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Exploring transdisciplinary learning and lifelong training in visual communication design education

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Abstract: The paper seeks to discuss how visual communication design education could be improved by incorporating transdisciplinary learning within design curriculum and providing lifelong training to professional designers and design educators. A review of literature indicates that design education needs to be adapted to allow future designers to solve the gradually complex design problems and work in non-design industries. In fact, design education needs to extend design knowledge to non-design disciplines to enable more people to generate innovation to work-related problems. On this basis, it is recommended that design education should offer graphic designers the opportunity to master skills and knowledge of other disciplines, such as marketing and technology. New design courses should be formulated to meet the unique requirements of teaching applied design in a wider context and for broader audiences. Further research is needed to identify other factors that could strengthen the integration of design skills with non-design knowledge.

Keywords: visual communication design; transdisciplinary learning; lifelong training; design education

1. Introduction

With increasing numbers of students opting for art and design programmes, art and design faculties in universities have expanded rapidly with a growing number of both graduate and postgraduate programmes in the last decade (Denicolo et al., 2010; Staley & Trinkle, 2011). Accordingly, design education has moved beyond the teaching of practical design skills towards equipping students with exploration skills that enable them to instigate relevant design issues and examine research related to their personal formative practices as creative individuals (Yeo et al., 2017).

This shift from vocational skills training to an emphasis on research being integral to courses has indicated a transformation in design in higher education. In visual communication design education, design practices are becoming more reflective and multidisciplinary. Designers no

longer simply visualise or apply their creativity, but are involved with, or even lead a team to identify and solve more significant challenges that cannot be addressed by designers alone (Sanders & Stappers, 2012). Therefore, besides providing future designers with space "to ask more of the right questions, [they need to] come up with better hypotheses [and] design effective experiments" (Brown, 2012, p. 20) to solve the gradually complex design problems in the world. How can design education be advanced to meet the demands of the ever-evolving industry? Can transdisciplinary learning be cultivated and lifelong training be promoted in this way?

Grounded on Friedman's (2002, 2003) thorough elucidation of the historical development and challenges of designing the university-level design curriculum, this paper seeks to fill the gaps in the literature by exploring transdisciplinary learning and lifelong training as ways to meet the demands of the ever-evolving industry. However, due to the high complexity of curriculum planning, this paper does not intend to provide a definitive evaluation of the concept but to discuss potential ways of adaptation.

2. Overview of undergraduate education in visual communication

2.1 What is visual communication design?

Visual communication design has been subjected to various definitions and interpretations and has often been used interchangeably with graphic design and graphic communication. McCoy (1998) described visual communication design as a spontaneous reaction to the growing needs of commercial communication during the industrial revolution. Technological advancement changes visual communication design in tandem. It broadly encompasses art and design, with specialities ranging from editorial design, packaging design and branding design to motion graphics and digital design. Visual communication design, made up of two components of design process and the creative output, is about creating meaning and expression that will be broadcasted to the public (Swanson, 1998). To graphic professionals, the objective of visual communication design is to create meaningful imagery through a variety of visual technologies and to either communicate ideas and messages or to persuade and entertain the audiences (Meggs, 2005).

2.2 Origins of undergraduate education in visual communication design

The term visual communication design was unheard-of at the turn of the twentieth century and was born out of commercial urgency and needs. Thus, much of the knowledge and skills pertaining to its domain were gathered through trial and error or by on-the-job training (Siu, 2009). Intuition and common sense were often the tools of the field, used in assessing and grading design works. It was also called upon to solve communication problems, in connecting businesses with customers using messages and images (McCoy, 1998). In the 1920s, the Bauhaus school of thought—its foundation of which still models most undergraduate design programs—spawned a revolutionary approach to design education. This model focused "on abstraction and experimentation, and the rejection of

accepted traditional formulas" (McCoy, 1998, p. 5). Subsequently, practitioners and students tended to reference published solutions found in graphic design periodicals, magazines and competition annuals, as points of departure that lauded examples of creativity and flashes of intuition, which all apparently captured the Big Idea of the times. In the creative industry, Big Idea means "fresh and provoking ideas that hold a viewer's attention" (Engel, 2010) of which, however, there is no mode or formula to it. As McCoy insightfully framed, "the Big Idea's reliance on personal intuition and creativity makes it difficult to formalise a codified educational method; just as educational success is limited to the level of brilliance in both teacher and student" (p. 6).

Presently, most conventional undergraduate programs still do train their students within scopes of practical design fundamentals, leaving graduate and postgraduate programs to fill the niche of providing the much-needed in-depth theory and research. This has been long observed by McCoy (1998), who noted that many students have graduated with advanced typography and computer skills, while they are not usually educated with lifelong, self-directed learning. However, changing taxonomies have since been generating demands for graphic designers to come equipped with cognitive theories and perceptual processes (Winn, 2002a), and to create creative outputs that are relevant and engaging. Winn (2002b) interestingly noted that conventional training is insufficient for today's multifaceted education. Design education as such should move beyond vocational training and towards 'intellectual pursuit' requiring 'philosophical fluency' (Heller, 2006) and that it should be a journey that transcends disciplinary boundaries to develop innovative invention and explore regeneration further (Blevis et al., 2015). This appropriately garners current attention to changes in undergraduate education in visual communication.

2.3 The changing face of undergraduate education in visual communication design

Friedman (2003) stated that the evolution of design education was "a consequence of the new needs and demands of the nascent knowledge economy" (p. 244) and any knowledge-based economy values the focus on ideas and innovation (Brown et al., 2010). Commercially driven design outcomes may be fine but these are not always sustainable, as the industry will have moved beyond recognising the familiar, to constant innovations based on design and creative explorations (Liedtka et al., 2013). Designers have to become professionals who are competent to provide solutions to complex issues of today's world (Friedman, 2003). The thrust of visual communication education is, therefore, to raise the professional stature of graphic designers from the vocation of "commercial artist" by incorporating "hybrid concepts harvested from literature, sociology, and even architecture" (Heller, 2006, p. 10). We have to better prepare students for a greater challenging creative field as the industry will continue to evolve in terms of business developments and strategies, and designers will have to become more responsive than before to contribute to innovation (The Partnership for 21st Century Skills, 2015).

Previously, how a graphic designer created a project might best be described as enigmatic. The renowned graphic designer Stefan Sagmeister's design process was thus described cryptically, as first identifying the design issues, encompassing the topic to seize its secret, then breaking, reforming and returning the secret in a visual form (Moore, 2007). This arcane description fails any potentially useful classroom or studio reinterpretation. For current design practices in visual communication to be helpful, it could be defined in a six-step procedure: 1. identifying and defining the project's objectives; 2. exploring concepts fully; 3. refining feasible concepts in details; 4. executing and modelling of the concepts; 5. communicating the finished design to clients; and 6. final refinement and production (Aspelund, 2015). From an educational perspective, this structured design process would be particularly suited to a knowledge-based economy. Structured design processes provide methodical and critical steps in creative developments that would produce unique concepts. In contrast, formal design processes are client-centred, and outcome-focused, involving merely visual decorations of client's messages (Forlizzi & Lebbon, 2006).

Practical theories and principles involving colour, perception, and symbolism taught in design schools provide useful foundations upon which critical design methodologies can be built. Circumstantially, when any emphasis of design aesthetics outweighs the expression of meaningful visual communication, a student may tend towards mere graphical adorning of information, instead of cultivating potentials to instigate social change. A later movement significant in enforcing the professional standing of design recognised the authorship of exemplary designers in producing creative works, that went beyond the client's brief. This might likely propel the same potential conditions universally, as would the education of a graphic designer be changed from "a decorator of messages to an agent of influence on the social implications of delivering a visual dialogue" (Forlizzi & Lebbon, 2006, p. 52).

3. The need for change in visual communication education

The above sections provide an overview of visual communication design, the origin and development of visual communication education. Detailed inquiries into the design process can include the participatory, contextual, and other subsets of user-centred design (Bennett, 2006). The broader adoption of user-oriented solutions and new approaches towards problem-solving in graphic design have become increasingly prevalent in the field of visual communication (e.g. Frascara & Noël, 2012; Norman, 2004; Sanders & Chan; 2007). Fresh perspectives particular to graphic design also affect the design processes. Current trends in the field of visual communication draw from the social and ethical liabilities of designers, designing for cross-cultural contexts, and human-centred design, which all prioritise the people they design for, as primary intent to the design process. The quality of the creative output largely depends on the particular attributes of the design processes undertaken. The discipline of design might emerge to become the quintessential 21st-century profession, an essential form-giving that creates meanings, a synthesis of art, technology, and a blending of social sciences. Educational perspectives have to be reformed, as 21st-century designers need more than design skills to succeed in this ever-changing landscape.

3.1 Transdisciplinary learning

In the knowledge-based economy, designers with transdisciplinary, or interdisciplinary, skill sets are much needed in the future. In fact, the role of the designer has transcended the stage of mere brainstorming of ideas for a brand, product and/or service to create strategic edges to transforming systems, experiences and organisations (DesignSingapore Council, 2019). Furthermore, designers have been invited to be involved with other businesses to identify more significant challenges and produce more meaningful solutions that cannot be addressed by designers or executives alone (Sanders & Stappers, 2012). Along with the same notion, Norman (2010) stated that designers need to learn from and collaborate with likeminded statisticians to develop new and appropriate methods (p. 4). Therefore, it is inevitable to cultivate transdisciplinary learning within design education, and the following presents three plausible ways:

Expanding the knowledge boundaries

Riding the light wave of technology, many businesses have moved their operations online. For example, in the current banking environment customers can pay their bills online or engage with an operator virtually in 24-hours banking services. In fact, the healthcare industry has tapped on design knowledge for unique creative approaches to meet their goals of "increasing patient engagement; strengthening doctor-patient relations; and changing patients' behaviour" (FuseLab Creative UI/UX Design agency, 2017). Therefore, as suggested by Friedman (2003), besides "preserving existing knowledge" through providing extensive training in design disciplines, design education should "create new knowledge" by equipping students with knowledge in non-design disciplines, including marketing, medicine and technology, as this would provide a space for the students to develop and explore novel and useful solutions based on their interdisciplinary experiences. Visual communication design, as a practical discipline, often produces tacit knowledge. With the combination of knowledge from other disciplines, the thought process may allow students to uncover unpredicted outcome in the middle of a design inquiry, become aware of it, analyse its effect and respond by making changes to their design process. For instance, Rust and colleagues (2007) stated that the integration of tacit and research skills allowed designers to contribute knowledge to both the design and the natural sciences. Also, designers are known to discover new ideas by linking various understanding together, as well as dealing with known and newly discovered variables and limitations through designing (Schön, 1987). The study of Singh and colleagues (2018) that invited design educators to envision futures of design education has demonstrated that future curricula will integrate ways of learning and knowing that develop from multiple disciplines. The possessing of new knowledge and combining with essential design knowledge will allow future designers to work in other non-design industries. It appears that the discipline of design can become more helpful in advancing economies around the world.

Developing design-led thinking for the future economy

To further promote transdisciplinary platforms, design education should reform their

curriculum by not just including transdisciplinary learning but also enrol non-design students. According to the British Design Council (2018), around 2.5 million working people use design skills in their day-to-day tasks. In addition, average workers with design skills seem more valuable compared with workers without these skills because apparently design skills can help workers to drive higher productivity, generating innovation to work-related problems through creative thinking and problem-solving skills (Design Council, 2018). However, this may post challenges for design educators as we may already have a difficult time teaching our Millennial design students (Kincade, 2019). Yet the modern way of design has changed and gone beyond the discipline of design, and we, design educators must be more open-minded than before. So instead of offering existing courses to both design and non-design students, new design courses must be tailored to meet the unique requirements of teaching applied design in a wider context and for broader audiences (Norman, 2010).

Extending the scope of the internship

Besides, reforming the skills curriculum framework for design must be aligned with the needs of the future economy. Transdisciplinary learning can also be cultivated through real-life experiences. Currently, a high percentage of design students serve as interns in the design- and creative-related industries. These exposures have introduced students to advance design practices and allowed them to build networks with industry practitioners and future employers (Kolko, 2005). However, to better contribute to today's globalised societies, as affirmed by Norman (2010), new kinds of designers are needed, in particular, one who can work across specialities and understand human needs, business, and technology. Design education can strengthen their industry-higher education relationship by encouraging design students to do their internship in other industries. For instance, design student Stenlund (2018) mentions that she has gained valuable work experience through interning at Laerdal Global Health. Besides having the opportunity to apply her design skills to real work experiences, she was introduced to more holistic and systemic thinking where patients were the centre of designing. Experience as such can play a critical part in design practices, as it empowers students to answer the question of 'How can design contribute to the society and how does it relate?' particularly with regards to the relationship between design practice and contextual learning in society. Correspondingly, people in non-design fields could be educated and exposed to the value of design when design students participate in internship in these non-design industries.

3.2 Promoting lifelong training in design

To contribute holistically to the knowledge economy, current professional visual communication designers need to be upskilled to meet the demand and transformation of the industry. As stated by Davis (2008), traditional knowledge in design has its limitations and must be reconsidered in this rapidly changing environment. Also, designers who have worked for more than five years may find themselves in a senior role where they are needed for management, communication and problem-solving in order to perform their tasks more satisfactorily. According to the study by Dziobczenski and Person (2017), which investigated

the required skill set of graphic designers through the analysis of 1,406 job advertisements from the United Kingdom, graphic designers are required to lead, manage, and organise design and development processes. The associate skill set included "client relationship skills" and "interpersonal (teamwork) skills" where designers have to communicate and work as a team member with internal and external associates. Also, to effectively present their ideas and handle multiple projects and deadlines, "proficient presentation and communication skills" and "project planning and administration skills" are must-have skills for graphic designers. In addition to the skills mentioned above, senior graphic designers will require "team management skills" to lead projects and coach junior team members.

In both aspects, therefore, design education should provide continuing training for design professionals. Additional to advanced design skills such as must-know knowledge of the principles of digital typography and user experience (UX) design, other relevant courses, including problem-solving, strategic, analytical and communication skills, should be offered to allow designers to think expansively and to provide solutions from different perspectives. For example, Chow and Jonas (2008) propagated the use of integrated knowledge and communication platform, such as creating an interface that combined design and processes of analysis, projection and synthesis, to produce innovative artefacts and new knowledge.

Also, with the increase of awareness and concern to our environmental and social issues, learning collaborative skills and knowledge of humanities, such as theology, philosophy, ethics, and literature, can allow designers to establish the significance of human expression and to classify, map and observe the origination of concepts, human, things and occurrences (Archer, 1995, p. 8). Brown (2012) remarked that traditional design processes needed to be changed to solve the gradually complex design problems in the world. Design education can incorporate collaborative projects that address societal and contextual values in newly designed upskilling courses. This would help to strengthen social values that can be conveyed through designs, to encourage reflection on human experiences and to make value judgments of worth (e.g. Frascara & Noël, 2012; Sanders & Stappers; 2012), as well as to engage with others who are more experienced in particular subject matters, while identifying the needs of target audiences or broadening their understanding of the norms, values and practices related to the social issues identified (e.g. Bennett, 2006; Brown, 2009; Caruso & Frankel, 2010; Chick, 2012; Norman, 2004).

For a more sustainable system, design education must also look inward to promote lifelong training as design faulty has to upgrade consistently to impart knowledge that is relevant to the future economy (Steinert, 2017). Friedman (2003, p. 246) pointed out that "few design teachers genuinely represent [the] design profession" as they do not have active careers in the industry. Therefore, allowing design faculties to go on a temporary placement in the industry as a designer may enable them to relearn how to engage effectively and holistically with others. They would then be able to negotiate desirable and meaningful outcomes in the design enterprise and thus make relevant contributions to the context of society.

4. Conclusion

It has been established from the above that integration of various knowledge and upskilling have become critical in design education, for visual communication designers to have an edge on others in the competitive industries. “Design is changing as a professional field and a discipline” (Friedman, 2002, p. 53), and the economy of the future is complex and offers more challenging problems than ever. Yet, this calls for an opportunity for design education not only to serve as a bridge to strengthen the link with the industries, but also to equip future designers with knowledge and skills that transcend disciplines, and more importantly to nurture thinking designers who can lead frontiers of innovation with insightful and relevant transdisciplinary practice. Currently, the paper has conducted an initial review of the educational literature; therefore, the variance and bias of choosing specific ways for advancing design education are inevitable. Future studies may like to engage participants, relevant designers and industries in empirical research to examine whether transdisciplinary or interdisciplinary learning and lifelong training can indeed help to advance design education, as well as to establish ways of how non-design knowledge can be integrated and taught in design related disciplines.

The paper has posited that visual communication design education could be reformed by incorporating transdisciplinary learning within design curriculum and providing lifelong training to both professional designers and design educators, for them to grow as critical, analytical and independent design thinkers. According to Brown (2009), design thinkers are likely to be compassionate and self-learners. Design education, therefore, must provide a platform that allows the students to grow as design thinkers – through mastering skills of marketing, analytical thinking, technology and communication, exploring the boundaries of design knowledge through responsive and collaborative design creations, and consistently acquiring knowledge to upgrade themselves and inquiry about society and the world. As a result, design education can extend its reach in assisting different industries and nurture skilled future designers by broadening their intellectual creativity and innovation.

In conclusion, future visual communication designers should have a broader understanding of economic needs and be able to place people at the centre of creation, as well as be able to use various knowledge wisely to give meaning and purpose to a product, brand and service. Importantly, the design process can become more service oriented in advancing economies universally.

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