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Communication design industry – in search of unicorns or new pathways?

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Abstract

An integral part of curriculum design is continuously reviewing workplace and industry needs and requirements. International design research and research of a general nature provide some guidance for curriculum developers and lecturers, but research on the local design industry is fragmented and scarce. This lack of available and rigorous research on the local design industry provides a gap for this paper that explores the nature, needs, and requirements of the local design industry and the changing career pathways of designers.

This paper focuses on the broad communication, multimedia, digital and experience design fields. It starts with a literature review of the changes in this space to provide a theoretical grounding for the paper. This is followed by a thematic analysis of recruitment adverts collected in 2023 that looks at industry needs, job titles and levels, attributes, knowledge and skills, and the qualifications listed as the minimum requirement. Findings point to a fast-evolving workplace, shifts away from traditional agencies, demand for wide-ranging skill sets, more strategic alignment with business, flexibility and a focus on users. The need to understand users and the ability to conduct research are becoming critical requirements, as well as flexibility and the ability to work in teams. The analysis also highlights inconsistencies in job titles and unrealistic expectations.

The contribution of this research provides a snapshot of a fast-changing industry and a baseline for future comparisons that can guide design educators.

Keywords: Communication, design industry, digital and experience design, employment requirements.

Introduction

Technology is creating new opportunities and challenges in the world of work, potentially rendering existing jobs obsolete and creating new ones that are, as yet, ill-defined (Xing, Marwala & Marwala 2018). Continuously reviewing industry needs and requirements is integral to curriculum design as higher education institutions grapple with their role in developing the mindsets and skill sets needed in the future world of work (Makwela & Olalere 2021, p. 92). International design research provides some guidance, but research on the local design industry is fragmented and scarce, providing a gap for this paper that explores the nature, needs, and requirements of the local design industry and the

changing career pathways of designers in the broad communication design and expanded fields to inform relevant, appropriate design curricula.

Buchanan's (1998) design matrix provides a theoretical starting point for explaining these shifts within the context of the evolution of design and historical socio-technological changes. A thematic analysis of recruitment adverts collected in 2023 looks at industry needs, job titles and levels, attributes, knowledge and skills, and the type of qualifications listed as minimum requirements to better understand the current local workplace.

Design: an evolving discipline

Seminal design author Richard Buchanan characterised the evolution of design as it encountered new problems in his seminal design matrix (Buchanan 1998, p. 13). He describes design in four broad domains of design thinking: Design in the first domain entails an interest in symbols and the communication of information through words and images, while design in the second domain is concerned with the construction of tangible, physical things (Buchanan 1998). Design in the third domain is concerned with strategic planning and deals with interactions and experiences, whereas design in the fourth domain is concerned with systemic integration and deals with complex systems and environments for living, working, playing, and learning (Buchanan 1998). The domains expand without one replacing another, representing a widening of the domain of design, as can be seen in Figure 1.

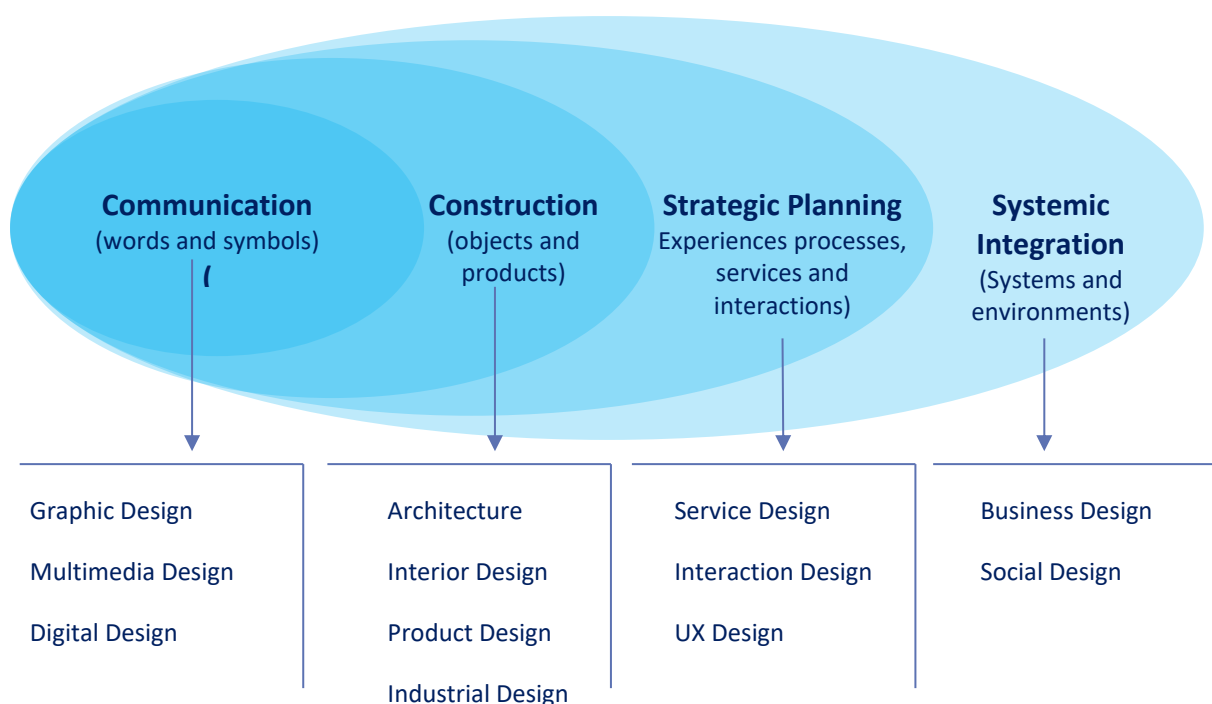


Figure 1: Shifts in the discipline of design according to Buchanan's (1998) domains of design (Adjusted by authors)

The significance of Buchanan's model, first presented in 1994,¹ can be seen in how design evolved and developed over the last 30 years. The evolution of design has coincided with historical global socio-

¹ First presented as a keynote address titled 'Branzi's dilemma: design', *Proceedings of the Contemporary Culture at the Design: Pleasure of Responsibility Conference*, Helsinki, June 1994 (Buchanan, Doordan & Margolin 2010, p. 13).

economical shifts brought about by the emergence and development of new technologies (García Ferrari 2017). Mechanisation in the production and distribution of goods and a need to push products to market (Thurik, Stam & Audretsch 2013), brought on by the first industrial revolution, resulted in a focus on function and form and a need for knowledge of materials and processes in Design (Manzini 2015; Roxburg & Cox 2015). The invention of electricity and the internal combustion engine in the late 19th century heralded the second industrial revolution (Schwab 2017). This era also saw the establishment of design as a formal discipline in schools like the Bauhaus and the Ulm Hochschule für Gestaltung in the first half of the 20th century (García Ferrari 2017, p. S627).

Following World War 2, global industrialisation and mass production resulted in the establishment of large corporations that leveraged the economies of scale made possible by technology to produce goods cheaper and faster (Thurik, Stam & Audretsch 2013). As goods became cheaper to manufacture and easier to copy, companies needed to find new, less tangible ways to differentiate (Thurik, Stam & Audretsch 2013). Consequently, design became concerned with a consideration of how customers form emotional connections with brands and how they use products. Designers now needed knowledge of ergonomics to make user-friendly products and communication studies to generate engaging creative concepts (Roxburg & Cox 2015). Television, computers, and the internet altered the meaning of distance and time, made information widely accessible and making participation in the global economy possible for nearly everybody. Increased connectedness and access to knowledge gave rise to consumer demands for greater variety and customisation (Thurik, Stam & Audretsch 2013), requiring designers to strategically plan how users might interact with and experience designed products. The focus on design shifted from how things should be designed, to how users might interact with and experience things, giving rise to new design fields such as Service Design, Interaction Design, and Experience Design (García Ferrari 2017). Digital technologies have changed the way designers work, putting the tools of production in their hands and expanding the field of Graphic Design to include digital media (Adobe Experience Cloud 2018).

A shift resulting from the ubiquity of mobile and smart technology and embedded interconnectivity throughout society is changing how people experience and make sense of the world (Schwab 2017). This interconnectedness has resulted in complex, networked social and economic problems that require systemic approaches and intradisciplinary collaboration (Dorst 2018). Within this context, the focus of design is expanding to include complex systems, for example, in business design and social innovation (García Ferrari 2017). Accompanying the latest evolution of design is a shift in designers' roles from shape-givers to facilitators of creativity and seeding of systems (Calabretta & Kleinsmann 2017; Sanders 2017). Design is becoming a co-creative practice requiring wide-ranging skill sets, adaptability, an ability to work in teams and a critical consideration for local context (Manzini 2015). Norman (2017) describes design as at a crossroads, design as a craft or practice of design as evidence-based discipline and way of thinking.

In South Africa, design as a recognised discipline has a young history. The first graphic and industrial design diplomas were introduced in Technical Colleges in the mid-1960s, and universities only started offering degree qualifications in the 1980s (Sutherland 2004; Campbell 2008). Design only became a recognised field of research in South Africa in the late 1980s and 1990s (Sutherland 2004). The relatively young status of design as a recognised discipline in South Africa may play a role in design qualifications offered in academic institutions lagging slightly behind the fast-evolving requirements of the local design industry – qualifications specifically in UX design, for example, do not yet exist in South Africa. Yet, there are many recruitment adverts for UX/UI designers.

Methodology

Recruitment adverts were collected during June 2023 from the Indeed and LinkedIn platforms using graphic design, digital design and user interaction (UI) and user experience (UX) (combined as UI/UX design) as search words. Terms such as ‘multimedia design’ and ‘communication’ design yielded no additional results. The adverts in the search pool were divided into three categories: graphic design, digital design, and UI/UX design based on the description of the nature of the position and qualifications needed. These categories as 'spaces' in this paper, based on the blurring of boundaries between them. Inappropriate adverts were discarded (such as the more production-oriented jobs at printshops and in-house positions with printing and reproduction as a core part of the scope, also adverts for design with engineering or IT qualification and programming as a requirement). Twenty adverts in each space were then selected, indexed, numbered and pulled into AtlasTi for thematic analysis. A prefix GD, DD and UIUX followed by a number to create a unique reference. The themes identified during coding are job titles, qualifications, software and technology skills, attributes and soft skills, industry expectations and requirements (with subthemes: research, review and testing requirements, teamwork and collaboration and the strategic role). Divining the job adverts into three spaces allows for comparisons and the identification of similarities and patterns. However, the blurred boundaries between these spaces and inconsistent use of terminology in the job adverts must be recognised upfront.

Findings

Job titles

A wide range of job titles is used, often with combinations that indicate the type of designer wanted. Some job titles seem contradictory or even impossible, while others do not align with the job specifications. Some Digital Design adverts, for example, refer to graphic design produced with digital tools such as InDesign, Illustrator, and Photoshop, rather than design for digital media. The terms Digital, Web and Graphic Design often occur in different combinations (Figure 2). The UI/UX area uses UX or UI interchangeably.

		COMMUNICATION DESIGN		EXPERIENCE DESIGN
	Graphic Design	Digital Design	UI/UX Design	
Most	<ul style="list-style-type: none"> Graphic Designer (13) 	<ul style="list-style-type: none"> Digital Designer (10) 	<ul style="list-style-type: none"> UI/UX or UX/UI Designer (7) UI Designer and UX Designer Product designer Figma UI/UX Designer 	
Combinations	<ul style="list-style-type: none"> Social Media Designer Web Designer & Graphic Designer Graphic & Web Designer Marketing and Graphic Design Brand and Creative Specialist Design, media and marketing manager Digital Branding & Graphic Design 	<ul style="list-style-type: none"> Digital Graphic Designer Digital Designer & Social Media Manager Motion Designer Motion Graphics Designer/Animator Motion Graphics Designer & Videographer Web Designer HTML Email & Digital/Graphic Designer 	<ul style="list-style-type: none"> UX/UI Graphic Designer Digital Design and Architecture Software Developer UX, UI and Research practitioner Product Trainer – Content Specialist & UI/UX Designer 	
	The job specifications between these two are often a mix and match between skills and media.			

Figure 2: Job titles divided into three spaces

Qualifications

All the adverts require applicants to have some form of qualification, with bachelor's degrees and diplomas often unspecified. Words such as such as relevant or suitable describe the type of qualification. Qualifications in Graphic Design are often mentioned for Digital and Experience design positions. A skill is often listed rather than a qualification.

Although the industry is clear about the nature of what the UI/UX designer should be able to do, it recognises that no UI/UX-specific qualifications exist yet and either does not mention a particular degree, or lists Graphic Design plus UI/UX, HCI, or product design² as qualification requirements (Figure 3).

	Graphic Design	Digital Design	UI/UX Design
Unspecified			
Bachelor's degree (Relevant)	4	5	4
Diploma or equivalent in the design field	4	0	1
Certificate	1	1	0
Graphic Design			
Bachelor's degree in Graphic Design or related field.	6	4	0
Tertiary Visual Communication qualification	0	1	0
Certificate /Diploma in Graphic Design	1	0	0
Degree in Graphic Design and/or marketing	3	0	0
Degree in Graphic Design +UI/UX Design	0	0	2
Bachelor's degree in Graphic Design + Human-Computer Interaction	0	0	1
Bachelor's degree in Product Design, Graphic Design	0	0	1
Digital Design			
Bachelor Degree or Diploma in Digital Design	0	2	0
Animation/Digital Design	0	2	0
Bachelor's degree in Web development or related field	0	2	0
Digital design qualification, including HTML (a must)	0	1	0
Addition/Advantage			
Additional in Videography	0	2	0
Additional in UX	0	1	0
Additional Social Media Management Certificate	1	0	0
Certified Usability Analyst (CUA)	0	0	1

Figure 3: Qualifications

All adverts require a portfolio of work and usually ask for specific examples of the type of work they expect the designer to do, such as brand identity, websites, or social media. In the UI/UX space, some

² The term product design here refers to digital products, and not the outcomes of industrial design.

adverts require case studies of own work. This requirement reflects the shift to design outcomes that are less tangible with a more strategic focus, and that is often done in multidisciplinary teams.

Attributes and soft skills

The attributes and soft skills are distributed very similarly across the three spaces and a comparison between these would be superfluous. The 20 most listed personal attributes and soft skills are summarised in Figure 3. The top three require designers to be good communicators (verbal and written), collaborators and be able to work independently.

General soft skills/competencies	Character qualities	Design Industry specific competencies
<ul style="list-style-type: none"> • Communication skills • Teamwork /collaboration • Independent /self-motivated • Self-management • Problem-solving/initiative • Ambition and drive • Interpersonal skills • Work under pressure 	<ul style="list-style-type: none"> • Stay up to date/willing to learn/Curious • Creativity • Passion for... (the different design areas) • Positive attitude • Adaptability/flexibility 	<ul style="list-style-type: none"> • Manage time/Meet deadlines • Accurate and attentive to detail • Productive: Work fast and efficiently, Prioritise/multitask • Work ethics/Integrity/accountability/professional conduct • Organisational/planning skills, work methodically • Listen and follow instructions/Take Guidance • Dedication/hard work as a designer

Figure 4: Top 20 attributes and soft skills

The attributes and soft skills needed by industry appear similar to the competencies and character qualities identified by the World Economic Forum (WEF) as essential 21st-century skills (Soffel 2016). The WEF differentiate between foundational literacies, competencies (to approach complex challenges) and character qualities (Soffel 2016). A similar division is used in this study, with a separate column added that reflects the pressures of the design industry, such as the abilities to meet deadlines, to multitask, pay attention to detail, to plan and solve problems. Other often-mentioned attributes include adaptability, flexibility, and creativity. Many job adverts list a passion and love for what designers are expected to do. The industry wants enthusiastic, positive designers who are flexible and can work or even "thrive" (GD11) under pressure in a fast-paced, deadline-driven environment.

Technical and software requirements

All the job adverts require designers to be technically proficient. This proficiency is not limited to specific design software but includes Microsoft Office and other technical proficiencies such as file management and archiving. Some adverts ask for industry-standard software, but most are rather particular about the specific software or even specify Mac or PC. Adobe's Creative Cloud is essential, with Photoshop, InDesign and Illustrator dominant for Graphic and Digital Design. Premiere Pro and AfterEffects are listed more often in the Digital Design area, as well as HTML/CSS/Java proficiencies. WordPress features in both Graphic and Digital Design, and some employers specifically list Elementor (a WordPress Builder) and the ability to maintain WordPress sites (back and front end) as a requirement.

Animation and motion design abilities feature in many Digital Design adverts, mainly for web and social media, with skills to work with sound and voice-overs. Few specialised 3D needs and applications are listed (such as Cinema 4D), which could be because the search did not focus on this area. CorelDraw was only listed in some of the printshop adverts that were excluded from the study.

Only one job advert in the sample was for television production, requiring outcomes such as title sequences and the ability to art direct 3D (DD13). (Figure 5 provides a snapshot of the most mentioned design software requirements.)

Knowledge of print production and obtaining print quotes are, as expected, mentioned in the Graphic Design job adverts. Some Digital Design job adverts also ask for InDesign and print knowledge, which points to a blurring of boundaries and the need for versatility.

Prototyping, visualising and collaboration software stand out as a requirement in the UI/UX space, with Figma standing out as most specific mentions (others are Sympli, Adobe XD, Sketch – see Figure 5). Adobe Creative Suite, Photoshop, Illustrator, and InDesign are also listed as a requirement in the UIUX space and, unexpectedly, also the ability to design for print, social media, web and marketing collateral, with video editing and copywriting as advantage (e.g., UIUX21). The question can be asked if industry is looking for a graphic or digital designer with UX abilities, or a UX designer with broad communication design abilities.

Adobe software	Graphic design	Digital design	UI/UX design
Adobe Creative Suite (as collective)	6	11	9
Photoshop	16	15	3
Illustrator	12	11	3
InDesign	9	9	2
After Effects	2	7	0
Premiere Pro	2	5	0
Markup languages and web			
HTML, CSS, and JavaScript	3	20	7
WordPress (and Elementor)	5	8	3
Dreamweaver	2	2	0
Others mentioned: WebFlow, Mailchimp			
Prototyping and collaboration			
(Proto) Figma	2	2	16
(Proto) Sketch	0	1	8
(Proto) AdobeXD	0	2	3
Others mentioned: Moqup, InVision; Axure; Sympli, Zeplin			
3D and Motion			
Cinema 4D; modelling software Modo & Z-Brush, Maya, Arnold &VRay A and PFtrack & Mocha			

Figure 5: Specific software requirements most mentioned

Industry expectations and requirements

Employers might not know what to call the position or what qualifications the suitable candidates should hold, but they know what they expect the designer to produce and how these outcomes fit their strategies and businesses.

Graphic/Digital design spaces

The data revealed a clear need for conceptually and technically versatile designers who can work 360° across media (print and digital) and different channels (above and below the line). The exhaustive list of design outcomes includes identity design, brochures, flyers, posters, presentations, reports, out-of-home, promotional items, advertising and campaigns, video content, display and exhibition material, packaging and e-mailers.

Design for social media and the web (websites, web banners, landing pages) dominate in both the Graphic and Digital design areas. Logo design and corporate or brand identity are primarily seen in Graphic Design, whereas Motion Design and Animation are mainly required in Digital Design adverts. Many adverts list video and video editing as an advantage. The term multimedia has mostly disappeared, and the terms Visual Design or Communication Design appear less than expected. Designers are required to either be able to work from brief to outcome or deliver parts or assets as part of a team.

Employers not only list the desired design outcomes, but also formulate qualitative expectations about the nature of the design solutions, such as aesthetically and visually appealing, creative, trendy, stunning, innovative, mind-blowing solutions that users will love and that are interesting. DD25 asked for a "digital designer/perfectionist/magician". The potential for award-winning work is also mentioned (DD09).

What became evident is that employers are looking for designers with skillsets or understandings often found in other disciplines such as marketing and branding. One such area is digital marketing and social media, specifically social media planning and strategy, SEO, adwords, and analytics. Some job adverts even require online engagement with customers and stakeholders (DD03, DD08, GD06). Some employers look for designers who can maintain websites and social media platforms.

Knowledge of User Interface (UI) and Interaction design is required in the Digital Design space, and User Experience Design (UX) is occasionally mentioned in both Graphic and Digital Design adverts as a requirement. A few adverts list copywriting skills as an advantage. Videography, Photography and Video Editing are often listed as an advantage, and the ability to work with sound is mentioned occasionally.

UI/UX space

The UI/UX space brings a different dimension and new terminologies that clearly show a shift from the design of tangible outcomes to the design of experiences. In these job adverts, the design of digital products, user interfaces, and user experiences firmly position the user in the centre, and adverts require designers who can produce user flows, user maps, and low and high-fidelity prototypes as design requirements. Teamwork and collaboration are highlighted as important, and user research is starting to feature as a required skill.

Similar to Digital and Graphic Design, a theme started to emerge that describes the expected nature of solutions in the UI/UX space. For example, UIUX17 ask for designers who can produce "Products with purpose and experiences that delight"; who can "Dive into complex design challenges that improve lives over many interfaces". What is valued in the adverts is the experience of use, such as features that are a "breeze to use" (UIUX16). Terms used are user-friendly, cool, sophisticated, original, creative, and simple solutions to complex problems.

Knowledge of Graphic Design is often listed as a requirement or advantage, and some adverts indicate that they need a visualiser or a designer to make mock-ups by Figma in the job title. One advert even

asked for a UI/UX Graphic Designer – indicating the need for an all-rounder. Many UI/UX adverts mention alignment with brand guidelines and a few require UI/UX designers who can do social media posts, digital and print-ready brochures or any other marketing related to print or digital assets (e.g., UIUX20). Skills found in other disciplines, such as Corporate Training and IT/Software Engineering are also mentioned.

A purpose statement in a job ad for a UI/UX designer in the healthcare and insurance sector reveals a shift towards systemic integration – Buchanan's fourth domain (UIUX21):

To ensure that [company name withheld] digital features and channels meet the needs of their intended audiences through design, analysis, evaluation and testing of the user experience. Designs and conducts analysis and evaluations of systems interfaces with clients and staff, to ensure maximum usefulness and satisfaction, to increase productivity and to elevate the overall quality of the product or service.

Collaboration and teamwork with specific stakeholders

Many adverts were specific about who designers should be able to work or collaborate with, and these were combined in a separate theme. A job advert would, for example, list teamwork as a general soft skill or attribute, and then expand later on with more specific requirements. Some comprise collaboration with external stakeholders, suppliers and clients and internal cross-functional teams such as marketing and brand teams, social media teams, developers, engineers, copywriters, managers and sales teams. These requirements were listed most in the UI/UX space. The ability to mentor and coach juniors is mentioned as a leadership requirement, as well as the ability to explain design to others or even be an advocate or ambassador for new fields such as experience design.

Research, review and testing requirements

A subtheme emerged from the data that combines research skills and activities, ways of using data, and testing final solutions. Some are explicit (such as user testing), and others are more implied (for example, troubleshooting). Some of these activities are individual, and some are mentioned as team or collaborative activities.

Examples of research skills before and as part of the design process include requirement and systems analysis, trend analysis (such as social media and design trends) and marketing research, user research (to develop personas and user flows – UIUX19), user testing and concept testing. Iterations and improvements of concepts and designs based on research and stakeholder feedback are mentioned several times in all three design spaces, with a strong need for designers with the ability to listen to feedback.

The research tools and techniques listed include facilitating discovery workshops, in-person ethnography, AB Testing, and using quantitative and qualitative data. Knowledge of POPIA was mentioned once as a requirement. Research is seen as a proactive activity by DD01. UIUX09 and IUUX10 provide two contrasting viewpoints: "rely on user validation rather than your own personal opinions" versus a "heuristic, expert assessment of strategic value, usability, design, and content".

The ability to "review" own and peer work and to compare against best practices and standards also emerged as a recurring theme in the data. In order to be able to review something implies a critical thinking process that includes observational and analytical skills, the ability to draw conclusions based on data and one's own experience and knowledge and the ability to communicate and act on these inferences. The term troubleshooting is also used in the job adverts as a form of reviewing.

Specific testing skills include user testing, usability testing, and the review of analytics and data. Adverts in the UIUX space require tools and software, such as Hotjar Recordings, Optimal Workshop, and Zuko – further extending the already long list of job and technology specifications. UIUX21 ask for a Certified Usability Analyst (CUA),³ the only mention found for some form of certification.

Strategic role of design

A subtheme that can best be described as the strategic alignment and the strategic role of design starts to emerge. The skill mentioned most and notably across all three design spaces is a strategic alignment with Brand Identity/CI/standards. Many of the job adverts also require designers who can meet business/brand/marketing goals. DD04 is looking for a designer who is "business SMART and "Able to think about problems from a business perspective using technical and product input".

Employers look for designers who are sensitive towards their corporate culture, e.g., "We seek out and invest in exceptional individuals who understand and support our core purpose, and whose own values align with" (UIUX21).

Discussion

This paper set out to explore the local communication design industry's nature, needs, and requirements and the analysis of the job adverts produced rich data. The inconsistencies in the job titles seen in this small sample stand out. Richard Buchanan indicated in 2001 that the name of this profession or area of study has changed over the years: it has evolved from Graphic Design, to Visual Communication, to Communication Design (Buchanan 2001, p. 10). Interaction and Experience design were included as pathway possibilities for an expanding discipline (Buchanan 2001).

The industry still uses the older job title of Graphic Designer, with multimedia design hardly ever mentioned. The Digital Design space overlaps to a great extent with those of Graphic Design, with more similarities than differences. The most significant shift observed in these adverts is the shift to User Interaction (UI) and User Experience (UX) Design. This is a shift in focus from how things should be designed to how people interact with design outcomes (García Ferrari 2017), and the job adverts echo requirements for new skill sets, knowledge and tools and abilities.

However, similar to Buchanan's four orders that build on each other, first and second orders of communication and interaction are embedded in designing such experiences, presenting new pathways for traditional graphic and digital designers. An awareness of these overlaps can be observed in the sometimes-odd combinations of job titles in the adverts: a UI/UX Graphic Designer or a Digital Graphic Designer. We are also starting to see knowledge of UX as a requirement for Graphic Designers, pointing to cross-disciplinary influence.

These overlaps and shifts challenge educators: what should be at the core of a future-directed syllabus, and what should these qualifications be called? Educators are, on the other hand, influenced by future thinking design discourse by scholars such as Buchanan (1997; 2001), Garcia Ferrari (2017), Manzini (2015), Sanders (2017). On the other hand, current industry needs need to be considered to ensure our graduates are employable. Is design and design education at a fork in the road (Norman 2017)? The analyses of job adverts show that the industry recognises the impact of technological development and socio-economic shifts on design (García Ferrari 2017) and wants multiskilled and versatile designers who can stay up-to-date and adapt to the latest design trends and technologies.

³ Certification trademarked by hfi.training/sa/certifications/cua

The expectations show a demanding industry that expects graduates to hit the ground running, with requirements that are of unicorn scope.

Salaries and job levels such as junior or senior were not analysed for this paper, however, we could not help but notice the much higher salaries in the UI/UX field. The industry sectors were also excluded since many of the adverts are placed by recruiters with the identity of the employer not provided. Yet it was noticeable how many adverts there are for in-house positions in various sectors such as banking, insurance, retail, manufacturing, and services, with fewer traditional agencies/design studios. Several positions for paid internships were noticed during the search, and some were also included in the sample. Such internships provide young designers with opportunities to gain much-needed experience.

Conclusion

Far more research is needed to understand the design sector better. Sadly, none of the adverts mentioned sustainability, although employers require designers who are professional and ethical practitioners. Cultural sensitivity was also only listed once as a requirement. These findings may indicate a still-developing understanding of the systemic role design can play in shaping environments and places to live, and our graduates could and should play an essential role in bringing these dimensions into the workplace.

The analysis of job adverts in this study contributes a valuable snapshot of a developing and challenging workplace that design educators can use to shape curricula and prepare students for a fast-paced, innovative and dynamic industry so that our students are ready not only for the current workplace and but also for future pathways.

References

- Adobe Experience Cloud 2018, *The evolution of graphic design*, viewed 9 June 2023 <<https://business.adobe.com/blog/basics/the-evolution-of-graphic-design#:~:text=Earliest%20Graphic%20Design&text=Fast%20forward%20to%20the%201900s,graphic%20that%20set%20the%20tone>>.
- Buchanan, R, 1998, 'Branzi's dilemma: design in contemporary culture', *Design Issues*, vol. 14, no. 1, pp. 3–21, <<https://www.ida.liu.se/~steho87/und/viskult/468816.pdf>>.
- Buchanan, R 2001, 'Design research and the new learning', *Design Issues*, vol. 17, no. 4, pp. 3–23, <<https://www.ida.liu.se/~steho87/desres/buchanan.pdf>>.
- Buchanan, R, Doordan D & Margolin, V 2010, *The designed world: images, objects, environments*, Oxford, Berg.
- Calabretta, G & Kleinsmann, M 2017, 'Technology-driven evolution of design practices: envisioning the role of design in the digital era', *Journal of Marketing Management*, vol. 33, no. 3–4, pp. 292–304.
- Campbell, AD 2008, 'Industrial design education and South African imperatives', *Image & Text*, pp. 82–99, viewed 7 June 2023 <<https://www.researchgate.net/publication/266146341>>.
- Dorst, K 2018, 'Mixing practices to create transdisciplinary innovation: a design-based approach', *Technology Innovation Management Review*, vol. 8, no. 8, pp. 60–65.
- García Ferrari, T 2017, 'Design and the Fourth Industrial Revolution: dangers and opportunities for a mutating discipline', *Design Journal*, vol. 20, suppl. 1, pp. S2625–S2633.

- Makwela, MJ & Olalere, FE 2021, 'Preparing the future workforce in African universities of technology: a case of new media art as a mutating discipline in the 4IR', in D Smal, H Botes and S Salaam (eds), *Design Education Forum of Southern Africa (DEFSA Conference, Johannesburg)*, viewed 28 June 2023 <<https://www.defsa.org.za/papers/preparing-future-workforce>>.
- Manzini, E 2015, *Design when everybody designs: an introduction to design for social innovation*, Cambridge, London, MIT Press.
- Norman, DA 2017, 'When you come to a fork in the road, take it: the future of design', *She Ji: Journal of Design, Economics, and Innovation*, vol. 2, no. 4, pp. 343–48, <<https://doi.org/10.1016/j.sheji.2017.07.003>>.
- Roxburg, M & Cox, S 2015, *Visual communication design is the centre of the artificial universe*, in L Collina, L Galluzzo & A Meroni (eds), Milan, McGraw-Hill Education, <<http://www.cumulusassociation.org>>.
- Sanders, EBN 2017, 'Design research at the crossroads of education and practice', *She Ji: Journal of Design, Economics, and Innovation*, vol. 3, no. 1, pp. 3–15.
- Schwab, K 2017, *The Fourth Industrial Revolution*, London, Penguin.
- Soffel, J 2016, *Ten 21st century skills every student needs*, World Economic Forum, viewed 27 June 2023 <https://www.weforum.org/agenda/2016/03/21st-century-skills-future-jobs-students/>.
- Sutherland, I 2004, 'Paradigm shift: the challenge to graphic design education and professional practice in postapartheid South Africa', *Design Issues*, vol. 20, no. 2, pp. 51–60.
- Thurik, AR, Stam, E & Audretsch, DB 2013, 'The rise of the entrepreneurial economy and the future of dynamic capitalism', *Technovation*, vol. 33, no. 8–9, pp. 302–310.
- Xing, B., Marwala, L & Marwala, T 2018, 'Adopt fast, adapt quick: adaptive approaches in the South African context', in N Gleason (ed.), *Higher education in the era of the Fourth Industrial Revolution*, Springer Singapore, pp. 1–229.