of interest, more than half the respondents holding PhDs are working in architectural practices.

ROLES AND SENIORITY

Survey respondents are also heavily weighted towards those in senior roles. [Figure A4]

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2 The comparison is indicative only because of the two-year gap between the Census and the AACA survey.
3 Australian respondents identified as retired in the survey have been removed from the 65+ calculation as they were not counted in the Census.
4 Note that the survey did not ask for detail on what ‘other’ meant for this question.
Figure A1 State/country of respondents, number and comparison to proportion of 2016 Census

<table>
<thead>
<tr>
<th>State/Country</th>
<th>Number</th>
<th>Approx Proportion of Census Counts of Architects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Capital Territory</td>
<td>125</td>
<td>41%</td>
</tr>
<tr>
<td>New South Wales</td>
<td>913</td>
<td></td>
</tr>
<tr>
<td>Northern Territory</td>
<td>114</td>
<td>15%</td>
</tr>
<tr>
<td>Queensland</td>
<td>954</td>
<td></td>
</tr>
<tr>
<td>South Australia</td>
<td>311</td>
<td>25%</td>
</tr>
<tr>
<td>Tasmania</td>
<td>319</td>
<td></td>
</tr>
<tr>
<td>Victoria</td>
<td>353</td>
<td>12%</td>
</tr>
<tr>
<td>Western Australia</td>
<td>689</td>
<td>21%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>559</td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>466</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>~11%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure A2 Gender of respondents

- Female: 954
- Male: 1812
- Non-binary: 7

Figure A3 Age of respondents, number and comparison to proportion of 2016 Census

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number</th>
<th>Approx Proportion of Census Age Group (Australia only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25</td>
<td>77</td>
<td>35%</td>
</tr>
<tr>
<td>25-29</td>
<td>272</td>
<td>30%</td>
</tr>
<tr>
<td>30-34</td>
<td>357</td>
<td>25%</td>
</tr>
<tr>
<td>35-44</td>
<td>689</td>
<td>20%</td>
</tr>
<tr>
<td>45-54</td>
<td>559</td>
<td>15%</td>
</tr>
<tr>
<td>55-64</td>
<td>466</td>
<td>10%</td>
</tr>
<tr>
<td>65+</td>
<td>353</td>
<td>5%</td>
</tr>
</tbody>
</table>
Figure A4 Position held in organisation

Figure A5 Size of firm

Note: The numbers shown here are not the same as in the survey raw data. The ‘Other’ category included those working for the government, retirees and students, but also some sole practitioners nominate themselves as ‘Other’. The latter have been added to the Partner/Director category, and other ‘Other’ entries have been re-assigned where appropriate (63 in all).

Figure A6 Qualifications of respondents
ACADEMIC SURVEY DEMOGRAPHICS

The academic survey attracted 511 respondents. Of these, 33 were partial responses, which gave very minimal information and answered no opinion questions.

The survey asked respondents to identify as either continuing / fixed-term academics or sessional / casual. The former might be assumed as having a commitment to being or becoming an academic. The latter group might range from recent graduates to well-established practitioners who teach on a regular basis; this group is more volatile in number and constituency, but is assumed to have a more direct connection to practice. However, this is not a hard and fast distinction because recent graduates who are teaching might have little practice experience and some part-time academics work in this way to maintain a practice.

Figure A7 Age and gender of academic survey respondents

Figure A8 Highest qualification of academic survey respondents
Figure A9 Years teaching and years practice experience of academic survey respondents

Figure A10 Academic survey respondents by university

388 from Australia, 86 from New Zealand and 3 from Papua New Guinea
Architectural education and the profession in Australia and New Zealand

Figure A11 Academic survey respondents by level or position at university

Figure A12 Registration status of those teaching by jurisdiction – 59% are registered
# APPENDIX B: ACADEMIC SURVEY RESULTS

## APPENDIX B1: COMPARISON OF CONTINUING STAFF AND SESSIONAL STAFF

### Table B1–1

<table>
<thead>
<tr>
<th>How important do you consider the following areas in architectural education?</th>
<th>Q16. Continuing N=213</th>
<th>Q43. Sessional N=262</th>
<th>Total N=475</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design studio</td>
<td>4.8</td>
<td>4.7</td>
<td>4.8</td>
</tr>
<tr>
<td>Architectural technology</td>
<td>4.5</td>
<td>4.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Architectural history</td>
<td>4.3</td>
<td>4.2</td>
<td>4.3</td>
</tr>
<tr>
<td>Design communication</td>
<td>4.3</td>
<td>4.4</td>
<td>4.4</td>
</tr>
<tr>
<td>Environment / sustainability</td>
<td>4.2</td>
<td>4.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Architectural theory</td>
<td>4.0</td>
<td>4.1</td>
<td>4.1</td>
</tr>
<tr>
<td>Professional practice</td>
<td>3.9</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Urban studies</td>
<td>3.9</td>
<td>3.9</td>
<td>3.9</td>
</tr>
<tr>
<td>Electives [architecture discipline]</td>
<td>3.8</td>
<td>3.7</td>
<td>3.8</td>
</tr>
<tr>
<td>Indigenous studies</td>
<td>3.8</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Project and/or construction management</td>
<td>3.5</td>
<td>3.4</td>
<td>3.4</td>
</tr>
<tr>
<td>Law / business / economics</td>
<td>3.2</td>
<td>3.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Electives [non-disciplinary]</td>
<td>3.1</td>
<td>3.3</td>
<td>3.2</td>
</tr>
</tbody>
</table>

### Table B1–2

<table>
<thead>
<tr>
<th>How important is it for architecture students to develop the following generic skills?</th>
<th>Q19. Continuing N=213</th>
<th>Q45. Sessional N=262</th>
<th>Total N=475</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical thinking</td>
<td>4.8</td>
<td>4.8</td>
<td>4.8</td>
</tr>
<tr>
<td>Problem solving</td>
<td>4.7</td>
<td>4.8</td>
<td>4.8</td>
</tr>
<tr>
<td>Collaboration / teamwork</td>
<td>4.6</td>
<td>4.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Verbal communication</td>
<td>4.5</td>
<td>4.4</td>
<td>4.5</td>
</tr>
<tr>
<td>Time management</td>
<td>4.4</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Written communication</td>
<td>4.3</td>
<td>4.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Entrepreneurial / business skills</td>
<td>3.6</td>
<td>3.5</td>
<td>3.5</td>
</tr>
</tbody>
</table>

### Table B1–3

<table>
<thead>
<tr>
<th>How important is it for students to learn the following technical skills?</th>
<th>Q18. Continuing N=213</th>
<th>Q44. Sessional N=262</th>
<th>Total N=475</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital modelling (e.g. CAD, 3D modelling)</td>
<td>4.3</td>
<td>4.2</td>
<td>4.3</td>
</tr>
<tr>
<td>Free-hand drawing / drafting</td>
<td>4.2</td>
<td>4.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Physical model making</td>
<td>4.1</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Other software skills (e.g. presentation, project management)</td>
<td>3.7</td>
<td>3.6</td>
<td>3.7</td>
</tr>
<tr>
<td>Digital fabrication</td>
<td>3.7</td>
<td>3.3</td>
<td>3.5</td>
</tr>
<tr>
<td>Parametric scripting or coding</td>
<td>3.2</td>
<td>2.9</td>
<td>3.0</td>
</tr>
</tbody>
</table>
### Table B1–4

<table>
<thead>
<tr>
<th>Within an architectural degree, how important is:</th>
<th>Q26. Continuing N=172</th>
<th>Q49. Sessional N=160</th>
<th>Total N= 332</th>
</tr>
</thead>
<tbody>
<tr>
<td>The studio culture/environment where students learn from peer support, discussion and work</td>
<td>4.7</td>
<td>4.6</td>
<td>4.7</td>
</tr>
<tr>
<td>Dedicated studio facilities for students</td>
<td>4.4</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Discrete “Design Studio” courses / curriculum</td>
<td>4.3</td>
<td>4.1</td>
<td>4.2</td>
</tr>
<tr>
<td>A dedicated workspace for each student</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
</tr>
</tbody>
</table>

### Table B1–5

<table>
<thead>
<tr>
<th>In an architectural degree, how important do you consider:</th>
<th>Q20. Continuing N=213</th>
<th>Q46. Sessional N=262</th>
<th>Total N= 472</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluating both the individual and the group</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Group work</td>
<td>4.1</td>
<td>3.8</td>
<td>3.9</td>
</tr>
<tr>
<td>Work placements and/or simulated practice environments</td>
<td>3.8</td>
<td>3.9</td>
<td>3.9</td>
</tr>
<tr>
<td>Working with students from disciplines other than architecture</td>
<td>3.8</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Learning practical industry knowledge (e.g. use of building codes)</td>
<td>3.6</td>
<td>3.8</td>
<td>3.7</td>
</tr>
</tbody>
</table>

### Table B1–6

<table>
<thead>
<tr>
<th>What is the ideal length of contact time that should be spent in a design studio group per week?</th>
<th>Q27. Continuing N=172</th>
<th>Q50. Sessional N=160</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hours</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>3 hours</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>4 hours</td>
<td>8%</td>
<td>6%</td>
</tr>
<tr>
<td>5 hours</td>
<td>5%</td>
<td>13%</td>
</tr>
<tr>
<td>6 hours</td>
<td>39%</td>
<td>30%</td>
</tr>
<tr>
<td>7 hours</td>
<td>3%</td>
<td>6%</td>
</tr>
<tr>
<td>8 or more hours</td>
<td>43%</td>
<td>42%</td>
</tr>
</tbody>
</table>

### Table B1–7

<table>
<thead>
<tr>
<th>How many students per design tutor are there in a typical studio class in your institution?</th>
<th>Q28. Continuing N=172</th>
<th>Q51. Sessional N=160</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 or fewer</td>
<td>21%</td>
<td>26%</td>
</tr>
<tr>
<td>16-20</td>
<td>64%</td>
<td>56%</td>
</tr>
<tr>
<td>21-25</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>More than 25</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>
## APPENDIX B2: COMPARISON OF AUSTRALIA AND NEW ZEALAND

### Table B2–1

<table>
<thead>
<tr>
<th>Area in Architectural Education</th>
<th>Australia</th>
<th>New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Continuing N=157</td>
<td>Casual N=229</td>
</tr>
<tr>
<td>Design studio</td>
<td>4.8</td>
<td>4.7</td>
</tr>
<tr>
<td>Architectural technology</td>
<td>4.5</td>
<td>4.3</td>
</tr>
<tr>
<td>Architectural history</td>
<td>4.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Design communication</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Environment / sustainability</td>
<td>4.2</td>
<td>4.3</td>
</tr>
<tr>
<td>Architectural theory</td>
<td>4.1</td>
<td>4.1</td>
</tr>
<tr>
<td>Professional practice</td>
<td>4.0</td>
<td>3.9</td>
</tr>
<tr>
<td>Urban studies</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Electives (architecture discipline)</td>
<td>3.8</td>
<td>3.7</td>
</tr>
<tr>
<td>Indigenous studies</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Project and/or construction management</td>
<td>3.4</td>
<td>3.4</td>
</tr>
<tr>
<td>Law / business / economics</td>
<td>3.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Electives (non-disciplinary)</td>
<td>3.1</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Note that N figures may not add up to the same as previous tables because data in these tables excludes contributors from Papua New Guinea.

### Table B2–2

<table>
<thead>
<tr>
<th>Technical Skills</th>
<th>Australia</th>
<th>New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital modelling (e.g. CAD, 3D modelling)</td>
<td>4.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Digital fabrication</td>
<td>3.7</td>
<td>3.2</td>
</tr>
<tr>
<td>Free-hand drawing / drafting</td>
<td>4.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Physical model making</td>
<td>4.1</td>
<td>4.0</td>
</tr>
<tr>
<td>Parametric scripting or coding</td>
<td>3.2</td>
<td>2.9</td>
</tr>
<tr>
<td>Other software skills (e.g. presentation, PM)</td>
<td>3.7</td>
<td>3.6</td>
</tr>
</tbody>
</table>
### Table B2–3

<table>
<thead>
<tr>
<th>How important is it for students to develop the following generic skills?</th>
<th>Australia</th>
<th>New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Continuing N=157</td>
<td>Casual N=229</td>
</tr>
<tr>
<td>Critical thinking</td>
<td>4.8</td>
<td>4.8</td>
</tr>
<tr>
<td>Problem solving</td>
<td>4.7</td>
<td>4.8</td>
</tr>
<tr>
<td>Collaboration / teamwork</td>
<td>4.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Verbal communication</td>
<td>4.5</td>
<td>4.4</td>
</tr>
<tr>
<td>Time management</td>
<td>4.4</td>
<td>4.3</td>
</tr>
<tr>
<td>Written communication</td>
<td>4.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Entrepreneurial / business skills</td>
<td>3.7</td>
<td>3.5</td>
</tr>
</tbody>
</table>

### Table B2–4

<table>
<thead>
<tr>
<th>In an architectural degree, how important do you consider:</th>
<th>Australia</th>
<th>New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Continuing N=157</td>
<td>Casual N=229</td>
</tr>
<tr>
<td>Evaluating both the individual and the group</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Group work</td>
<td>4.1</td>
<td>3.8</td>
</tr>
<tr>
<td>Work placements and/or simulated practice environments</td>
<td>3.9</td>
<td>3.9</td>
</tr>
<tr>
<td>Working with students from disciplines other than architecture</td>
<td>3.8</td>
<td>3.7</td>
</tr>
<tr>
<td>Learning practical industry knowledge (e.g. use of building codes)</td>
<td>3.6</td>
<td>3.7</td>
</tr>
</tbody>
</table>

### Table B2–5

<table>
<thead>
<tr>
<th>Within an architectural degree, how important is:</th>
<th>Australia</th>
<th>New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Continuing N=128</td>
<td>Sessional N=145</td>
</tr>
<tr>
<td>The studio culture/environment where students learn from peer support, discussion and work</td>
<td>4.7</td>
<td>4.6</td>
</tr>
<tr>
<td>Dedicated studio facilities for students</td>
<td>4.3</td>
<td>4.5</td>
</tr>
<tr>
<td>Discrete &quot;Design Studio&quot; courses / curriculum</td>
<td>4.3</td>
<td>4.1</td>
</tr>
<tr>
<td>A dedicated workspace for each student</td>
<td>3.5</td>
<td>3.5</td>
</tr>
</tbody>
</table>
Table B2–6

<table>
<thead>
<tr>
<th>What is the ideal length of contact time that should be spent in a design studio group per week?</th>
<th>Australia N=273</th>
<th>New Zealand N=56</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hours</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>3 hours</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>4 hours</td>
<td>7%</td>
<td>5%</td>
</tr>
<tr>
<td>5 hours</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>6 hours</td>
<td>35%</td>
<td>30%</td>
</tr>
<tr>
<td>7 hours</td>
<td>5%</td>
<td>4%</td>
</tr>
<tr>
<td>8 or more hours</td>
<td>41%</td>
<td>52%</td>
</tr>
</tbody>
</table>

Table B2–7

<table>
<thead>
<tr>
<th>How many students per design tutor are there in a typical studio class in your institution?</th>
<th>Australia N=273</th>
<th>New Zealand N=56</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 or fewer</td>
<td>26%</td>
<td>20%</td>
</tr>
<tr>
<td>16-20</td>
<td>61%</td>
<td>68%</td>
</tr>
<tr>
<td>21-25</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>More than 25</td>
<td>4%</td>
<td>5%</td>
</tr>
</tbody>
</table>
APPENDIX B3: COMPARISON OF 2018 AND 2007 ACADEMIC SURVEYS

The survey in 2007 did not solicit answers from casual or sessional staff. The 2018 results shown in this section are also for continuing staff only.

### Table B3–1

<table>
<thead>
<tr>
<th>How important do you consider the following areas in architectural education?</th>
<th>2007 N=181</th>
<th>2018 N=123</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design studio</td>
<td>4.8</td>
<td>4.8</td>
</tr>
<tr>
<td>Construction technology</td>
<td>4.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Communication &amp; presentation</td>
<td>4.0</td>
<td>4.3</td>
</tr>
<tr>
<td>Architectural history</td>
<td>4.2</td>
<td>4.3</td>
</tr>
<tr>
<td>Sustainability</td>
<td>4.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Architectural theory</td>
<td>4.1</td>
<td>4.0</td>
</tr>
<tr>
<td>Professional practice</td>
<td>-</td>
<td>3.9</td>
</tr>
<tr>
<td>Electives [architecture related]</td>
<td>3.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Electives [non-disciplinary]</td>
<td>3.2</td>
<td>3.1</td>
</tr>
</tbody>
</table>

### Table B3–2

<table>
<thead>
<tr>
<th>How important is it for architecture students to develop the following generic skills?</th>
<th>2007 N=181</th>
<th>2018 N=123</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical thinking</td>
<td>4.7</td>
<td>4.8</td>
</tr>
<tr>
<td>Problem solving</td>
<td>4.6</td>
<td>4.7</td>
</tr>
<tr>
<td>Collaboration or teamwork</td>
<td>4.2</td>
<td>4.6</td>
</tr>
<tr>
<td>Verbal communication</td>
<td>4.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Time management</td>
<td>4.1</td>
<td>4.4</td>
</tr>
<tr>
<td>Written communication</td>
<td>4.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Entrepreneurial and business</td>
<td>3.2</td>
<td>3.6</td>
</tr>
</tbody>
</table>

### Table B3–3

<table>
<thead>
<tr>
<th>How important are the following factors associated with the design studio?</th>
<th>Within an architectural degree, how important is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007 N=181</td>
<td>2018 N=123</td>
</tr>
<tr>
<td>An environment where students learn from peer support, discussion and work</td>
<td>4.6</td>
</tr>
<tr>
<td>A dedicated studio space or building</td>
<td>4.0</td>
</tr>
<tr>
<td>Discrete “Design Studio” courses / curriculum</td>
<td>4.3</td>
</tr>
<tr>
<td>For each student to have a dedicated workspace</td>
<td>3.9</td>
</tr>
</tbody>
</table>
### Table B3–4

<table>
<thead>
<tr>
<th>In an architectural degree, how important do you consider:</th>
<th>2007 N=2,181</th>
<th>2018 N=210</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group work</td>
<td>3.9</td>
<td>4.1</td>
</tr>
<tr>
<td>Evaluating both the individual and the group</td>
<td>3.8</td>
<td>4.0</td>
</tr>
<tr>
<td>Work placements and/or simulated practice environments</td>
<td></td>
<td>3.8</td>
</tr>
<tr>
<td>Working with students from disciplines other than architecture</td>
<td>3.2</td>
<td>3.8</td>
</tr>
<tr>
<td>Learning practical industry knowledge (e.g. use of building codes)</td>
<td></td>
<td>3.6</td>
</tr>
</tbody>
</table>

### Table B3–5

Consider the following statements about your experience with students and indicate your level of agreement:

<table>
<thead>
<tr>
<th>2007 N=181</th>
<th>2018 N=123</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students often have challenges integrating study with work and other commitments</td>
<td>4.0</td>
</tr>
<tr>
<td>Limited academic preparedness of students means a lot of first year is spent on basic skills</td>
<td>3.7</td>
</tr>
<tr>
<td>The increasing proportion of international students has required more time commitment by staff</td>
<td>3.6</td>
</tr>
<tr>
<td>Students in my class complain about their workload.</td>
<td>3.0</td>
</tr>
<tr>
<td>Students in my classes often feel they have too high a workload</td>
<td>3.5</td>
</tr>
<tr>
<td>It is increasingly hard to get students to engage with on-campus classes and other activities</td>
<td>3.4</td>
</tr>
<tr>
<td>Student absenteeism affects students’ individual learning.</td>
<td>4.3</td>
</tr>
<tr>
<td>Student absenteeism is a problem in my classes</td>
<td>3.3</td>
</tr>
</tbody>
</table>
APPENDIX B4: SOURCES OF FUNDING

Table B4–1

<table>
<thead>
<tr>
<th>Q37. Sources of funding for research during 2018</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal university grant / project</td>
<td>63%</td>
</tr>
<tr>
<td>Self-funded (i.e. as part of core employment)</td>
<td>60%</td>
</tr>
<tr>
<td>Industry funding</td>
<td>39%</td>
</tr>
<tr>
<td>Other government grant</td>
<td>35%</td>
</tr>
<tr>
<td>Tier 1 competitive grant (ARC/NHMRC/Marsden/HRC and equivalents)</td>
<td>14%</td>
</tr>
</tbody>
</table>

Additional sources:
- CAT3 institutional
- Client
- Competitive grant funding from other institutions (GLAM sector)
- External foundation grants
- Funding by commissioning clients
- Funding from gallery
- International funding
- Local council funding, charitable trust finding, funding in kind (service provision), NZIA
- Overseas institutional fellowship
- Overseas research institution (postdoctoral fellowships)
- Personally paid for outside of my core employment
- Philanthropic funding via university
- Startup funds
# APPENDIX C: PRACTITIONER SURVEY RESULTS

## APPENDIX C1: PRACTITIONER COMPARED TO ACADEMIC

### Table C1–1

<table>
<thead>
<tr>
<th>How important do you consider the following areas in architectural education?</th>
<th>Q22. Practitioners N= 2,188</th>
<th>Academics N= 475</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design studio</td>
<td>4.3</td>
<td>4.8</td>
</tr>
<tr>
<td>Architectural technology</td>
<td>4.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Architectural history</td>
<td>3.8</td>
<td>4.3</td>
</tr>
<tr>
<td>Design communication</td>
<td>4.3</td>
<td>4.4</td>
</tr>
<tr>
<td>Environment / sustainability</td>
<td>4.1</td>
<td>4.2</td>
</tr>
<tr>
<td>Architectural theory</td>
<td>3.7</td>
<td>4.1</td>
</tr>
<tr>
<td>Professional practice</td>
<td>4.3</td>
<td>3.8</td>
</tr>
<tr>
<td>Urban studies</td>
<td>3.6</td>
<td>3.9</td>
</tr>
<tr>
<td>Electives (architecture discipline)</td>
<td>3.5</td>
<td>3.8</td>
</tr>
<tr>
<td>Indigenous studies</td>
<td>-</td>
<td>3.7</td>
</tr>
<tr>
<td>Project and/or construction management</td>
<td>4.0</td>
<td>3.4</td>
</tr>
<tr>
<td>Law / business / economics</td>
<td>3.7</td>
<td>3.2</td>
</tr>
<tr>
<td>Electives (non-disciplinary)</td>
<td>2.9</td>
<td>3.2</td>
</tr>
</tbody>
</table>

### Table C1–2

<table>
<thead>
<tr>
<th>How important is it for architecture students to develop the following generic skills?</th>
<th>Q25. Practitioners N= 2,188</th>
<th>Academics N= 475</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical thinking</td>
<td>4.6</td>
<td>4.8</td>
</tr>
<tr>
<td>Problem solving</td>
<td>4.7</td>
<td>4.8</td>
</tr>
<tr>
<td>Collaboration / teamwork</td>
<td>4.4</td>
<td>4.4</td>
</tr>
<tr>
<td>Verbal communication</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Time management</td>
<td>4.4</td>
<td>4.3</td>
</tr>
<tr>
<td>Written communication</td>
<td>4.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Entrepreneurial / business skills</td>
<td>3.8</td>
<td>3.5</td>
</tr>
</tbody>
</table>

### Table C1–3

<table>
<thead>
<tr>
<th>How important is it for students to learn the following technical skills?</th>
<th>Q24. Practitioners N= 2,188</th>
<th>Academics N= 475</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital modelling (e.g. CAD, 3D modelling)</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Free-hand drawing / drafting</td>
<td>4.1</td>
<td>4.2</td>
</tr>
<tr>
<td>Physical model making</td>
<td>3.3</td>
<td>4.0</td>
</tr>
<tr>
<td>Other software skills (e.g. presentation, project management)</td>
<td>3.9</td>
<td>3.7</td>
</tr>
<tr>
<td>Digital fabrication</td>
<td>3.2</td>
<td>3.5</td>
</tr>
<tr>
<td>Parametric scripting or coding</td>
<td>2.8</td>
<td>3.0</td>
</tr>
</tbody>
</table>
### Table C1–4

<table>
<thead>
<tr>
<th>Q26. In an architectural degree, how important do you consider:</th>
<th>Q28. Practitioners N= 2,180</th>
<th>Q16,43 Academics N= 472</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group work</td>
<td>3.7</td>
<td>4.0</td>
</tr>
<tr>
<td>Evaluating both the individual and the group</td>
<td>-</td>
<td>3.9</td>
</tr>
<tr>
<td>Work placements and/or simulated practice environments</td>
<td>4.2</td>
<td>3.9</td>
</tr>
<tr>
<td>Working with students from disciplines other than architecture</td>
<td>3.9</td>
<td>3.7</td>
</tr>
<tr>
<td>Learning practical industry knowledge [e.g. use of building codes]</td>
<td>4.2</td>
<td>3.7</td>
</tr>
</tbody>
</table>

### Table C1–5

<table>
<thead>
<tr>
<th>Considering the relationship of architectural education to the profession, indicate how important are the following elements:</th>
<th>Q28. Practitioners N= 2,418</th>
<th>Q30 Academics N= 207</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduates being well equipped to enter a practice environment</td>
<td>4.2</td>
<td>3.9</td>
</tr>
<tr>
<td>Having mechanisms for the profession to engage with the direction of the architecture program</td>
<td>3.9</td>
<td>3.7</td>
</tr>
<tr>
<td>Architectural academics staying abreast of key developments in architectural practice</td>
<td>4.2</td>
<td>4.0</td>
</tr>
<tr>
<td>Students working part time in an architectural practice during their studies</td>
<td>4.1</td>
<td>3.3</td>
</tr>
<tr>
<td>Research collaborations, consultancies and other engagement with the profession</td>
<td>3.8</td>
<td>4.0</td>
</tr>
</tbody>
</table>

### Table C1–6

<table>
<thead>
<tr>
<th>Considering the role of practitioner-teachers, indicate your level of agreement with the following statements:</th>
<th>Q29. Practitioners N= 2,411</th>
<th>Q31 Academics N= 207</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important for industry practitioners to be a regular part of the teaching program</td>
<td>4.4</td>
<td>4.4</td>
</tr>
<tr>
<td>It is difficult to get architectural practitioners to contribute to the teaching program</td>
<td>-</td>
<td>3.1</td>
</tr>
<tr>
<td>It is desirable for architecture academics to be [current or former] registered architects</td>
<td>4.0</td>
<td>3.2</td>
</tr>
<tr>
<td>It is difficult to maintain an architectural practice as an academic</td>
<td>-</td>
<td>4.1</td>
</tr>
<tr>
<td>Architectural practitioners have the necessary skills to contribute to teaching programs</td>
<td>4.0</td>
<td>-</td>
</tr>
</tbody>
</table>

### Table C1–7

<table>
<thead>
<tr>
<th>How important is the accreditation of architectural education programs by Architect Registration Boards to:</th>
<th>Q30. Practitioners N= 2,413</th>
<th>Q33 Academics N= 206</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintaining standards within architectural education</td>
<td>4.2</td>
<td>4.1</td>
</tr>
<tr>
<td>Articulating the profession’s expectations of architecture degree graduates</td>
<td>4.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Providing a connection between architectural education and the path to registration</td>
<td>4.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Maintaining public confidence in the architectural profession</td>
<td>4.3</td>
<td>-</td>
</tr>
</tbody>
</table>
Q21. Considering the skill requirements of your work after graduation, are there any areas of your university study you wish had been given more (or less) attention?
   • Slightly over 1,600 practitioners gave useful responses to this question.
   • 1,838 directly answered this question, but 144 answered no; some answered yes, but gave no detail; and others stated that their education was so long ago that their answer would not be useful.

Q23. Are there any new / emerging areas of practice (not listed above) that are important for the future of architectural education?
   • 10% of the 1,264 practitioners who answered the question said ‘no’.
   • Of the rest, one in five (21%) detailed subjects that were not emerging or even new.

Q27. From your experience, what is the most significant challenge facing architectural education in Australia?
   • The tagging of ‘in Australia’ at the end of the question meant those not based in Australia were unsure how to respond. Some still answered.
   • There were over 2,000 responses to the question; 3% of these said no or were invalid.

Q34. What is the one area you would most like graduates to get more exposure to in during their university studies?
   • 2,026 supplied answers to this question; 92 or 5% said no or were invalid.

Q35. Are there any other issues affecting the relationship of architectural education and the profession you wish to comment on?
   • 1,204 respondents took the opportunity to respond; however, 16% answered no.
## APPENDIX D1: AUSTRALIAN SCHOOLS

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>6,651.8</td>
<td>2,343.3</td>
<td>2,069.0</td>
<td>4,413.3*</td>
<td>993.8</td>
<td>1,244.8</td>
</tr>
<tr>
<td>2017</td>
<td>6,235.5</td>
<td>2,251.5</td>
<td>1,982.9</td>
<td>4,235.4*</td>
<td>903.7</td>
<td>1,096.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,000.1</td>
<td>3,155.2</td>
</tr>
<tr>
<td>Total</td>
<td>12,887.3</td>
<td>4,603.2</td>
<td>3,977.2</td>
<td>9,645.5*</td>
<td>1,965.9</td>
<td>2,772.1</td>
</tr>
</tbody>
</table>

### Bachelor Graduation

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic</th>
<th>International</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>2,025</td>
<td>660</td>
<td>612</td>
</tr>
<tr>
<td>2017</td>
<td>2,002</td>
<td>681</td>
<td>607</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>414</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,040</td>
</tr>
</tbody>
</table>

### Masters Enrolments

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic</th>
<th>International</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>3,226.9</td>
<td>965.5</td>
<td>802.8</td>
</tr>
<tr>
<td>2017</td>
<td>2,929.0</td>
<td>977.5</td>
<td>776.3</td>
</tr>
<tr>
<td>2016</td>
<td>2,785.7</td>
<td>970.0</td>
<td>751.3</td>
</tr>
<tr>
<td>2015</td>
<td>2,748.4</td>
<td>1,003.9</td>
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### Masters Graduation

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<th>Total</th>
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<tbody>
<tr>
<td>2018</td>
<td>1,298</td>
<td>437</td>
<td>318</td>
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<td>2017</td>
<td>1,234</td>
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<td>602</td>
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</table>

Enrolment figures are in EFTLS – Equivalent full-time student load; Graduation figures are for persons.

* Includes one non-binary person identified in the data

## APPENDIX D2: NEW ZEALAND SCHOOLS

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### Bachelor Graduation

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### Masters Enrolments

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### Masters Graduation

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</thead>
<tbody>
<tr>
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</tbody>
</table>

Enrolment figures are in EFTS – Equivalent full-time student; Graduation figures are for persons.

* Includes one non-binary person identified in the data