DRAWING AS MANUAL DRAFTING IN THE INTERIOR DESIGN INDUSTRY: A WORK-BASED STUDY

A Thesis submitted by

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ABSTRACT

Since the rise of computer-aided design (CAD) software in the past 20 years, there has been a noticeable decline in student manual drafting abilities. The pervasive use and value of CAD applications are not questioned in this research project because they are the norm in interior design and their contributions have been significant. However, due to the impact of digitalisation on modern interior design education, graduates and students of interior design have shown a limited capacity for producing simple floor plans, elevations, sections, and perspectives by hand.

It can therefore be argued there is a disconnect between professional practice and whether there is value in manual drawing in graduate education. By presenting the opinions of ten professional experts in interior design, this work-based research project explores whether the use of drawing as a manual drafting skill in professional practice is important. The study additionally looks at how experienced interior designers recognise their skills and question the value of drawing as a manual drafting technique.

To generate qualitative data, a series of semi-structured interviews were conducted. The findings from these interviews suggest, that interior designers still rely heavily on manual drafting and drawing as a component of their process for client briefs, concept generation, and communication. Despite ongoing digitalisation, this knowledge will assist students and newly graduated interior designers to use manual drafting to become better communicators, idea generators, and thus ultimately better designers.

The existing literature on this subject suggests that educators need to be aware of opportunities to create new techniques to enhance the delivery of manual drafting skills in tertiary education.

CERTIFICATION OF THESIS

I, Elena Lomas, declare that this thesis by publication (TBP), titled "Drawing as Manual Drafting in the Interior Design Industry: A Work-Based Study", is not more than 40,000 words in length including quotes and exclusive of tables, figures, appendices, references, and footnotes.

This TBP is the work of Elena Lomas except where otherwise acknowledged, with the majority contribution to the paper presented as a TBP undertaken by the student. The work is original and has not previously been submitted for any other award, except where acknowledged.

Endorsed by:

Associate Professor Dr. Henriette van Rensburg
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Student and supervisors' signatures of endorsement are held at the University.

STATEMENT OF CONTRIBUTION

All the work presented in this thesis was carried out solely by Elena Lomas under the guidance of her supervisors Associate Professor Dr. Henriette van Rensburg, Dr. Lee Fergusson and Dr. Linda Clark.

I gratefully acknowledge the guidance and support of others during my master's journey in the acknowledgement section of this thesis. The following detail is the agreed share of contribution for candidates and co-authors in the presented publication in this thesis:

Article: Lomas E., Thurlow L., Fergusson L., van Rensburg H., & Clark L. (2023). Use of Drawing as a Manual Drafting Skill in the Interior Design Industry. *Journal of Interior Design*.

The overall contribution of Elena Lomas was 80% including the concept development, data management, analyses, interpretation, and drafting of the final manuscript; Dr. Lisa Thurlow, Dr. Lee Fergusson, Associate Professor Dr. Henriette van Rensburg and Dr. Linda Clark were instrumental in developing the concept, editing, and offering critical intellectual feedback by 5% each respectively.

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ABBREVIATIONS

BIM - Building Information Modelling

CAD - Computer-Aided Design

CIDA - Council for Interior Design Accreditation

CoP - Community of Practice

FAUP - Faculty of Architecture of the University of Porto

JID - Journal of Interior Design

MPSR - Master of Professional Studies Research

RTP - Research Training Program

SESL - Student Evaluation of Subject and Lecturers

SMART - Specific, Measurable, Achievable, Relevant, Timebound

TBP - Thesis by Publication

TEQSA - Tertiary Education Quality and Standards Agency

TUA - Torrens University Australia

WBP - Work-Based project

WIL - Work Integrated Learning

CHAPTER 1: INTRODUCTION

This study originated in response to concerns that surfaced in the researcher's university classroom, as well as from being part of ongoing conversations with interior design practitioners during regular student portfolio industry reviews. The thesis provides an overview of the research, a detailed explanation of how the project was planned and, carried out, and what the results mean; as well as what the conclusions are, and where and how the researcher answered the initial research questions.

The thesis follows this structure: Chapter 1: Introduction; Chapter 2: Literature review; Chapter 3: Publishable paper: "Use of Drawing as Manual Drafting Skill in the Interior Design Industry"; Chapter 4: Discussion and Conclusions. Specifically, Chapter 1: Introduction, is further structured as 1.1: Background; 1.2: Context; 1.3: Research problem and purpose; 1.4: Methodology; 1.5: Ethical considerations; 1.6: Scope and 1.7: Summary of the next chapters of the thesis.

1.1. Background

The researcher is a Brisbane-based interior design lecturer with over 19 years of experience in the higher education field, employed by Torrens University Australia (TUA), a for-profit private higher-education institution, established in 2012. The researcher is presenting this thesis by publication (TBP) to record the aims and results of the work-based project (WBP) titled: *Drawing as manual drafting in the interior design industry.*

The research project aims are to reflect on relevance, context, approach and feasibility of the work-based research project (Costley & Abukari, 2015), conducted as part of the Master of Professional Studies (Research) degree, and to provide a convincing study with an application in theory and practice (University of Southern Queensland, 2022).

The researcher completed the requirements for Confirmation of Candidature by the end of the first year of three-years of part-time study, but faced some challenges during Semester 2 – 2022 which related to writing the research paper. However, the researcher was able to continue to work towards the TBP and submitted the manuscript article for peer review in a Q1 journal in August 2023.

1.2. Context

For the past few years, a higher percentage of the Australian population were actively involved in both education and work. According to the Australian Bureau of Statistics, in 2022, 60% or 11.5 million Australians, between the ages of 15 and 74 years were studying for a non-school qualification. Around 2.1 million people or 19% of these students were undertaking post-graduate studies, including postgraduate degrees, graduate diplomas and graduate certificates. Also, 35% of these students were studying while working part-time (Australian Bureau of Statistics, 2022).

The challenge of traditional higher education is to meet the needs of mid-career professionals in the contemporary workplace. Attempts to meet those needs has led to the development of work-based learning and research professional studies programs such as work-based doctorates (Costley & Lester, 2012) and professional studies programs according to Fergusson et al. (2018). Professionals with experience in their fields of practice have the opportunity to enhance their abilities while still at work, as a result of their work-based projects. Those projects also provide the opportunity to contribute to the broader practice community and address real-world issues relevant to the workplace while encouraging professional and personal development (Costley & Abukari, 2015).

The learner establishes learning objectives based on the target areas for personal and professional improvement that are identified through structured reflective practice (Fergusson et al., 2018). Through the completion of a work-based project that addresses a recognised need or issue related to the workplace, learning objectives are addressed (Fergusson et al., 2018). A work-based project yields a measurable result or "artefact" that is advantageous to an organisation (Fergusson et al., 2018). The learner receives personal and professional benefits that raise their competence, confidence, and position in the workplace (Costley & Abukari, 2015).

1.3. Research problem and purpose

1.3.1. Research problem

To understand the research problem and purposes of the research project, there is a need to first define *drawing as manual drafting*. *Drawing,* according to the

Cambridge dictionary, is the act of making a picture with a pencil or pen, or can refer to a picture made in this way. Alagbe, et al. (2014) defined *manual drafting* as the practice of making drawings by hand. Historically, design ideas and construction information have been planned and communicated using manual drafting processes. Additionally, there are many different kinds of information that need to be communicated, just as there are many different types of drawings. As a part of this study, the linking of these two terms, *drawing as manual drafting,* into a unified concept was aimed at connecting the creative process in the design phase to the result of technical drawing by hand in the interior design office.

As an interior design lecturer, the researcher has witnessed a significant reduction in the manual drafting component in the course delivery for the Diploma of Interior Design, from 15 weeks down to three weeks, or nine hours of teaching, per trimester.

The reduction of delivery time is linked to the reduction of skills development. The introduction of manual drafting into the Bachelor of Interior Design at TUA for the first year of study commenced in 2021 in Term 2. This was as a result of industry reviews and a realisation that some Bachelor of Interior Design students did not have basic manual drafting skills, unless they previously completed the Diploma of Interior Design.

As one part of the research objectives, the researcher identified the relevance of drawing as manual drafting in the interior design industry and the importance of a hand-drawing ability by interior designers. Another research objective was to bring the important information from the findings of the research project to the researcher's professional practice as an interior design lecturer. The researcher identified that the problem lies in understanding how relevant and current drawing as manual drafting is in interior design practices.

1.3.2. Purpose

The main purpose of this thesis is to answer the following two research questions related to this work-based research project:

RQ 1: What is the use and purpose of drawing as manual drafting abilities in the interior design sector, and what makes that use important or not, in the opinion of industry professionals?

RQ 2: How are manual drawing skills gained in the opinion of industry specialists?

Therefore, the purpose of this study was to determine the relationship between different interior design practitioners with varying years of work experience in the context of how they utilise drawing as manual drafting to enhance their practice, and also whether those skills diminish after graduation. Another purpose was to develop a better understanding of the impact of drawing as manual drafting experiences on the development of innovatory design concepts. A further purpose was to investigate if there is a relationship between the potential employability of interior design graduate students and the acquisition of knowledge of drawing as manual drafting, or whether those skills are irrelevant because of the use of different digital platforms and software in interior design firms. The main aim was to identify to what extent manual drafting and drawing are used in interior design professional practice.

To provide evidence of meeting learning objectives, the researcher has identified six key objectives for this work-based project. They were focused on the philosophy of work-based learning and explicitly related to what the researcher aimed to accomplish and learn as a result of pursuing this MPSR degree. They also connect to the researcher's entire program of learning. Each of the following six objectives addressed several fields of study: 1. Information gathering that is systematic, 2. Analytical abilities, 3. Independent judgement, 4. Solving issues, 5. Invention and innovative thinking and 6. Critical analysis.

Research objectives serve as the direction for the entire research effort, including data collection, analysis, and conclusions. Research objectives also direct the research process by assisting in concentrating on the subject of the study and important variables. To explain the study's main focus and determine the measurement variables in detail, the list of many steps that needed to be taken to set the study's parameters was created. By following the research objectives, the researcher ensured that no unnecessary data were collected. The research objectives are focused on what is accomplished from this research and include the general and specific objectives. The general research objectives have utilised the SMART approach, as Specific, Measurable, Achievable, Relevant and Timebound. The specific research objectives are presented as research questions.

From the commencement to the presentation of the findings, managing all areas of the research project gave the researcher the opportunity to put these skills

into practice and it furthered their development. In Chapter 4: Discussion and conclusion, a summary is provided of how these learning and research objectives were met.

1.4. Approach and methodology

The philosophical underpinnings of the research quality of this work-based research project are essential. According to James (1907), Creswell (2003), Ormerod (2006), and Duram (2010), Pragmatism describes a philosophy, a research paradigm, and a method of practice, all centred on attempting to determine what is practically valuable. The essence of Pragmatism may be reduced to one word: useful. Sharma et al. (2018, p. 1549) have stated that: "Pragmatism can be summarised by the phrase whatever works, is likely true".

The researcher adopted Pragmatism for this work-based research project, as the most suitable research philosophy because of Pragmatism's epistemological (how knowledge is created and what is possible to know) focus on the enquiry process and practicality (Kelly & Cordeiro, 2020). Simply described, Pragmatism is a research paradigm that examines and assesses ideas and beliefs in terms of how well they actually work in the real world (Cordeiro & Kelly, 2019).

Furthermore, the researcher discovered that Pragmatism is of significant value to research on organisational processes because it involves research subjects being active participants rather than passive describers of the world; it involves viewing people's ideas and beliefs as tools for problem solving and action.

Pragmatism has a rich history of implementation in social science research and is represented by the work of contemporary philosophers, including Cheryl Misak, Robert B. Brandom, Richard J. Bernstein and Richard Rorty, as well as the classical pragmatists. The latter include: John Locke, Charles Sanders Peirce, William James, John Dewey, George Herbert Mead and William Heard Kilpatrick . According to Ormerod (2020):

Pragmatism puts the emphasis on the free flow of ideas, the spirit of inquiry and discussion. It promotes individual freedom of thought and experimentation. Pragmatism emphasizes flexibility, utility and adjustment in all fields of human

activity, promoting the continuous development of individuals and society. (p. 816)

In this research project the researcher evaluated the learning process from the point of view of both a researcher and an educator. It is important to acknowledge both the bias and the benefits that exist in negotiating the roles of both the researcher and the educator. Benefits include preserving relevance in practice and assisting students in situating theory into context. Maintaining a complex function and controlling expectations in each position were challenges. Both intentional and unintentional bias can exist in every study. Bias can be misleading and can lead to incorrect judgments. Therefore, the researcher developed an awareness of potential sources of bias, and took necessary steps to minimise and diminish departure from the truth.

Pragmatism fits well in work-based research projects because "the focus of pragmatism is action" (Ormerod, 2020, p. 804); thus, "all learning must come as a product of action. Learning by doing makes a person creative, confident and co-operative" (p. 816). According to Adeleye (2017, p. 3) , "the greatest contribution of pragmatism to education is this principle of learning by doing". Klockner et al. (2021) have stated that together with the 4 Ps of pragmatism (Practicality, Pluralism, Participation, and Provisional) the fundamental theoretical foundations of pragmatism are provided as a teaching framework. "Pragmatism is seen as both a path forward in reducing the theory into practice divide for safety science educators and professionals, and a teaching philosophy which enhances the safety science pedagogy educational lens", (Klockner et al., 2021, p. 1). In Table 1, the researcher presents pragmatism as a part of research philosophies and approaches.

Table 1: Pragmatism, research philosophy and methods

Ontology (Nature of reality or being)	Epistemology (What constitutes acceptable knowledge)	Axiology (Role of values)	Research methods Systematic ways, procedures, and tools used for data collection and analysis
Complex, rich, external 'reality' constitutes the practical consequences of ideas. Flux of processes, experiences and practices.	Practical meaning of knowledge in specific contexts. 'True' theories and knowledge are those that enable successful action. Focus on problems, practices and relevance. Problem solving and informed future practice as contribution.	Value-driven research. Research initiated and sustained by a researcher's doubts and beliefs. Researcher being reflexive.	Following research problem and research question. Range of methods: mixed, multiple, qualitative, quantitative, action research. Emphasis on practical solutions and outcomes.

Source: Research methods, Saunders et al. (2007, p. 145)

The researcher created a model of an hourglass for this work-based research project (see Figure 1). This model demonstrates how research began with the use of semi-structured interviews (Ruslin et al., 2022), before employing techniques to analyse data (thematic analysis) and respond to the research questions. The research project's findings were presented as follows: results; presentational outcome, i.e., the research artefact - article submission for peer review to the Journal of Interior Design (JID); propositional outcome (TUA's manual drafting workshops, 30 hours pilot); experiential outcome as practical application for students and graduates (i.e., the portfolio development); and implications for future research.

Figure 1: Hourglass model of the research project
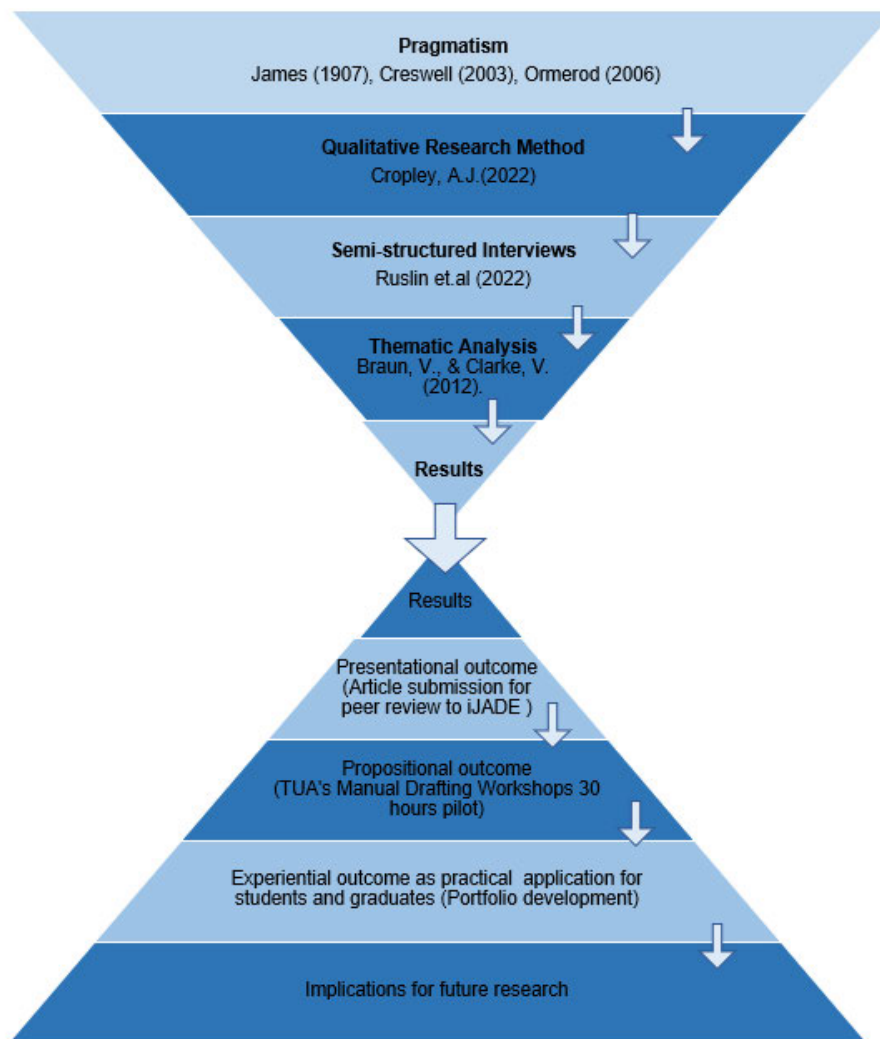
Source: The base part of the figure is adapted from *Feeling and personhood* (Heron, 1992), Figure 8.3 The up-hierarchy of knowledge (p. 174).

To identify how the current work-based research project is meeting reliability and dependability requirements, the researcher linked it to Fergusson et al.'s (2019) study, in which semi-structured interviews are number one in a list of seven sources of evidence related to research methodologies.

As a source of evidence, short and long-form interviews are a core technique in work-based research. Several variations of nonstructured interviews have been identified, including ethical integrity, life history, situational, patterned behaviour description, creative, unstructured, and semi-structured, of which the last three types will be highlighted. (p. 93)

Semi-structured interviews thus seek out the details of experience and ask interviewees to reconstruct and explain their experience in their own words. Thus, researchers using semi-structured techniques seek to understand the interviewee's world, including understanding the meaning of their words and phrases. Qualitative researchers maintain the comparison is a meaningless one because data from unstructured interviews are not designed to be generalisable but can still be trustworthy. (p. 94)

Sources of evidence for this research project are presented in Table 2.

Table 2: Sources of evidence and their methodological features.

Source of Evidence	Type of Data	Type of Method	Reliability	Validity	Type of Analysis
Creative, unstructured, and semi-structured interviews	Primary	Qualitative; mixed methods	Dependable	Trustworthy; analytically generalisable, but not statistically generalisable	Thematic; saliency; basic content; interpretive content; qualitative content; discourse; dimensional, situational; categorical; or contextualising
This research					
Semi-structured interviews	Primary	Qualitative	Dependable	Trustworthy; analytically generalisable, but not statistically generalisable	Thematic Analysis (TA)

Source: *Lines-of-inquiry and sources of evidence in work-based research* (Fergusson et al., 2019, p. 98).

To support the validity or trustworthiness of the project, the researcher followed the research protocol with the following requirements: member checking and respondent validation; neutrality; detail and transparency; replicability and mechanical recording of the rich data.

Qualitative researchers intending to use interviews as a data collection method are therefore advised to capture interviews on a digital audio recording device (commonly achievable via use of a low cost or free application on a smartphone) and either transcribe these recordings in full or, where financially possible, have this work carried out by an independent professional transcription service. (Coleman, 2022, p. 2042)

1.5. Ethical considerations

McAreavey and Muir (2011) stated that in many studies, the individual researcher or the research group must understand the considerations of ethical conduct and responsibility to the participants by passing through a rigorous process of inspection by ethics committees based within universities. According to the British Educational Research Association's Ethical Guidelines for Educational Research: "All educational research should be conducted within an ethic of respect for: the person; knowledge; democratic values; the quality of educational research; and academic freedom" (BERA, 2018, p. 5). The expectation that researchers would take responsibility for their acts, as well as conduct themselves in a trustworthy way, are additional crucial components of the interaction between the researcher and the researched.

Husband (2020, p. 1) has stated that: "ethical considerations for researchers designing and undertaking interview-based research are considered alongside the potential for engagement in research interviews as a catalyst for professional learning in practice".

During the period of the researcher's confirmed candidature, this research was deemed to meet the requirements of the National Statement on Ethical Conduct in Human Research (2007) and USQ HREC ID: H21REA272, and has approved status. All information relevant to the researcher's ethics approval such as: participant invitation email template, participant information sheet interview, consent form interview, and interview questions template can be found in attached Appendices A, B, C and D of this thesis.

1.6. Scope

At the postgraduate level, the researcher used a work-based project as a "reflective, thought-provoking educative experience" as it would influence the context of her work and the researcher could "become a practitioner-researcher" (Barnacle, 2012). It also, "proved an opportunity to: 1) delve into a theoretical and conceptual domain; 2) research and develop using an informed and rigorous process; and 3) realise a range of possible pathways and possibilities for working practices" (Costley & Abukari, 2015, p. 13). The research project took place at the Brisbane Campus of

TUA as well as local interior design practices and architectural studios that have a team of interior designers. The researcher had a positive as well as a challenging experience. Even though the researcher's reflection was not part of the research data, it became an ongoing part of the self-evaluation process because it is essential for a researcher to consider both what to learn throughout a research project and how to enhance the learning outcomes. As the triple-dividend is designed to benefit the individual researcher, work environment, and community of practice (Fergusson et al., 2018), the researcher anticipates contributions as per the following.

1.6.1. Benefits to the individual researcher

According to Potane and Mariano (2022), the benefits of post graduate study to the individual researcher may include the following:

> Experience of fulfillment, excitement and happiness; Discovery of new information with the given opportunity to solve problems; Gaining of wider knowledge about research and development of critical thinking skills; Develop professionally; Improvement of self- confidence and learning of life skills. (p. 6854)

The researcher will be able to continue lifelong learning for personal and professional development, and to summarise "learner" and "achiever" as her top themes in the strategic thinking domain of Clifton strengths (Gallup, n.d.). By completing the MPSR program, the researcher was able to fill the gaps in her learning skills and identify the elements of an academic research project as part of professional practice.

Another benefit is that the researcher will be able to stay current in a position as educator for a higher degree diploma and at a bachelor level, and continue the present employment held since 2004. An overview of the benefits of completing a work-based research project, as part of the MPSR program, to the researcher is presented in Chapter 4: Discussion and conclusion.

1.6.2. Benefits to the work environment

An accepted technique to demonstrate to employers that a researcher has the credentials to support their experience is through post-graduate education. A research project provides opportunities to connect with like-minded individuals, gain knowledge from key company leaders, and obtain exposure to industries with strong networking connections.

As part of TUA company culture, its mission statement states: "Be creative. Be curious and playful, find innovative solutions. Take ownership and show initiative. Creativity comes in all shapes and sizes. Collaboration is essential" (Torrens University Australia, n.d.). This mission statement is designed to encourage personal and professional development in TUA's work environment and greatly benefits from lecturers studying during their employment and using research projects to improve their delivery methods. The regular Student Evaluation of Subject and Lecturers (SESL) survey evaluates overall student satisfaction. In addition, a systematic update helps to meet the Tertiary Education Quality and Standards Agency (TEQSA) deadline with the internal TUA system evaluation (Pure – Torrens University Production) every four months. In Chapter 4: Discussion and conclusion, a summary of the benefits to the work environment is provided.

1.6.3. Benefits to the Community of Practice (CoP)

According to Nagy and Burch (2009, p. 227), a Community of Practice is:
A form of voluntary workplace engagement, communities of practice are characterised in literature as providing entities with the potential to harness the multiplier effects of collaborative processes by building on informal networks within entities. As knowledge building and sharing institutions it would be reasonable to presume that communities of practice activities have been embraced to facilitate a level of connectedness and engagement in a university context.

Wenger et al. (2002) stated that a CoP is made up of three elements: domain, community, and practice. The community establishes social structures for interactions, the domain establishes a common ground for knowledge sharing, and the practice involves specialised knowledge that is shared, created, and preserved by the community.

This research is of benefit to the CoP, as the strategy (Torrens University Australia, n.d.) for the next few years is a focus on increasing the Masters and PhD academics with full-time and part-time employment, and benefit from their contributions to research development in different areas. As a regular participant in CoP workshops, and learning and teaching symposiums, the researcher is contributing more measurable skills and knowledge by studying and completing the MPSR program and by developing and conducting a research project that is defensible, compelling and academically rigorous. The researcher evaluated the stages involved in the development, conduct, and understanding of a critical analysis of work-based learning of MPSR. The researcher comprehended the statement of prior learning and designed her own learning objectives. Finally, the researcher introduced this work-based project, which evolved into the meeting of learning objectives with anticipated contributions as a triple dividend. An overview of the benefits of completing a work-based research project, as part of the MPSR program, to the Community of Practice (CoP) is presented in Chapter 4: Discussion and conclusion.

1.7. Summary of the thesis by publication

The remainder of this TBP gives a detailed overview of how the research project was planned and carried out to address the difficulties that were found.

Chapter 2: Literature review, includes a review of the literature which addresses the components that, according to the international literature, make up the existing research related to drawing as manual drafting in the interior design industry.

Chapter 3: Research paper, includes the article: "Use of Drawing as a Manual Drafting Skill in the Interior Design Industry," that was submitted to the *Journal of Interior Design* (Q1) for peer review on 1 August 2023.

Chapter 4: Discussion and conclusion, includes a brief discussion of the limitations of the study and suggestions for future directions. Finally, the outcomes in terms of the learning objectives associated with the MPSR program are summarised, as well as an overview of research objectives.

The Appendices contain extra material referred to within the body of the work, which may be of interest to the reader, including a copy of the list of questions used for the interviews in this study.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

In the previous Chapter 1: Introduction, a summary of the study topic was examined as part of this work-based research project. The thesis' intended contribution to the field of professional practice was also indicated. This study contributes to an enhanced understanding of the relevance of manual drafting skills in the interior design industry by evaluating the gap between university lecture content and interior design companies.

Chapter 2: Literature Review, demonstrates that the researcher developed a good knowledge of the research area and provided critical appraisal of previous studies related to the current work-based research project. However, a thorough examination of the literature on drawing as manual drafting revealed a number of gaps and limitations regarding the interior design industry and education because very few published results have been identified about the topic. Therefore, the researcher assessed related articles from industries and disciplines such as architecture, graphic design, and engineering where manual drafting components have been researched.

Citation and author searches became increasingly refined as familiarity by the researcher with the literature developed. The most productive searches were those that went forwards and backwards in the citation tree with combinations of words from: *drawing as manual drafting in the interior design industry.* However, within a much larger literature environment, the work of a small number of academics provided the most literature. Within the USQ library catalogue, Scopus, Ebsco, and Google Scholar, were some of the databases used for this literature review. Nearly all of the literature sources used in this review were conference papers and peer-reviewed academic journals written by academics and practitioners. Grey literature, including online sources, was rarely used because it was deemed to provide little value. A vast amount of literature was accessible during the course of the study—certainly much more than was ever required to finish a review of this scope. However, by identifying areas for prospective future research, reading so widely turned out to be beneficial.

For clarity, the results from the literature review have been organised into the following sections: 2.1. Introduction; 2.2. Interior design; 2.3. Pedagogical practices in

interior design; 2.4. Drafting and drawing in design education; 2.5. Employability skills and gap between education and industry; 2.6. Conclusion and 2.7. Summary of the next chapters.

2.2. Interior design

According to the International Interior Design Association, *what is interior design,* or its definition, is described as follows:

> Interior design is defined as the professional and comprehensive practice of creating an interior environment that addresses, protects, and responds to human need(s). It is the art, science, and business planning of a creative, technical, sustainable, and functional interior solution that corresponds to the architecture of a space, while incorporating process and strategy, a mandate for well-being, safety, and health, with informed decisions about style and aesthetics. (IIDA, 2023)

According to Piotrowski (2014), interior design as a profession includes the elements of services, ethical responsibility, and professional conduct, and interior design professionals should have particular qualifications. The educational qualification levels of interior design graduate students range from Diploma of Interior Decoration to Bachelor of Interior Design. Piotrowski (2014) has stated that due to the range of knowledge and skills development required today, interior design programs are interdisciplinary, drawing from the arts, architecture, and human ecology. The author further suggested that it is also important for students to have coursework in business and the liberal arts. Depending on the location of the program and the educational institution, the professional and technical course-work will have a slightly different focus. (Piotrowski, 2014, p. 21)

2.3. Pedagogical practices in interior design

Interior design in higher education includes pedagogical practices such as: "Learning-to-build" methods and classifications as well as studio practices and Work Integrated Learning (WIL). The Experiential Learning Model, created by David Kolb in the 1970s (Kolb & Kolb, 2017), showed a learning cycle that has been widely implemented in design education. Regarding interior design pedagogical theories,

some issues have been identified. Firstly, there is the borrowing of theory from architecture or interior decoration, and an absence of distinct boundaries between the three domains: interior design, interior decoration and architecture. According to Gürel, & Potthoff, (2006), following the establishment of interior decoration as a 'new' profession in the latter half of the nineteenth century, the recognition of interior design separately from architecture is predominantly a twentieth-century event. The authors noted that due to a conflict of interest between the two professions, this split has created a source of friction that is rooted in conceptual differences between the pedagogies of the two sectors. All of this creates considerable debate between these industries about priority, importance and necessity of their professions.

Secondly, interior design is a new and "open" profession, and as Shaheen (2018) states, "still in need of thoughtful research-based evolution". Shaheen outlines the need for research on the pedagogical aspects of interior design education: "there is a lack of academic attention in the field. Currently, there is a limited volume of research, especially at postgraduate level, concerning interior design pedagogy" (Shaheen, 2018, p. 5). Interior design pedagogy is 'multifaceted' (Cho & Schwarz, 2015), and in most classrooms and in industry a more pragmatic and profit-making function of the profession involves visual thinking. The researcher agrees that manual technical drawing "is considered a worthwhile experience" and should therefore be incorporated within the teaching and learning strategy. Manual drafting is still an important part of the educational field, and not only during student's learning development; it is also fundamental for future professional opportunities. According to McLaren (2007):

> To retain this experience, when it is rendered near redundant in the workplace, therefore can be justified in educational terms of validity, relevance, construction of knowledge and attitudinal development. Perhaps the questions of the staff room and web-ring debates, at this time of impending review, should not be are we teaching a redundant subject, but rather what is the purpose of our teaching and are we using a valid and relevant pedagogy? (McLaren, 2007, p. 188)

2.4. Drafting and drawing in design education

For design disciplines such as interior design, drawing knowledge becomes fundamental during the development of students' professional practice and is crucial

in all stages of the design process. Ozkan and Yildirim (2016) have noted differences between 'conventional drafting' and computer-aided drafting (CAD) in terms of time, quality and success. By using research testing and evaluation of the results, they concluded that CAD has a better outcome in terms of efficiency and timeliness compared with conventional drawing. In addition, researchers have evaluated other studies where students' visualisation ability possibly improved with continuous implementation of drafting education for first year engineering students (Adanez & Velasco, 2004) as well as spatial ability for technical occupations (Olkun, 2003) and building design according to Flemming et al., (1997).

In understanding the development and use of the manual drafting and drawing skills for space visualisation, it is important to recognise that idea development and communications of the interior design students are critical components. The importance of the statement that "hands-on sketching and drawing tend to improve spatial skills more than courses that stress Computer Aided Design methods" (Sorby & Gorska, 1998, p. 256), and how students can develop the values towards manual drafting and drawing, have been reviewed by evaluating the results during this work-based research project.

Education is essential in creating effective operating interiors for living, work and recreation. Acici and Sonmez, (2014) have emphasised the value of education by focusing on developing a solution made by three-dimensional sketching and modelling, incorporating usage of two-dimensional hand drawing as well as CAD in the process. The authors stated that:

> The student, who knows technical drawing, develops well his drawing technique by using computer aided design. In order to increase performance in the design process, it is clear that there should be known first a basic knowledge of hand drawing and, then, it should be completed by forming a model in the computer environment. (Acici & Sonmez, 2014, p. 720)

According to Santos et al. (2022), in some design schools, such as the Faculty of Architecture of the University of Porto (FAUP), hand drawing skills are considered *fundamental* as well as a *large investment*. Architectural students are prohibited from using digital media in the first year of their study. So, it is clear that close coordination exists between some courses to achieve a common objective. In this respect, the teaching of a design approach or process based on freehand drawing needs to be analysed. Santos et al. (2022, p. 376) have also stated that:

While in the drawing courses the technical and expressive dimension of drawing is focused, in the design studios students learn how to apply this knowledge. Students then use freehand drawing: as a perceptive tool to approach the intervention site in the process of form finding, definition of design ideas, volumetric and spatial studies to make technical representations of the design project, such as plans, sections and elevations. Freehand drawing is also used in the more advanced stages of the design process, to solve a particular detail or a constructive issue which is rarely mentioned in the literature, as freehand drawing is usually associated with the initial conceptual phases.

Therefore, it is possible to think of hand sketching as the foundation of students' education, and a requirement that equips them with practical and technical abilities in spatial perception, representation, conception, and communication, which together comprise the process of designing. The relevance of manual drawing for architecture students' design studio instruction has been assessed by Alagbe et al. (2014). They discovered that opinions on whether or not it is still relevant are evenly divided, with a majority favouring the usage of both approaches. The study's findings also suggested potential explanations for these preferences as "the use of manual drafting should not be completely discarded in the training of undergraduate architecture students, but juxtaposed with digital drafting" (2014, p. 1588).

Lastly, the authors advocated for the continued use of manual drawing alongside digital drafting when instructing undergraduate architecture students. Lambert and Firth (2006) stated: "today the teaching of drawing as a design skill has been overlooked even more to make room for the necessary acquisition of new skills, like 3D CAD modelling" (p. 1). Even today, the issue persists, as observed by Corremans et al. (2018, p. 2418): "if design schools want to improve the quality of their students, they should invest in hand drawing courses, and in the enhancement of students' sketch quality."

When exploring the limitations of this literature review in conjunction with the work-based project, as well as the interior design industry's current application of manual drafting and drawing, the researcher identified a gap in the literature on how drawing as manual drafting is applied in the interior design industry, thus suggesting the need for this study as a research project. The research questions investigated the fundamental philosophy of the research project, which was conducted using a qualitative research method (semi-structured interviews), as that method has been

supported by existing theory and literature including by Knowles and Cole (2007), McLaren (2007) and Shaheen (2018).

2.5. Employability skills and gap between education and industry

According to Khodeir and Nessim (2020) employability skills can be categorised into four themes, as presented in Figure 2.

Figure 2: Fundamental, Personal management, Teamwork and Innovation skills.

Fundamental skills Communication Managing information Thinking and problem solving	**Personal management skills** Demonstrating positive attitudes and behaviours Being responsible and adaptable Learning continuously Working safely
Innovation skills Creativity, problem-solving Risk-assessment and risk-taking skills Relationship-building and communication skills Implementation skills	**Teamwork skills** Working with others Participating in projects and tasks

Source: Changing skills for architecture students' employability: Analysis of job market versus architecture education in Egypt (Khodeir & Nessim, 2020, p. 812).

Answering the question of: *how the gap between the job market and education can be filled,* different authors such as Khodeir and Nessim (2020) and Abdallah (2022) have agreed that those skills must be held by the graduate students for successful employment. The skills need to be developed during their study with the best possible examples and strong links to the industries.

For example, Khodeir and Nessim (2020) stated, in respect to research on bridging the gap between architectural education and the demands of the job market, that the 21st-century job market has specific skills and competencies that applicants must have. Based on a survey of experts' opinions, it was determined that the fundamental skills that students must learn in the design studio include: creative and innovative thinking, strategic decision making, communication skills, and problem-solving ability.

In addition, according to Abdallah (2022), educational strategies for teaching interior design focus on equipping students with professional competencies. These

competencies include the capacity of students to comprehend users' needs, critical thinking, problem-solving, and space planning, as well as the technical and technological know-how and methods of professional practices that will determine future employability.

2. 6. Conclusion

In their study conducted more than 20 years ago, Brandon and McLain-Kark (2001) examined the effectiveness of traditional drafting and computer-aided design on the evaluation of design qualities contained in final design solutions. They came to the conclusion that there were no appreciable differences between the traditional drawings and CAD design ratings in terms of quality. Nevertheless, the authors suggested that before conclusive statements about how these techniques may affect the design process can be made, additional study on the effects that manual drafting and CAD have on the design process was required.

For the past 22 years, minimal research has been conducted regarding manual drafting. The reason identified for this is that manual drawing has lost value due to the widespread adoption of new digital tools, even at the early stages of design. According to Goldschmidt (2017) however, in the "front end" of design, and in university design studios in particular, manual drawing still has importance alongside computer tools because it offers cognitive benefits that digital technology cannot easily substitute.

The recent work of Hasenhütl (2020) has analysed the evolution of manual drawing in the context of design and art. The author focused on the historical paradigm transition from "unselfconscious form-making processes" to "design-by-drawing" and formed the view that it is strongly related to the current transformation of manual drawing into "digital" or "spatial sketching." The author believed that design-by-drawing has altered how we perceive manual drawing as a body technique, moving the focus away from hand-eye coordination and more towards an aesthetic standpoint. The author further identified a gap between the improvement of traditional manual skills and the retraining of "body techniques" through the use of cutting-edge man-machine interfaces, as the key area of their research paper.

According to Hasenhütl (2020), the future prospects of the usage of manual drawing are demonstrated by examining the benefits and drawbacks of manual drawing within the engineering design, graphic design, and art education fields. The

understanding of the current changes in manual drawing might be aided by looking at past changes. The arguments made can also aid in the creation of a fresh framework for using this traditional design method (Hasenhütl, 2020).

Thus, despite continued advancements in virtual reality, artificial intelligence, and digital imaging technology, manual drawing remains important. The ability of drawing to support learning as well as the growth of creativity across disciplines is one of the reasons for its significance. According to Masi (2021), the drawing process has been shown to improve a variety of learning mechanisms, capacities and skills, including visual thinking, intuition, focus, embodiment, translating experience, perceiving, and ideation. The author stated that:

> The identified learning mechanisms are summarized in a theoretical framework that describes the three main steps of the drawing process: perception, elaboration and production. Academics can use this theoretical framework for the design of teaching and learning activities, while practitioners can use the framework to be aware of the intellectual work involved in each step of their artistic production. (Masi, 2021, p. 199)

The researcher identified a recent definition of interior design based on the International Interior Design Association website. Furthermore, the researcher linked this research project's literature review to the pedagogical practice in interior design as well as to the place of drafting and drawing in design education. Finally, the researcher clearly recognised a *gap* in the research as there was an insufficient number of studies that have been conducted on drawing as manual drafting in the interior design industry. The literature review findings have identified employability skills and a gap between education and industry. This has helped the researcher to connect the manual drawing needs of the interior design industry and skills needed to be developed by students to satisfy those needs.

Authors like Masi (2021), Hasenhütl (2020), and Goldschmidt (2017) were aware of the manual drafting notion and "so what" questions have been answered well by their studies. The researcher reviewed each potential article with four separate threads of the "so what" question (Selwyn , 2014, pp. 3-4):

- What is the relevance of the article to educational practice...or another aspect of the 'real world'?

- What is the relevance of the article to policy?
- What is the relevance of the article to other academic research and writing?
- What is the relevance of the article to theory?

The researcher also used "so what" questions for this work-based research project to show their relevance to the interior design field and manual drafting aspects of the "real world". Even though a digital drawing may not have the same physical impact as an analogue one, technology is advancing, for example, paper-like touch or sound effects. It is incorrect to assume that only because of the medium or interface the drawing cognition and visualisation abilities are improved or limited. Indeed, according to the researcher's knowledge, some design schools, universities, and professional practices can exclusively design briefs and deliver design projects based only on digital technology. Yet, other designers continue to employ manual drafting into design processes since it helps to improve communication and create a point of difference in portfolios, these designers create for people by people.

2.7. Summary of the next chapters

The research paper: "Use of Drawing as a Manual Drafting Skill in the Interior Design Industry" is presented in Chapter 3 of this thesis by publication. A brief assessment of the study's limitations is presented in Chapter 4: Discussion and conclusion, as well as suggestions for further research and a summary of the results for the MPSR program's learning and overview of research objectives.

CHAPTER 3: RESEARCH PAPER

3.1. Introduction

This chapter of the thesis by publication includes the research paper: Lomas E., Thurlow L., Fergusson L., van Rensburg H., & Clark L. (2023). Use of Drawing as a Manual Drafting Skill in the Interior Design Industry.

The paper was submitted for peer review to the *Journal of Interior Design* on 1 August 2023. The manuscript ID of the submission is 23-Aug-JID-A-0071. At the time of the submission of this thesis by publication to the External Examiner/s, the status of the research paper was "Awaiting Admin Processing".

Dr. Lisa Thurlow, Dr. Lee Fergusson, Associate Professor Dr. Henriette van Rensburg, and Dr. Linda Clark each contributed 5% to the final manuscript's development, editing, and critical intellectual review. The researcher contributed 80% overall to the concept's development, data management, analyses, and interpretation.

The process of writing the research paper helped the researcher to define research objectives, examine and interpret data, and thus drove the researcher to compare works done by others. Peer review offers valuable feedback on the efficacy of the research methodology and can shed light on the next processes for developing and interpreting work. By sharing what has been discovered, the researcher can enhance her own work and add to the body of knowledge already present on the subject (Tennant & Ross-Hellauer, 2020).

3.2. Conclusion

The above submitted research paper evaluates the research project and includes the following parts: Abstract; Introduction; Definition of terms; Research method; Data collection tool; Research participants; Data collection; Data analysis; Results and References.

3.3. Summary of the last chapter

The last chapter of this thesis by publication, Chapter 4: Discussion and conclusion includes a review of the study's limitations as well as recommendations for future work. Lastly, a summary of the results for the MPSR program's learning and overview of research objectives is provided.

The Appendices include further information that is provided in the paper, including a copy of the interview questions used for this study's interviews.

Abstract

With the introduction of computer-aided design (CAD) programs, the focus on manual drafting skills had declined in several interior design educational programs. This study does not question the use of CAD programs, as they constitute an established industry standard. However, given the major influences of digitalization in contemporary interior design education, students and graduate interior designers appear to demonstrate a limited ability to manually produce basic floor plans, elevations, sections, and perspectives. Currently, a gap exists between awareness of the importance of manual drawing in education and professional practice. This work-based study presents 10 professional interior designers' views on the use and purpose of drawing as a manual drafting skill in the industry, and examines whether they consider its use as important. This study also explores the importance of drawing as a manual drafting ability for professional interior designers and how their skills are gained. Semi-structured interviews were conducted to collect qualitative data. The results of the interviews showed that interior designers still use drawing in manual drafting as part of their practice, which aids them in communication, ideation, and the provision of unique solutions to client briefs. Students and graduate interior designers will benefit from this knowledge because despite increasing digitalization in the industry, these skills will help them become better communicators, idea developers, and consequently, better designers. Drawing from existing literature, we present the key findings and recommend that educators be open to opportunities to develop strategies to improve the delivery of manual drafting skills in education.

Use of Drawing as a Manual Drafting Skill in the Interior Design Industry

Without questioning the importance of computer-aided design (CAD) programs, this study investigated whether there could be any overall negative implications for students or the industry owing to a lack of manual drafting skills. The potential benefit of this study for students could be awareness of the advantages (if any) of learning manual drafting and whether it is worth their time and effort. Further, the industry and educators could benefit from knowing whether drawing as a manual drafting skill can potentially create better designers.

Using semi-structured interviews, this work-based research project aimed to present 10 interior designers' views on the use and purpose of drawing as a manual drafting skill in the industry, and examine whether this use is essential. This study also explored the importance of drawing as a manual drafting ability for professional interior designers and how their abilities are developed.

Chen and Chou (2010, p. 550) stated that the industry places little value on the ability to draw by hand because of the common use of computers. However, the researchers argue that the recent impact of this shift on students is unclear from the perspective of professional interior designers. The researchers agreed that, because of the development of CAD software, manual drafting skills are becoming less common in many interior design degree programs. Students and recently graduated interior designers have a poor capacity to manually draw basic floor plans, elevations, sections, or perspectives as a result of the significant effects of this technology (Thurlow & Ford, 2018, p. 2045).

Definition of Terms

Drawing from existing literature, we present the following definitions for drawing and manual drafting. -

Drawing - According to Makela et al. (2014, p. 8): "Drawing has been one of the basic skills possessed by artists and designers throughout history and in all parts of the world. It has played a crucial role in the creation processes of most art and design practices."

Manual drafting - According to Design Building UK (as presented on their website)**:** "Manual drafting is the practice of creating drawings by hand. Manual drafting techniques have traditionally enabled the planning and communication of design ideas and construction information" (Designing Buildings Ltd., 2022, para. 1).

Drawing as manual drafting – As part of this study, we linked these two terms into a unified concept to connect the creative process in the design phase involving technical drawing by hand in the interior design office. Drawing does not need to include drafting as a process or end result. Drafting, however, always needs to include drawing.

According to Lim et al. (2004), designers prefer using pencil and paper for visual communication as this technique offers three primary benefits. First, it allows them to express ideas quickly and simplifies the recording of spontaneous ideas. Second, free-hand sketching and recognition are not completely supported by the available digital tools. Third, CAD tools have numerous limitations: "Too complicated for design thinking; different feeling with a pencil and paper; difficult interface compared with a pencil and paper; too expensive; poor result" (Lim et al., 2004, p. 396).

Furthermore, Company et al. (2006) suggested that hand-drawn designs, or conventional paper and pencil sketches, are almost "transparent" to the designer. Transparency refers to a situation wherein ideas flow freely from the mind's eye to paper without any obstructions or changes. Currently, CAD drawings require the user to continuously define every aspect of each step before moving on to the next step, thereby reducing the flow of creative ideas. Consequently, when conceptual design is undertaken, paper and pencil

sketching is considered a more practical option than CAD systems (Company et al., 2006, p. 141). In the past decade, ongoing digitalization of the workplace has resulted in a significant reduction in the time invested in students' development of drafting skills in some universities.

Gawlak et al. (2021) identified a strong need for the re-evaluation of manual drafting skill development in interior design education. In the Asia-Pacific region, the number of students specializing in interior design has risen by over 60 % every year, according to Tu (2022). Tu (2022) also stated that interior designers in the era of media and digitalization are evolving their aesthetic preferences, storytelling techniques, modes of expression, functional necessities, and dreams for a spiritual space. Thus, excellent interior design works are not always the outcome of good interior design methods, but good interior design works must be ensured by a collection of useful design approaches and procedures.

This study investigated the use of manual drafting and drawing skills in the interior design industry. The overarching research questions of this study are as follows:

RQ 1: From the perspective of industry professionals, what is the use and purpose of drawing as a manual drafting skill in the interior design industry and why is it important or not?

RQ 2: From the perspective of industry professionals, how are manual drafting skills gained?

Research Methods

The goal of a work-based research project, according to Costley and Nottingham (2018), is to accomplish "real life," commonly in "real time" areas of practice within an organizational context that may be particular to the services or goods offered by that organization. "Researchers need to show a working knowledge of current practice and

conceptual professional understanding that demonstrates practice-based knowledge and involves the individual's professional growth" (Costley & Nottingham, 2018, p. 512).

This work-based research was conducted using qualitative methods. According to Lune and Berg (2017), a qualitative research method seeks responses by analyzing various aspects, people, or groups. Furthermore, the primary areas of interest for qualitative researchers are how people organize themselves in their environments, and how they make meaning of their surroundings through symbols, rituals, social structures, social roles, and other means. To represent perceptions and experiences in a natural, detailed, and realistic way, qualitative research methods may use data collection tools such as observations, questionnaire surveys, or interviews (Lune & Berg, 2017).

Therefore, the qualitative research method presented a robust approach well suited to the aim of this research project and provided a foundation for the researchers to answer the research questions.

Data Collection Tool

The interview method is among the most popular data collection tools used in qualitative research. For instance, Dornyei (2007) stated that "interviews are the most used method in qualitative inquiries" (2007, p. 134). Turner (2010) also suggested that qualitative interviews are frequently used because they offer detailed information about participants' experiences and viewpoints about a particular topic. Furthermore, it is commonly believed that interviews are a fundamentally effective technique for comprehending the worldviews, experiences, and beliefs of informants.

This study used, one-on-one, semi-structured (semi-standardized) interviews, based on a set of questions, as the data collection tool because they provided some form of flexibility. For example, Lune and Berg (2017) described the semi-standardized (semi-structured) interviews as something in-between: "guided, semi-structured or focused." A selection of

structured questions and special topics are used in this type of interview. Although the interviewers normally ask each interviewee these questions in a methodical and consistent manner, they are free to divert topics; in other words, they are allowed, and even expected, to ask their research participants questions that go well beyond the scope of their pre-planned, standard questions (Lune & Berg, 2017).

Research Participants

To select the research participants, the following inclusion and exclusion criteria were established.

Job description: – Inclusion criteria: Decorator, interior design technician, interior designer, interior architect, architect or builder, design lecturer, or building information modelling (BIM) operator who currently or previously worked as an interior designer. Exclusion criteria: Anyone who did not meet the inclusion selection criteria, including an architect who does not provide an interior design service as part of their professional practice or does not work with or manage an interior design team.

Work experience: - Inclusion criteria: More than six months of work experience. Exclusion criteria: Less than six months of work experience.

Education: – Inclusion criteria: Certificate IV, diploma, advanced diploma, bachelor's degree, master's degree or PhD. Exclusion criteria: No formal education. The LinkedIn profiles of potential participants were used to confirm their eligibility for selection.

Based on convenient sampling, we contacted 54 local companies to recruit participants for the one-on-one semi-structured interviews. All companies were selected from publicly available websites. All potential participants were contacted via e-mail and two follow-up phone calls. Fourteen companies responded; however, only nine agreed to participate in the study. By the time the interviews were organized, three companies chose to drop out. Therefore, 25 additional companies were contacted to ensure a reasonable number of interviewees. During

this period, six companies responded, and four agreed to participate. After applying the selection criteria, invitations to participate were withdrawn from two architectural companies that did not meet the job description criteria.

The participants who engaged in this study used their interior design expertise and were chosen based on their professional backgrounds and industry experience to provide trustworthy and compelling data. The number of participants in the research was considered a representative sample of small, medium, and large companies with local, national, and international projects (Table 1).

Table 1

Companies Who Agreed to Have their Representatives Interviewed

N	Company Size	Headquarters	Number of participants	Specialties
1	Small	Brisbane, Australia	1	Interior design, architecture and development
2	Medium	Brisbane, Australia	1	Architecture and interior design
3	Medium	Brisbane, Australia	1	Architecture and design
4	Large	Brisbane, Sydney, Melbourne, Rockhampton, Australia	2	Architecture and design
5	Small	Brisbane, Australia	1	Interior design
6	Large/Small	Brisbane, Australia	1	BIM/ Interior design
7	Small	Brisbane, Australia	1	Building construction/ Interior design
8	Small	Brisbane, Australia	1	Interior design
9	Small	Brisbane, Australia	1	Retail design

Ten interviewees from nine interior design, building, architectural, and retail companies participated in the study. The sample consisted of eight women interviewees and two men interviewees (Table 2) with 210 years of combined industry experience.

Table 2

Table of Participants

Designer	Company Size	Job Title	Experience	Education	Gender
A	Small	Founder/CEO	18 Years	Master Degree	F
B	Medium	Head of Interiors	14 Years	Bachelor Degree	F
C	Medium	Architectural Graduate/ Interior Designer	10 Years	Master Degree	F
D	Large	Senior Interior Designer	26 Years	Bachelor Degree	F
E	Large	Associate	20 Years	Bachelor Degree	M
F	Small	Owner/Interior Designer	6 Years	Bachelor Degree	F
G	Large/ Small	BIM Specialist/Director	23 Years	Bachelor Degree	F
H	Small	Interior Designer	25 Years	Advanced Diploma	F
I	Small	Owner	27 Years	PhD candidate	F
J	Small	Principal	41 Years	PhD	M

Data Collection

All 10 semi-structured interviews were conducted by the first author as part of her work-based research project. The interview invitations were sent by email, confirmed by the participants a few days in advance. The selected participants nominated the most convenient places for their interviews, ranging from work to home offices or nearby coffee shops.

Interviews were recorded using two iPads. Eleven questions, which were prepared beforehand, were routinely asked using the participants' LinkedIn profile notes and checklists. Further, when appropriate, a short tour of the studio and a sample of the drawings were also requested. After data collection, all 10 interviews were transcribed using Microsoft One Drive software and a personal transcription service.

Data Analysis

Thematic analysis (TA) was used as the data analysis method for all 10 interviews. This method "demands more conceptual and design thinking from researchers" (Braun & Clarke, 2022, p. 3), which fits perfectly with the researchers' professional experience. The six phases of *inductive TA* outlined by Braun and Clarke (2006, p. 87) are as follows: 1) become familiar with the data; 2) generate initial codes; 3) search for themes; 4) review themes; 5) define and name themes; and 6) produce the report. The coding process in the NVivo software program was used for all 10 interview transcriptions. We identified 60 - 198 codes as part of the continuous process of coding during phases one and two of the TA. However, when 198 codes were examined and discussed, we noted some inapt steps and concepts that become part of the process, which could jeopardize the development of non-biased themes. A decision was made to disregard the newly generated 198 codes and return to the initial 60 codes to continue the phase-two process as part of the TA. At this point, the following more precise inductive process was considered.

According to Saldaña (2013), "a theme is an outcome of coding, categorization, or analytic reflection, not something that is, in itself, coded" (p. 14). The generation of themes was a challenging step in this study. As Braun (2018) states in her video recorded presentation, "themes are actively generated by the researchers and themes do not passively emerge from the data" (Braun 26:49).

After an extensive period of coding, four major categories of themes were derived from transcript analysis using a central organising concept (Braun, 2018) that represented the focal point of data analysis. The central organizing concept of the themes is as follows: Designers provide solutions for the design problem. The four major themes were as follows: 1) Drawings used as a means of communication with colleagues and clients; 2) Drawing skills as fundamental skills for designers; 3) Drawing as part of design idea development to provide some form of a visual idea; and 4) Limitations: Technology and manual drafting. Figure 1 displays the four themes and the central organizing concept.
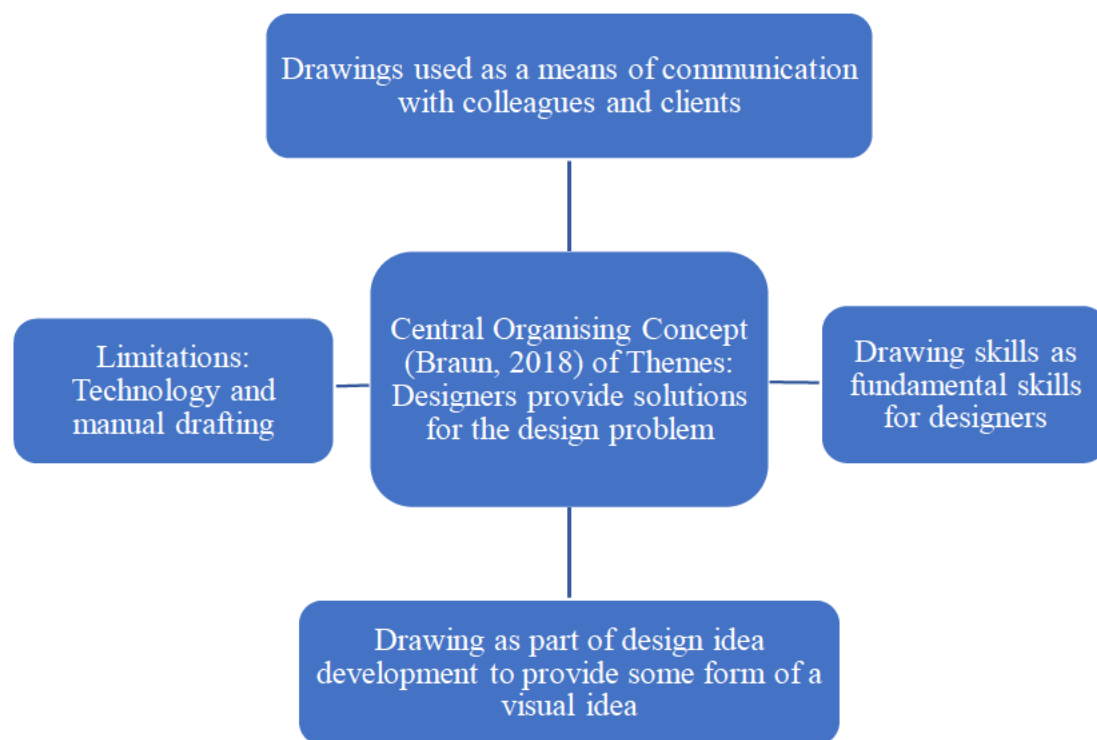
Participant quotations are presented in the Results section of this study to support our findings based on the four themes.

Results

The following section discusses the results based on the four major themes derived from our analysis.

Theme I: Drawings Used as a Means of Communication with Colleagues and Clients

The participants in this study generally agreed that drawings could be a valuable tool for helping designers gain better communication skills to interact with colleagues and clients.

For instance, Designer I (owner of a small interior design company and design lecturer at a university, with 27 years of work experience), stated:

> You need to be able to communicate with a client effectively, even when you've done so far that you've come up with a concept. When changes are needed to be done, there's no time to sit on our Revit file or SketchUp to change in front of a client, it looks unprofessional, but if you're able to go on a on a printed floor plan, and go... "aah" is this what you were thinking? You want - to change the sink over here? You wanted to change the island benchtop over there? I can see what you mean, right. … and obviously I mean, how are they gained... Well, that's the problem, isn't it?

Further, Designer B (head of interiors at a medium-sized architectural and interior design company, with 14 years of work experience), acknowledged: "I do still sketch a lot, especially as a means of communication to junior staff."

Designer J (principal of a small retail company and design lecturer at a university, with 41 years of work experience) added:

> I will apply the same sort of thinking to manual drafting; but, you know, if you know why you are manual drafting, if you know why you are drawing and what you are drawing and what you are trying to do, you become a better designer and communicate that.

Designer G (a BIM specialist in a large company, director of a small interior design studio, and former interior design university lecturer, with 23 years of work experience) had similar views:

I think that as a result of the software, our learning set will change, but one thing that we will always need is to understand like how to draw with perspective or how to quickly communicate ideas, particularly on site, because regardless of the software, you're not going to sit down on site with an iPad or a laptop and sit there and start drafting in a building site; so that I guess that's where I see, and, and that's probably from my own experience. That's where I'll use it. I take my book, do a quick sketch.

She went on to say that:

Unless they know how to put it together, they're still not going to understand it in software though they could just pick a cupboard out of the software library and just put it in. But then they're not really understanding how it's put together, so maybe that's where the *gap* would end up being is that there's more and more of them, or they just pick the whole kitchen off a software site, drop it in. Carry on and never actually understand how the kitchen's put together and uhm, and that's when they get caught out later when something's more detailed or a shop fitter is ringing them, or possibly, that could be it. Making it too easy with this software doesn't communicate the information on how things are actually built.

Theme II: Drawing Skills as Fundamental Skills for Designers

Designer A (founder and CEO of a small interior design, architecture, and development company, with 18 years of work experience), mentioned "I think it's, there's the understanding of how important it (*manual drafting skill)* is first, and then practice it."

Designer H (interior designer and interior design lecturer at a university, with 25 years of job experience), stated the following:

To use drafting skills, it tells a story. It tells your story. It tells the client what you are wanting to achieve for that particular project and for them. It is a direct answer to the response. I feel it is more of a direct emotional response to what they have asked you to do.

She continued:

Well, I feel if you can manually draft, hand draw you have a skill forever. But students or junior designers going into the industry, because of their age, only have computer skills, so I feel they lack of a dying craft like - a joiner that does craftsmanship compared to mass produced machines. Yes, that is how I feel.

Designer I (owner of a small interior design company and design lecturer at a university, with 27 years of job experience) asserted: "Without that (drawing skills), you cannot possibly be a good designer. It is fundamental."

Theme III: Drawing as Part of Design Idea Development to Provide Some Form of a Visual Idea.

All participants mentioned that drawings were used to create concepts and visual ideas. Designer G (BIM specialist in a large company, director of a small interior design studio, and former interior design lecturer at a university, with 23 years of work experience) expressed:

So, the purpose in my mind is to always communicate an idea. OK, so you are taking something intangible that is in your mind and you are communicating to someone who is not sharing that same vision, so you have to be able to do that..., and, the other purpose of it is that drawing and drafting, will…. it bridge language barriers as well.

She continued:

It will bridge language barriers in a way that nothing else can because you can draw a picture of an apple and it doesn't matter what, where you come from unless you have never seen an apple, you'll know what that is so being able to draw it.

Designer E (an associate in a large architectural and design company, with 20 years of work experience) stated:

As a professional my duty to my client is to give them the best result, I can give them. Without going and copying, somebody else's plan or any of those things and to the way to do that is to show sketches and become personal. It is part of you and you say: "I did 10 options; this is the best one."

Theme IV: Limitations: Technology and Manual drafting.

The limitations of manual drafting were expressed by Designer C (architecture graduate and interior designer of a medium-sized architectural and design company, with 10 years of work experience): "I am pro manual drafting, but I understand that to actually get construction documents out manually, drafting them down completely would be almost impossible."

Designer A (founder and CEO of a small interior design, architecture, and development company, with 18 years of work experience) agreed with the limitations of manual drafting. However, she opined that some limitations of manual drafting can be overcome by using an iPad:

The thing that improves manual drafting is that you draw it and you need to change it, which, in proper paper drafting, you almost need to start it again. Whereas the speed I can draft it up on the iPad and sort of manage all the layers and things like that. Is that make sense…. Which is why I in terms of sustainability, using less paper and things like that I really like it.

However, she also acknowledged the limitations of computers:

This connection between the brain and the pen or the iPad pen, that you are thinking through things, whereas what happens when you model it on a computer, there is something missing there, but it is just not as free flowing. I think there is a risk that the thinking part of design is missing…the CAD programs you always need to have, you need to know all the answers before you put anything down. Drawing by hand or on paper or iPad, you don't actually need any answers and the pen can go wherever you want to go, and it doesn't really matter- …- Manual hand drafting allows us to take our clients on design journeys.

Further, Designer C added on the limitations of computers:

I think that when you go immediately onto the computer, it is quite limiting, and when you are using it, you know your hand and you are sketching ideas. There's so much more creativity that it can come from that and when you are, you know. When you are physically drawing ideas, just come to view or, you know, figuring out as you go, and you have that kind of brain connection to your hand and all of that.

Designer D (senior interior designer of a large architectural and design company, with 26 years of work experience) identified the limitations of technology and stated that drawing in real time was the preferred skill in her practice: "It certainly makes it quicker. Because I can draw something in a meeting in real time and send it immediately."

The final statement in theme four describing the limitations of technology in favor of drafting was made by Designer F (owner and interior designer of a small interior design company, with six years of work experience):

If I am at the client's house, so if I am sitting in front of them and I just find it

easier to grab out the scale ruler and just draw something quickly with the hand

instead of getting all the precision on the computer.

As part of developing this ability, Designer C: (an architecture graduate and interior

design professional working with a medium-sized architectural and design company, with 10

years of work experience) commented:

I think that students shouldn't be allowed to touch computers for the first year

at least in architectural design degrees. I think, that some universities are trying

to hold on to that, but then, I see, you know, some students and it's straight away

from learning Revit on like day one of their architectural degrees. I don't think

that it is correct.

Discussion

The concepts of communication, ideation and drawing as a foundation have been

widely supported in the literature. According to Blood (2012), the three main categories of

architectural drawings are ideas for design development, vision as part of a communication

tool, and realization for construction or fabrication purposes. In other words, handheld

drawings serve as a means of testing original design concepts, perspective serves as a means

of communicating unbuilt projects to future consumers, and construction documentation serves

as a link between subjective ideas and reality. For "half a millennium," manual drawing was

the most efficient method for creating architectural works, and all of these tasks were carried

out by expert draftsmen and artists.

The methods used in both academia and practice, whether digital or analog (and

most likely both), are essentially and fundamentally tools at the disposal of the

designer. Thus, it is the designer's quest to identify and master the tools

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appropriate to a given approach. At this time, we have a unique opportunity to discover, and even invent, new possibilities inherent in the unfolding overlap of the hand, eye, and continually evolving realm of technology. (Blood, 2012, p. 10)

To become professionals, students must be prepared to collaborate and work with other professionals. They must produce, read, and review construction documents, and obtain information from technical drawings. For example, remodeling an existing space requires the services of an interior designer. Students would benefit from creating site measurements to verify that the drawings are accurate and correctly represent the space. Having the ability to manually draw survey plans or floor plans, elevations, perspectives, and sections prior to the development of a drafting package will help students and graduate interior designers develop communication, ideation, and fundamental drawing skills and, thereby, become better designers.

Goldschmidt (2017, p. 77) claimed that manual sketching still has value alongside computer tools, particularly at the "front end" of design and in school or design studios, because manual sketching has cognitive advantages that computational technologies simply cannot replace.

Fava (2020, p. 319) also supported drawing skills and "calls for a renewed emphasis on 'drawing as process' as preparation for university, and for further consideration of the core competencies underpinning the use of drawing as a tool of thought, and how these might be standardized." McLaren's (2008) analysis of participants' personal opinions and attitudes revealed certain shared beliefs regarding the educational value of traditional manual technical drafting teaching among the groups surveyed. Furthermore, increasing the time spent on CAD may result in skillful CAD operators but at the expense of deep understanding (Mclaren, 2008,

p. 185). According to the Council for Interior Design Accreditation (CIDA) Professional Standards, "hand sketches" are included as part of the guidance for Standard 9 *Communication: Interior designers are effective communicators* (CIDA, 2022, p. 25).

Meanwhile, Chen and Chou (2010) state that "due to the common use of computers today, the industry places relatively low importance on hand drawing abilities" (2010, p. 550). Both points have a place in the industry. However, evidence from this study does not support Chen and Chou's (2010) view. All the participants in this study affirmed the importance of drawing in their practice.

One possible limitation of this study is the lack of participant representation from a broader group of companies in different geographic locations.

In summary, the findings from our study suggest that drawing, as a manual drafting skill, is still used and continues to be an important part of communication, ideation, and fundamental skills in the design industry. Interior designers must be able to draw and draft as part of their practice if they aspire to become creative and unique professionals. Drafting skills have been identified as an important part of career development, highlighting the need to introduce manual drafting during the early stages of professional development.

Conclusion

This study could provide an academic platform for interior design industry professionals to express their points of view on the current use, relevance, and development of drawing as a manual drafting skill in their practice. The results may help students realize that, despite digitalization and the heavy use of computer software, drawing as a manual drafting skill is still relevant in the interior design industry, and the ability to use this skill could help students become better designers. This study supports the need to recognize the importance of manual drafting. Moreover, this study may provide educators with the knowledge that this

ability needs to be improved and further developed by students before they graduate, to cultivate distinct and unique skills as designers. Further research is required to develop strategies for improving the delivery methods of drawing as a manual drafting skill in education for undergraduate interior designers.

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CHAPTER 4: DISCUSSION AND CONCLUSION

4.1. Introduction

This last chapter of the thesis, Chapter 4: Discussion and conclusion, summarises the study's constraints and offers suggestions for further research. It is structured as 4.1 Introduction; 4.2 Discussion; 4.3 Learning objectives; 4.4 Research objectives; 4.5. Recommendations and 4.6 Conclusion.

4.2. Discussion

The researcher begins this chapter with a restatement of the research questions. In order to explain any new understanding of insights resulting from this research, the researcher analysed and expressed the relevance of the findings in connection to what was already known about the research problem under investigation.

This research work-based project has looked into how manual drafting and drawing skills are used in the interior design sector. The main research questions for this study were:

RQ 1: What is the use and purpose of drawing as manual drafting abilities in the interior design sector and what makes that use important or not, in the opinion of industry professionals?

RQ 2: How are manual drawing skills gained in the opinion of industry specialists?

These are followed by a statement about whether or not, and how much, the findings "answer" the question. The primary task of interpretation for this work-based research could not be completed until all of the data had been gathered and processed. Therefore, after conducting and analysing the results of the semi-structured interviews the main finding is that drawing as manual drafting is still used extensively in the interior design industry. The use of this skill makes it an important foundation for designers as part of their communication and ideas development ability.

In addition, the clearly stated relationship presented between drawing as manual drafting skills held by interior designers on the one hand, and being a better designer on the other, was evident. Finally, the results identified a clearly defined association between the need for drawing as manual drafting skills in the industry and all ten interview participants' opinions.

The common ground between these work-based research results and research studies by others, including Khodeir and Nessim's (2020) research about bridging the gap between architectural education and the demands of the job market, is that applicants for employment in the 21st century need to have a certain set of skills and abilities. The emphasis of educational strategies for teaching interior design, according to Abdallah (2022), is on providing students with professional competencies. Future employability will be limited by students' inability to appreciate users' demands, analyse critically, solve problems, organise spaces, and apply technical and technological know-how to professional practices. Drawing, sketching and manual drafting have been represented as foundational links to those abilities and skills.

Despite the industry advocating the continued use of manual drawing alongside digital drafting, one study identified that the majority of graduate designers cannot draw (Thurlow & Ford, 2018). Many current researchers focus on the application of digital drafting, artificial intelligence and virtual reality. However, not enough research has been done to identify if students and graduate designers' creativity are affected by a reduction in manual drawing abilities.

One limitation of this study can be seen in the relatively limited sample population of ten interior design industry representatives who were interviewed as part of this research. Inspired by the new knowledge of the research, there are therefore additional opportunities to investigate whether the same conclusions apply to a larger population. This study result is useful since the limited sample population was carefully selected from selection criteria explained in the research paper in Chapter 3, Research participants (Lomas et al., 2023, pp. 6-7).

4.3. Learning objectives

To understand the importance of learning objectives for development and successful completion of the Master of Professional Studies (Research) degree, the researcher evaluated, as defined by organisational and educational consultants Jack

Phillips and Patricia Phillips (2008), all six levels of objectives: impute, reaction, learning, application, impact, and return on investment. The researcher also evaluated the gap in her learning in the category "user information" (van der Laan, 2013) including the following:

- Effectiveness of research strategies;
- Pertinence of sources consulted;
- Quality of critical analysis;
- Coherence of organisation of information; and
- Range of contexts in which information is used.

The researcher followed the process to develop a level of research skills which will meet the AQF level 9 criteria (AQF specification for the Masters Degree, 2011, p. 57). Graduates at this level will have expert, specialised cognitive and technical skills in a body of knowledge or practice to independently analyse critically, and to reflect on and synthesise complex information, problems, concepts and theories. In addition, graduates will be prepared to: research and apply established theories to a body of knowledge or practice, and to interpret and transmit knowledge, skills and ideas to specialist and non-specialist audiences. In Table 3 the researcher provides evidence of the key learning objectives.

Table 3: Learning objectives and evidence of completion

N	Learning objectives	Evidence of completion
1	Information gathering that is systematic	Data collection and literature review
2	Analytical abilities	Project development. Thematic analysis of collected data
3	Independent judgement	The researcher organised the second co-author for the research paper by reaching out to three specialists in the area of this research
4	Solving issues	Overcame a misunderstanding in enrolment by continuing to work towards thesis by publication without enrolment in WRP9020 Professional Studies Publishable Paper A in Semester 1- 2022
5	Invention and innovative thinking	According to the primary supervisor the researcher demonstrated ongoing evidence of invention and innovative thinking. However, the researcher has a habit of completing more than required by tasks
6	Critical analysis	The researcher critically analysed the serious issues which developed during the second semester of 2022, when a significant number of third parties started to affect the outcome of this research. The researcher made the decision to focus on the completion of the research according to MPSR program and completely disregarded some of the third parties' suggestions and recommendations

Source: Developed by the researcher for this study

The researcher in providing the evidence of the learning objectives was aware of and has put into practice the idea that the journey of lifelong learning is rewarding and challenging and that learning is a never-ending process. The opportunity to be a "scholarly professional" rather than a "professional scholar" was provided, and it supports the current employment.

4.4. Research objectives

The direction of the entire work-based research project, including data collecting, analysis, and conclusions, is provided in the form of the development and

completion of the research objectives. Research goals also help focus attention on the study's subjects and key variables throughout the research process. The researcher in Table 4 provides the general research objectives and the evidence of completion.

Table 4: Research objectives and evidence of completion

Research Objectives	Evidence of Completion
Specific	The researcher identified the particular problem that was researched as part of this work-based project.
Measurable	One research paper was submitted for peer review in a Q1 journal as part of this research.
Achievable	A limited and convenient number of participants were selected for the interviews.
Relevant	The results of this research project are relevant to the interior design industry as well as higher degree design education.
Timebound	The research project was completed in the designated time.

Source: Developed by the researcher for this study

The research questions, and the specific research objectives, have been listed in 4.2. Discussion section, on page 48 of this thesis by publication.

4. 5. Benefits to the individual researcher

The most valuable benefit for the researcher was to gain hands-on experience by receiving the Research Training Program scholarship and stipend. Therefore, the researcher was able to complete a work-based research project and become an active researcher by accessing the latest practice and knowledge in the field of drawing as manual drafting in the interior design industry.

For the researcher, the MPSR program helped to develop research capabilities by learning research theory and techniques and selecting a research design appropriate for the project. Firstly, the researcher gained a deeper understanding of

the scientific process, developed the research questions and conducted a literature review by evaluating available research in relation to the research questions. Secondly, the researcher managed qualitative research by verbatim recorded responses from the semi-structured interviews, coded the information, sorted through the data, decided on the common themes, and presented the data according to the themes.

Lastly, this study improved the researcher's capacity for goal-setting since the researcher envisioned the outcomes and pinpointed the objectives that were met through work-based research. The results were, that the thesis by publication was written and a research paper was completed and submitted for peer review to a Q1 journal during this work-based research project. Overall, the completion of the MPSR program is beneficial to the individual researcher, as part of the ongoing process of self-development on a personal and professional level in the form of enhanced personal and professional confidence.

4.6. Benefits to the work environment

The researcher's work environment includes face-to-face and online classrooms and relationships with students, colleagues and the industry. The main benefit to the work environment is that participation in research ensures that the practitioner is knowledgeable in the field and connected to the industry on a local and international level. The researcher interviewed employees and principals of local companies and the second co-author of the research paper is a well-known international expert in the field. Although it can take a long time for a research paper to be published, the findings of the research project were almost immediately introduced in the practitioner's classrooms.

According to the researcher's observations and personal experiences, students who attend classes and engage with lecturers who are actively involved in research and connected to industry, gain access to contacts and knowledge of the industry. This helps students become more technically skilled and job-ready. The researcher developed and is delivering a series of workshops to combine the latest knowledge for sharing with students, colleagues and industry. The completion of this work-based research project benefits the work environment as it enhances the researcher's personal and professional credibility.

4. 7. Benefits to the Community of Practice (CoP)

Conducting the research project not only had a positive impact on the researcher's personal and professional life: it also benefited the CoP. Firstly, the researcher collected information and educated the members of the CoP by sharing information related to the process of the research via fortnightly TUA Research Writing Workshops as well as the delivery of annual TUA Interiors Learning and Teaching Show and Tell presentations. Secondly, the researcher supports the TUA CoP Academic Integrity panel discussions and regularly attend the Learning and Teaching Community workshops and Learning and Teaching Symposiums. In addition, the researcher supports and encourages the CoP members to start and sustain their research projects and learning processes. Lastly, the researcher provides the shared contexts which capture existing knowledge and stimulate learning and teaching experiences by creating productive dialogue. Overall, the completion of the MPSR program benefits the CoP by providing a direct impact on an organisation. Overall, increasing the credibility and reputation of the researcher as an educator from the viewpoint of others is beneficial to the individual researcher, the work environment, and the community of practice.

4.8. Recommendations

The researcher, based on the work-based results and own deliberations, offers the following recommendations:

- Explore how to continue and expand the dialogue between education and the interior design industry about the use of drawing as manual drafting in the classroom and in design offices.
- Examine whether the industry draws a distinction between pen and paper drawing/drafting abilities and digital drawing/drafting skills as part of the further investigation.
- Seek to better define the scope of knowledge by examining the effectiveness of existing educational programs and how they can enhance and focus on drawing as manual drafting skills development.
- Conduct additional interviews, surveys and focus groups that better represent all of the Australian interior design community. Such knowledge could also

facilitate international discussion about the use of drawing as manual drafting in the interior design industry.

- Explore the opportunity to promote the development of graduate portfolios with application of manual drafting, with a link to potential employment opportunities.

In addition, each trimester the researcher will conduct ten weekly workshops to promote the development and use of drawing as manual drafting as part of a TUA program. During writing of this TBP the researcher proposed, developed and delivered as part of immediate action the 30-hour workshops in Term 1 and Term 2 – 2023. The updated version of the workshops will be delivered from Week 2 to Week 12 in Term 3-2023.

4.9. Conclusion

This chapter has concluded the study by summarising the key research findings in relation to the research aims and questions, and it has discussed the value and contribution of the work-based research project. It has also reviewed the limitations of the study and proposed opportunities for future research. This study aimed to investigate the use of drawing as manual drafting in the interior design industry by interviewing industry professionals from different sized companies.

The main learning objective of the MPSR was to build research capabilities so the researcher could carry out the educational roles within the organisation more effectively. This objective has been met comprehensively.

The research design has given the researcher the chance to learn more about research methodology. Additionally, the lessons learned have improved that knowledge even more, giving increased understanding to real-world problems with this study.

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APPENDIX A. Participant Invitation Email

UNIVERSITY OF SOUTHERN QUEENSLAND

Dear participant (insert name here)

Re: Invitation to participate in a research project.

The purpose of this letter is to invite you to participate in the interview part of my Master of Professional Studies Research project at USQ. The participant information sheet enclosed provides details of the purpose of the study which you need to consider before deciding whether you would be willing to take part.

You are not obligated to take part in this research project. If you do agree to participate, you remain free to withdraw from the interview at any time and may do so without any disadvantages to yourself and without any obligation to give a reason.

If you decide that you would like to participate in the interview once you have considered the information provided, please complete the attached form electronically and email it to me by (insert return date here).

Please do not hesitate to contact me if you would like to discuss the information provided or ask any questions before agreeing to be part of the interview.

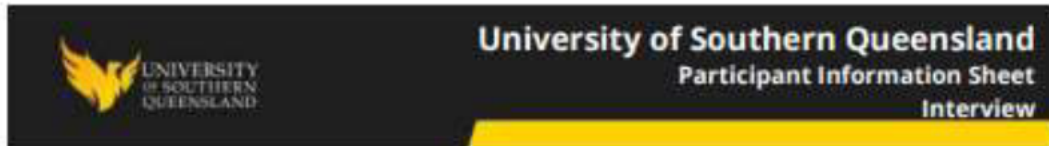Thank you for taking the time to read this information.

Kind regards,

Elena Lomas

M:

Email:

APPENDIX B. Participant Information Sheet

Interview Page 1

Project Title

Drawing as Manual Drafting in the Interior Design Industry

Research team contact details

Principal Investigator Details

Mrs. Elena Lomas
Email:
Mobile

Principal Supervisor Details

A/Professor Henriette van Rensburg
Email:
Teleph

Description

This project is being undertaken as part of a Master of Professional Studies (Research) through the University of Southern Queensland.

The purpose of this project is to determine what is the relationship between different interior design practitioners with different years of work experience in the context of how they utilise drawing as manual drafting to enhance their practices or whether those skills diminish after graduation. Also, developing a better understanding of any impact of drawing as manual drafting experiences on the development of innovatory design concepts. Investigate if there is a relationship in the potential employability of interior design graduate students with acquiring knowledge of drawing as manual drafting or whether those skills are irrelevant in the digital technology office and to investigate: To what extent are manual drafting and drawing used in the interior design professional practice.

Participation

Your participation will involve partaking in an interview that will take approximately 30 minutes of your time.

Questions will include:

- *RQ 1: From the perspective of industry professionals, what is the use and purpose of drawing and manual drafting skills in the Interior Design Industry and why is that use so important or not?*

- *RQ 2: From the perspective of industry professionals, what is the importance of drawing and manual drafting abilities by interior designers and how are these abilities gained?*

Your participation in this project is entirely voluntary. If you do not wish to take part, you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. However, you will be unable to withdraw data collected about yourself after you have participated in the interview.

If you do wish to withdraw from this project, please contact the Research Team (contact details at the top of this form).

Your decision whether you take part, do not take part, or take part and then withdraw, will in no way impact your current or future relationship with the University of Southern Queensland and Torrens University Australia.

Expected benefits

The benefits to participants and to the community will be presented as a result of the research proposal to identify the answers to research questions and not only to produce the publishable paper, it will also bring the results of the research back to the lecture room.

APPENDIX B. Participant Information Sheet

Interview Page 2

Risks

In participating in the interview, there are no anticipated risks beyond normal day-to-day living.

Privacy and confidentiality

All comments and responses are confidential unless required by law.

- The interviews will be audio and/or video recorded for the purpose of transcription.
- The researcher will have access to the recording.
- It is possible for you to participate in the project without being recorded.
- After completion of the research project you will receive a summary of results from the researcher via email.

Your data will be made available for future research purposes (whether for similar projects only or for full unspecified use) only to the researcher.

Any data collected as a part of this project will be stored securely, as per University of Southern Queensland's Research Data and Primary Materials Management Procedure.

Consent to participate

We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate in this project. Please return your signed consent form to a member of the Research team prior to participating in your interview.

Questions

Please refer to the Research team contact details at the top of the form to have any questions answered or to request further information about this project.

Concerns or complaints

If you have any concerns or complaints about the ethical conduct of the project, you may contact the University of Southern Queensland, Manager of Research Integrity and Ethics on +61 7 4631 1839 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can address your concern in an unbiased manner.

Thank you for taking the time to help with this research project. Please keep this document for your information.

Page 2 of 2

APPENDIX C. Consent Form Interview
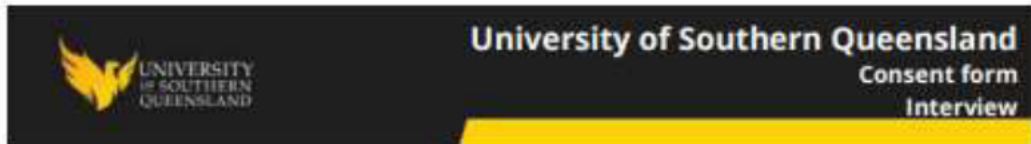
USQ HREC Approval number: 21007061

Project Title

Drawing as Manual Drafting in the Interior Design Industry

Research team contact details

Principal Investigator Details	Principal Supervisor Details
Mrs. Elena Lomas Email: Mobile	A/Professor Henriette van Rensburg Email: Teleph

Statement of consent

By signing below, you are indicating that you:

- Have read and understood the information document regarding this project. ☐Yes / ☐ No

- Have had any questions answered to your satisfaction. ☐Yes / ☐ No

- Understand that if you have any additional questions, you can contact the research team. ☐Yes / ☐ No

- Are over 18 years of age. ☐Yes / ☐ No

- Understand that any data collected may be used in future research activities. ☐Yes / ☐ No

- Understand that the interview will be audio / video recorded ☐Yes / ☐ No

  - Understand that you can participate in the interview without being audio/ video recorded

  - If you **do not** want to be audio/ video recorded during the interview, please initial here: ☐Yes / ☐ No

- Agree to participate in the project. ☐Yes / ☐ No

Name (first & last)			
Signature		Date	

Please return this document to a research team member before undertaking the interview.

Page 1 of 1

APPENDIX D. Interview Questions

Page 1

Project Title

Drawing as Manual Drafting in the Interior Design Industry

Research team contact details

Principal Investigator Details

Mrs. Elena Lomas
Email:
Mobile:

Principal Supervisor Details

A/Professor Henriette van Rensburg
Email:
Teleph

QUESTION	RESPONSE / COMMENTS
PERSONAL RAPPORT	
Participant Name	
Company Name	
Participant position	
Dates of employment	
EDUCATIONAL BACKGROUND	
Highest level of education received	
QUESTION 1:	
Please confirm your work experience	
QUESTION 2:	
Please confirm your highest level of education	
QUESTION 3:	
What is your current job title	
QUESTION 4:	
Please describe your own definition of Manual Drafting	
QUESTION 5:	
When was Manual Drafting introduced in your professional practice, what year	
QUESTION 6:	

Page 1 of 2

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APPENDIX D.

Interview Questions Page 2

Please describe your normal working day	
QUESTION 7:	
At what stage of your normal working day do you use manual drafting	
QUESTION 8:	
If you had the chance to change/improve your own skills regarding Manual Drafting, what it would be	
QUESTION 9:	
If you had the chance to influence delivery of Manual Drafting at higher education, what it would be	
RESEARCH QUESTION 1: Question 10 in the Interview	
From the perspective of industry professionals, what is the use and purpose of drawing and manual drafting skills in the Interior Design Industry and why is that use so important or not?	
RESEARCH QUESTION 2: Question 11 in the Interview	
From the perspective of industry professionals, what is the importance of drawing and manual drafting abilities by interior designers and how are these abilities gained?	