

# Adapting future designer curricula: a comparative analysis of future skills in learning outcomes

Wright, Emily

Swinburne University of Technology, Melbourne, Australia  
emwright@swin.edu.au

[doi.org/10.21606/iasdr.2023.852](https://doi.org/10.21606/iasdr.2023.852)

There is a rising imperative for design education programs to better prepare graduates for the challenges of the future job market. Future work contexts forecast rising complexity which requires designers to upskill in cross-disciplinary collaboration as well as adapt to the demands of data-driven and agile design. The challenge and constraints of revising curricula, let alone introducing significant change, cannot be underestimated. This paper presents the AIGA Designer 2025 as a framework tool to assess the effectiveness of a design education program. A comparative analysis of learning outcomes was undertaken with three case studies within an Australian university design school. Here, the importance of crossdisciplinary collaborations and complex problem solving in real-world contexts is highlighted. These results provide a best practice exemplar of an education model that future design educators can build upon and apply to their own curricula.

**Keywords:** *design education; future designer; learning outcomes; curriculum mapping*

## 1 Introduction

There is a rising world-wide imperative for design education programs to better prepare graduates for the challenges of the future job market (Meyer & Norman, 2020; Pontis & van der Waarde, 2020). The changing nature of design, and thus design education, has been a topic of much debate over recent decades (Bonsiepe, 1994; Buchanan, 1998; Davis, 2018; Margolin, 1994; Poggenpohl & Ahn, 2002). Many propose systems thinking and human centred research approaches are needed for future work (Cross, 2007; Friedman, 1997; Meyer & Norman, 2020), whereas others are concerned that the creative and literal making aspect of design practice may become overlooked (Swanson, 2020). Others further argue that design education needs to be student-led and suited to a diversity of students (Noel, 2022; Pontis & van der Waarde, 2020) as well as having the ability to design for, and with, diverse audiences (Sanders & Stappers, 2008).



This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International Licence](https://creativecommons.org/licenses/by-nc/4.0/).

An ongoing challenge of preparing graduates for careers in the design industry is the student lack of real-world experience in professional communication and project management skills that are mandatory for working with a variety of stakeholders across a project. This challenge only becomes greater as real-world projects are more complex than before, requiring systems thinking rather than the design of sole artefacts (Buchanan, 1998; Forlizzi & Battarbee, 2004). There has long been a call to embed design research inquiry in learning tasks, to make better sense of these complex problems (Friedman, 1997; Voûte et al., 2020). This involves user research, as well as the ability to cite evidence to support decision-making and evaluate proposed design outcomes (Frascara et al., 1997; Norman, 2013). Some complex problems require various disciplinary knowledges and thus require crossdisciplinary collaborative teams to solve (Cezzar, 2020; Frascara, 2017). Additionally, responding to data-driven, agile design approaches, as well as the impact of AI, brings further challenges (Davis, 2018).

Nevertheless, it is generally agreed upon that to work successfully in teams across disciplines requires excellent communication as well as collaboration skills. Additionally, critical thinking, problem-solving, global citizenship and self-directed learning have been identified as skills in all disciplines' graduate attributes across the Higher Education sector, not just design (Oliver & Jorre de St Jorre, 2018).

Echoing the design scholars cited above, various design organisations have called for design education to revise curriculum to prepare for this shift to future work challenges including the *Icograda Design Education Manifesto* (Bennett & Vulpinari, 2011), the *AIGA Designer 2025* (Davis, 2018) and the *Systems Shifting Design* report (Drew et al., 2021). As the 2025 date rapidly approaches (as outlined in *AIGA Designer 2025*), it is imperative that an assessment of graduate skills be undertaken, with a focus on identifying any mismatches between these and work skills needed for the future.

In this paper, I present the *AIGA Designer 2025* (Davis, 2018) as a framework tool to assess the effectiveness of the Design Factory education model across three case studies within an Australian university design school.

### **1.1 The AIGA Designer 2025**

Of the various frameworks proposed by design scholars and global design organisations, the AIGA Designer 2025 was chosen as it is extremely thorough. It describes and analyses future work trends and links these to tertiary student learning outcomes, knowledges, and skillsets. Thus, it is well-suited to curriculum mapping and assessment of design graduate learning outcomes.

The AIGA Designer 2025 initially describes the context of future work, and then identifies crossdisciplinary collaboration, data-driven design and agile design as key factors. Next, it details the core competencies needed for all designers, including; Creative and critical thinking, Communication skills, Technical skills, Collaboration skills, Business acumen, and Ethics and values. Following that, it drills down by further outlining seven important trends for Design Futures. These include; Complex problems, Aggregation and curation, Bridging physical & digital experiences, Resilient organisations, Core values matter, Making sense in the data economy, and Accountability for anticipating design outcomes. Finally, each of these seven trends are analysed and linked to student learning outcomes as well as further professional development learning outcomes (Table 2).

It is important to note that AIGA Designer 2025 not only outlines learning outcomes for undergraduate and postgraduate students, but also provides goals for professional development in future work contexts. Some of the desired graduate skills for students overlap with the professional development goals. For example, a desired skill in a student is “...should engage in conversation and group decisionmaking processes that support building consensus around systems thinking”, whereas the overlapping skill in a career designer is “collaborative processes for managing interdisciplinary teams” (Davis, 2018). Clearly, it is recognised that job skill-learning is a continual process, where graduate skillsets are built upon with professional development throughout a successful design career.

## **1.2 The Design Factory education model**

The Design Factory (DF) is an interdisciplinary learning and teaching model. First established in Finland in 2008, the model applies the successful Finnish innovative approach to education to the Higher Education sector. The DF education model brings together multi-disciplinary student teams and academic mentors with industry to carry out real world design projects (Björklund et al., 2019). The DF model is accessible in that it sits alongside all degrees in the university, allowing students from multiple disciplines to participate.

Students are challenged with design and innovation tasks that require complex problem solving, crossdisciplinary collaboration and co-creation with all stakeholders. Working across disciplines is important for future work, and building skills around interdisciplinarity and collaboration is fundamental to the DF approach (Chung et al., 2022). The problem space of the projects is intentionally not clearly defined, allowing for exploration and negotiation amongst the stakeholders to uncover new insights and opportunities in collaboration with the industry partner. Co-creation is central to the Design Factory process which supports the stakeholders in the building of shared meaning and purpose for the project (Joore et al., 2022; Kunnari et al., 2019).

Additionally, building the student’s capacity to be adaptable, navigate uncertainty and confidence to take creative risks is essential in the face of rising complexity, where problem space boundaries can shift and change. This approach supports the learner to build communication, teamwork, critical and creative thinking, as well as adaptability through being compelled to respond to unexpected challenges and the shifting project parameters that often come with co-creation approaches (Figueiredo et al., 2022).

## **2 Method**

Case Study method was employed (Yin, 2011), as well as Curriculum Mapping (Harden, 2001). To conduct the comparative analysis, three cases of the DF education model were selected. These were delivered at the Design Factory Melbourne and were different in scope as well as content. In short, while all three case studies involved interdisciplinary co-creation, they were selected as they represent a broad range of design types, disciplines, and industries (see Table 1). To assess how the DF model can increase future work job readiness in graduates, I mapped each of the case studies against the AIGA Designer 2025 (Davis, 2018). More specifically, I reviewed curriculum documentation and assessment tasks and then grouped these according to the framework’s seven trends.

Table 1. Case study description: scope, focus and participants.

Industry type	Design type	Students'	Facilitator & mentors	Team size workshop	User Research	Co-creation disciplines
Supermarket	System & Service Interaction Communication	Design (CD, UxD) Business (Marketing, Commerce) IT	Design (CD, UX, ID, DS) Business (Mk, I&E)	5	Observation in store Observation online Survey	5
FinTech	Interaction System & Service Communication	Design, (CD, UxD, ID) Business (Marketing, Engineering (PDE))	Design (CD, ID, UX, DS, UX) Business (I&E)	6	Expert Interview Focus Group Survey	5
University education	Interior System & Service Interaction Communication	Design (CD, ID, IntD) Business Engineering	Design (CD, ID, UX, DS, UX) Business (I&E)	6	Expert interview Focus group Survey	5

Legend for discipline abbreviations: Design: CD (Communication), ID (Industrial), IntD (Interior), UxD (User Experience), DS (Strategy); Business: Mk (Marketing), IE (Innovation & Entrepreneurship); Engineering: PDE (Product Design Engineering)

## 2.1 Case study 1

This project was for a national supermarket investigating the benefits and barriers to the purchase of fresh food online. The design focus was user experience from interaction with the product, system, service both online and in person.

The team was comprised of five students from the disciplines of design (communication, user experience), business (marketing, commerce, commercial law) and IT (information and communication technology). The background of the learning facilitators (five in total) included design (communication, industrial, user experience and design strategy) and business (innovation, and entrepreneurship). The team worked with two client/industry partner contacts over a period of two semesters, approximately 28 weeks in total. The user research was conducted in accordance with University Ethics Approval policy and included observation in store, observation online using Think Aloud Protocol (TAP) (Jääskeläinen, 2010), as well as an online survey. There were five co-creation workshops undertaken with industry partners, relevant stake holders and the team.

## 2.2 Case study 2

This project involved a financial technology (Fintech) organisation investigating how to engage young people in financial literacy and plan for their financial future. The design focus was user experience, looking at current interactions and then forecasting for future growth opportunities with a focus on a younger markets' needs within the product, system, service.

The team was comprised of five students from the disciplines of design, business and engineering. The background of the learning facilitators (five in total) included design (communication, industrial, user experience and design strategy), business (innovation and entrepreneurship). The team worked with three client/industry partner contacts over a period of two semesters, approximately 28 weeks in total. The user research was conducted in accordance with the University Ethics Approval policy and

included expert interview, focus group and online survey. There were five co-creation workshops undertaken with the industry partners, relevant stake holders and the team.

### **2.3 Case study 3**

This project was for the university education sector investigating the system and service required to deliver a professional practice focussed education model. The design focus was the learning environment and the stakeholders' needs within the product, system, service. More specifically, the learning spaces needed to accommodate collaborative work as well as iterative prototyping for a large cohort of students.

The team was comprised of six students from the disciplines of design (interior, industrial, communication), business (marketing) and engineering (product design). The background of the learning facilitators (five in total) included design (communication, industrial, user experience and design strategy), business (innovation, and entrepreneurship) and engineering. The team worked with two client/industry partner contacts over a period of two semesters, approximately 28 weeks in total. The user research was conducted in accordance with the University Ethics Approval policy and included expert interview, focus group and online survey. There were five co-creation workshops undertaken with the industry partners, relevant stake holders and the team.

## **3 Findings and discussion**

Seven trends are identified in AIGA Designer 2025 (Davis, 2018). They are mapped, below, to the three case studies. These trends are; Complex problems, Aggregation and curation, Bridging physical & digital experiences, Resilient organisations, Core values matter, Making sense in the data economy and Accountability for anticipating design outcomes. While the AIGA Designer 2025 is arguably relevant to all design education, some aspects are focussed specifically on Communication Design. It is important to note that the case studies examined here have a large cohort of Communication Design students working with User Experience, Industrial and Interior Design students as well as Business, IT and Engineering students.

These trends, and where they occurred within the three case studies, are described in Table 2. In the right hand column, the various learning tasks undertaken by the students in the cases are outlined. These are then mapped to a series of student learning outcomes (four to seven depending on the trend).

As shown, all three cases meet trends 1, 3, 4, 5, and 7 (Table 2). Only one case meets trend 2 and another case meets trend 6. This suggests that the DF education model meets the majority of the AIGA Designer 2025 trends for future work. In all cases, the teams employed collaborative interdisciplinary teamwork, user research and iterative prototyping, systems thinking and user experience mapping, co-creation and negotiation with stakeholders, evidence-based decision making and evaluation of design outcomes.

With regards to trends 2 and 6, these are more specific to the industry sector of the client. In case 1, the supermarket sector has a large brand system to manage, and curating the appropriate content for the brand context can be challenging. This was not present in the other two cases. In case 3, the

FinTech sector relies on the management of Big Data, users making sense of this complexity as well as user perceptions of trust and privacy. The other two cases did not have this aspect to the projects.

Table 2. Mapping Case Studies to Designer 2025 and Learning Tasks.

<b>Designer 2025 Trends</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Learning Tasks</b>
<b>1. Complex Problems</b> Wicked problems Systems thinking New design paradigm Interdisciplinary	x	x	x	Framing problem space for futures Shifting problem boundaries Mapping product, service, systems Working in interdisciplinary teams
<b>2. Aggregation and Curation</b> Managing information authenticity Crowdsourcing and 3 <sup>rd</sup> party influences Brand and service systems in context	x			Information mapping of brand systems Designing for brand and sub-brand systems Managing various stakeholder generated content
<b>3. Bridging Digital and Physical</b> Experiences Experiences over objects Touchpoints and systems New media (AR, VR, AI)	x	x	x	Human Centred Research - User Experience mapping Identifying pain points for improvement Forecasting use of new media
<b>4. Core Values Matter</b> Values Ethics Social Innovation	x	x	x	Co-creation & collaboration Stakeholder negotiation & decision making Evaluation in PESTE context Ethics approval
<b>5. Resilient Organizations</b> Strategy Design thinking Innovation Forecasting	x	x	x	Design strategy development Design thinking approaches Innovation modelling Stakeholder negotiation & decision-making Project management
<b>6. Making Sense in the Data Economy</b> Big Data, IoT AI, User Scoring, Digital Twins		x		-Data security, trust and privacy modelling -The role of gamification in interaction - Information design for data complexity
<b>7. Accountability for Anticipating Design</b> Outcomes User-centred research Intelligent research Design research	x	x	x	-Iterative prototyping based on user research -Evidence based design decision making -Evaluation of design outcome -Developing persuasive pitches -Writing evidence-based proposals

## 4 Conclusion

The AIGA Designer 2025 framework, in terms of its utilisation as a mapping tool, is effective due to the seven trends being both flexible and robust. The flexibility of the trends allows it to be potentially translatable to a variety of design education programs, whereas its robustness ensures that its application supports a thorough mapping of curricula. While mapping to the framework accurately identifies strengths of a design education program, its real benefit is in the identification of gaps or areas for improvement within a given curriculum.

Over the past decade, the Design Factory education model has supported student graduate learning outcomes commensurate with those outlined by the AIGA Designer 2025. An in-depth mapping of student skills, learning outcomes and learning tasks has been presented across three cases. This analysis can be used to explore further projects and ensure that they are meeting AIGA Designer 2025 trends for future work. This will assist with; improvement of university design education programs (particularly Communication Design), benchmarking with industry relevance, and better preparation of design graduates for future work. To meet the demands of future work, design programs need to adapt and embed these skills, and scaffold them throughout the curriculum. The Design Factory education model is a best practice exemplar that future educators can build upon and apply to their own curricula.

## Acknowledgements

I would like to express my sincere gratitude to all those who supported this project. I would like to thank the Design Factory Melbourne team for their invaluable expertise as well as the support of the industry partners who without their input, this paper would not be possible.

## References

- Bennett, A., & Vulpinari, O. (2011). *Co-grada design education manifesto 2011*. International Council of Graphic Design Associations, Montreal.
- Björklund, T. A., Keipi, T., Celik, S., & Ekman, K. (2019). Learning across silos: Design Factories as hubs for cocreation. *European Journal of Education, 54*(4), 552-565.  
<https://doi.org/https://doi.org/10.1111/ejed.12372>
- Bonsiepe, G. (1994). A Step Towards the Reinvention of Graphic Design. *Design Issues, 10*(1), 47-52.  
<https://doi.org/10.2307/1511655>
- Buchanan, R. (1998). Education and Professional Practice in Design. *Design Issues, 14*(2), 63-66.  
<https://doi.org/10.2307/1511851>
- Cezzar, J. (2020, 2020/06/01/). Teaching the Designer of Now: A New Basis for Graphic and Communication Design Education. *She Ji: The Journal of Design, Economics, and Innovation, 6*(2), 213-227.  
<https://doi.org/https://doi.org/10.1016/j.sheji.2020.05.002>
- Chung, S. J., Shim, O., & Kim, S. (2022, 2022/05/04). Analysing the status of communication designers' role and interdisciplinary collaboration. *The Design Journal, 25*(3), 397-415.  
<https://doi.org/10.1080/14606925.2022.2058682>
- Cross, N. (2007). *Designerly Ways of Knowing*. Springer. <https://doi.org/10.1007/978-3-7643-8485-2>
- Davis, M. (2018). Introduction to design futures. *AIGA Design Futures Trends*. Repéré à: <https://www.aiga.org/sites/default/files/2021-02/introduction-to-design-futures.pdf>.
- Drew, C., Robinson, C., & Winhall, J. (2021). *System-shifting design. An emerging practice explored*.
- Figueiredo, S., Ganoo, A., Eriksson, V., & Ekman, K. (2022). Future-ready skills development through Experiential Learning: perceptions from students working in multidisciplinary teams. *CERN IdeaSquare Journal of Experimental Innovation, 6*(2), 12-19.
- Forlizzi, J., & Battarbee, K. (2004). Understanding experience in interactive systems. Proceedings of the 5th conference on Designing interactive systems: processes, practices, methods, and techniques,
- Frascara, J. (2017). Design, and design education: How can they get together? *Art, Design & Communication in Higher Education, 16*(1), 125-131.  
[https://doi.org/https://doi.org/10.1386/adch.16.1.125\\_1](https://doi.org/https://doi.org/10.1386/adch.16.1.125_1)
- Frascara, J., Meurer, B., van Toorn, J., & Winkler, D. (1997). *User-centred graphic design: Mass communication and social change*. CRC Press.
- Friedman, K. (1997). Design Science and Design Education in the Challenge of Complexity. *Helsinki: University of Art and Design Helsinki Uiah*.
- Harden, R. M. (2001, Mar). AMEE Guide No. 21: Curriculum mapping: a tool for transparent and authentic teaching and learning. *Med Teach, 23*(2), 123-137. <https://doi.org/10.1080/01421590120036547>

- Jääskeläinen, R. (2010). Think-aloud protocol. *Handbook of translation studies*, 1, 371-374.
- Joore, P., Björklund, T., Thong, C., & Zancul, E. (2022, 12/21). Co-creating the future through design-based education in innovation hubs. *CERN IdeaSquare Journal of Experimental Innovation*, 6(2).  
<https://doi.org/10.23726/cij.2022.1413>
- Kunnari, I., Jussila, J., Tuomela, V., & Raitanen, J. (2019). Co-creation pedagogy from cSchool towards HAMK Design Factory. *HAMK Unlimited Journal*. <https://unlimited.hamk.fi/ammattillinen-osaaminen-jaopetus/co-creation-pedagogy/>
- Margolin, V. (1994). The Age of Communication: A Challenge to Designers. *Design Issues*, 10(1), 65-70.  
<https://doi.org/10.2307/1511657>
- Meyer, M. W., & Norman, D. (2020, 2020/03/01/). Changing Design Education for the 21st Century. *She Ji: The Journal of Design, Economics, and Innovation*, 6(1), 13-49.  
<https://doi.org/https://doi.org/10.1016/j.sheji.2019.12.002>
- Noel, L.-A. (2022). Designing New Futures for Design Education. *Design and Culture*, 14(3), 277-291.
- Norman, D. A. (2013). *The design of everyday things*. MIT Press.
- Oliver, B., & Jorre de St Jorre, T. (2018). Graduate attributes for 2020 and beyond: Recommendations for Australian higher education providers. *Higher Education Research & Development*, 37(4), 821-836.
- Poggenpohl, S. H., & Ahn, S.-S. (2002). Between Word and Deed: The ICOGRADA Design Education Manifesto, Seoul 2000. *Design Issues*, 18(2), 46-56. <https://doi.org/10.1162/074793602317355774>
- Pontis, S., & van der Waarde, K. (2020, 2020/06/01/). Looking for Alternatives: Challenging Assumptions in Design Education. *She Ji: The Journal of Design, Economics, and Innovation*, 6(2), 228-253.  
<https://doi.org/https://doi.org/10.1016/j.sheji.2020.05.005>
- Sanders, E. B. N., & Stappers, P. J. (2008, 2008/03/01). Co-creation and the new landscapes of design. *CoDesign*, 4(1), 5-18. <https://doi.org/10.1080/15710880701875068>
- Swanson, G. (2020). Educating the Designer of 2025. *She Ji: The Journal of Design, Economics, and Innovation*, 6(1), 101-105.
- Voûte, E., Stappers, P. J., Giaccardi, E., Mooij, S., & van Boeijen, A. (2020, 2020/03/01/). Innovating a Large Design Education Program at a University of Technology. *She Ji: The Journal of Design, Economics, and Innovation*, 6(1), 50-66. <https://doi.org/https://doi.org/10.1016/j.sheji.2019.12.001>
- Yin, R. K. (2011). *Applications of case study research*. SAGE Publications Inc.