DEVELOPMENT OF A COMPETENCY ASSESSMENT MODEL AND INSTRUMENT FOR FUTURE GRAPHIC DESIGN GRADUATES IN MALAYSIA

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SULTAN IDRIS EDUCATION UNIVERSITY

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ABSTRACT

The criteria for measuring the competency levels of graphic design (GD) graduates have continuously been shaped by the changing context of practice. However, previous studies provide little evidence on the existence of an effective competency assessment tool for GD graduates. This study aims to develop a model and an instrument to measure the competency levels of future GD graduates in Malaysia. Sequential exploratory research design approach was used. In the first phase, a two-round modified Delphi technique was employed with a group of 32 GD experts to gain their consensus on the desired competencies. In the second phase, a survey questionnaire was constructed to collect quantitative data with 207 final year GD degree students. The data was analysed using exploratory factor analysis (EFA) and Cronbach's reliability test. The results of EFA suggested that the instrument consists of 12 constructs and 59 items under five competency dimensions (CDs). In specific, cognitive CD is a two-factor structure (commercial awareness and integrated design knowledge) composes eight items; functional CD is a three-factor structure (operational design process management skills, software skills, and graphic print production skills) consists of 14 items; personal CD is a two-factor structure (personal intelligence and aesthetic and visual sensitivity) constitutes 13 items; ethical CD is a three-factor structure (professional expertise, professional behaviours, and professional values) composes 11 items; and meta-CD is a two-factor structure (analytical and creative problem-solving skills and interdisciplinary collaboration skills) contains 13 items. All 12 constructs yielded high internal consistency values, ranging between .723 and .914. Theoretically, the proposed model and instrument contributed to a new body of knowledge to the competency assessment of GD graduates in Malaysia. Practically, the findings provided relevant stakeholders with prescribed standards of performance and appropriate tools to assess the competency levels of new entrants to the GD profession.

PEMBANGUNAN MODEL DAN INSTRUMEN PENILAIAN KOMPETENSI UNTUK GRADUAN SENI REKA GRAFIK MASA HADAPAN DI MALAYSIA

ABSTRAK

Kriteria untuk mengukur tahap kecekapan graduan seni reka grafik (*graphic design* - GD) secara berterusan dibentuk oleh perubahan konteks pekerjaan. Walau bagaimanapun, kajian terdahulu memberikan sedikit bukti mengenai kewujudan instrumen penilaian kecekapan yang berkesan untuk graduan GD. Kajian ini bertujuan membangunkan sebuah model dan instrumen untuk mengukur tahap kecekapan bakal graduan GD masa hadapan di Malaysia. Pendekatan rekabentuk penyelidikan penerokaan berurutan telah digunakan di dalam kajian ini. Dalam fasa pertama, dua pusingan teknik Delphi yang diubahsuai telah dilakukan dengan 32 pakar untuk mendapatkan kesepakatan mereka mengenai kecekapan yang diperlukan. Pada fasa kedua, borang soal selidik telah direka untuk mengumpul data kuantitatif dari 207 pelajar tahun akhir GD. Analisis faktor penerokaan (EFA) dan ujian kebolehpercayaan *Cronbach* telah dilakukan. Keputusan EFA mencadangkan bahawa draf akhir instrumen terdiri daripada 12 konstruk dan 59 item di bawah lima dimensi kecekapan (*competency dimensions* - CDs). Secara khusus, CD kognitif adalah struktur dua-faktor (kesedaran komersial dan pengetahuan rekabentuk bersepadu) membentuk lapan item, CD fungsian adalah struktur tiga-faktor (kemahiran pengendalian pengurusan proses rekabentuk, kemahiran perisian, dan kemahiran menghasilkan cetakan grafik) terdiri dari 14 item, CD peribadi adalah struktur dua-faktor (kecerdasan dan estetik peribadi dan kepekaan visual) membentuk 13 item, CD etika adalah struktur tiga-faktor (kepakaran profesional, kelakuan profesional, dan nilai profesional) membentuk 11 item, and CD-meta adalah struktur dua-faktor (kemahiran menyelesaikan masalah secara analitikal dan kreatif dan kemahiran bekerjasama antara disiplin) terdiri dari 13 item. Kesemua 12 konstruk menghasilkan nilai konsistensi dalaman yang tinggi, di antara julat .723 dan .914. Secara teori, model dan instrumen yang dicadangkan akan menjadi penyumbang kepada pengetahuan baharu untuk penilaian kecekapan graduan GD di peringkat universiti di Malaysia. Secara praktiknya, dapatan ini memberikan pihak berkepentingan yang berkaitan suatu prestasi standard yang ditetapkan serta instrumen yang bersesuaian untuk menilai tahap kecekapan pekerja baharu dalam bidang kerjaya GD.

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LIST OF ABBREVIATIONS

AIGA	American Institute of Graphic Arts
CCD	Cognitive Competency Dimension
CDs	Competency Dimensions
CGPA	Cumulative Grade Point Average
ECD	Ethical Competency Dimension
EFA	Exploratory Factor Analysis
FCD	Functional Competency Dimension
GD	Graphic Design
HEIs	Higher Educational Institutions
ico-D	International Design Council
ICOGRADA	International Council of Communication Design
KMO	Kaiser-Myer-Olkin Measure of Sampling Adequacy
MCD	Meta-competency Dimension
MoE	Ministry of Education
MoHE	Ministry of Higher Education
MQA	Malaysian Qualifications Agency
MQF 2.0	Malaysian Qualifications Framework Second Edition
MRM	Malaysia Design Council
NASAD	National Schools of Art and Design
NOSS	National Occupational Skills Standard

OBE	Outcome-based Education
PCA	Principal Component Analysis
PCD	Personal Competency Dimension
PLOs	Programme Learning Outcomes
SPSS	Statistical Package for the Social Science
TVET	Technical and Vocational Education Training
UI / UX	User Interface / User Experience
wREGA	Graphic Design Association in Malaysia

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CHAPTER 1

INTRODUCTION

1.1 Introduction to the Study

The landscape for graphic design (GD) practice today bears little resemblance to the past due to the rapid pace of technological changes (Abushawali, Lim, & Bedu, 2013; American Institute of Graphic Arts [AIGA], 2015b; International Council of Communication Design [ICOGRADA], 2011; Opoku, Appiah, & deGraft-Yankson, 2020). The technical achievements of the Fourth Industrial Revolution such as the artificial intelligence, machine learning, augmented reality, virtual reality, online behaviour tracking and modelling, Internet of Things, 3D printing, etc. have challenged the traditional notions of GD as something 'one-direction', 'intuition-driven', and 'object-oriented' (Design Census, 2019; Dubberly & Pangaro, 2018; Ferrari, 2017). These technologies generate rich data for graphic designers to trace and understand the preferences and behaviours of end-users, and thereby planning and developing more

personalised tools, systems, strategies or experiences to suit their needs and demands (Davis, 2018b, 2018a).

And also because design problems are increasingly sophisticated due to the progressively complex social, cultural, and economic contexts (AIGA, 2015b), the role of design changes in association with the user, society, business, and manufacturing (Gardien, Djajadiningrat, Hummels, & Brombacher, 2014).

New patterns of practice have triggered design companies to diversify their services and activities to stay competitive (Adu, 2015). As a result, the scope and content of graphic designers' work have tremendously expanded and become more ambiguous (Davis, 2008, 2015a, 2018c; Dziobczenski & Person, 2017; Harland, 2016; Van der Waarder, 2009). Not only they are found to work within the industry in a number of new positions and career pathways (Design Census, 2019; Dziobczenski, Person, & Meriläinen, 2018), many are also found to "engage with interdisciplinary teams in the front-end development of strategy that addresses the varied and long-term relationships among audiences, products and services, and the larger social and cultural contexts for design" (AIGA & National Schools of Art and Design [NASAD], 2010, p. 1). The changing nature of the workplace has called into question the traditional priorities for educating graphic designers (Arnett, 2018).

Influenced heavily by the curricular heritage of the Bauhaus school, GD programmes at university level have long been focusing on the training of technical production skills to prepare graduates for employment (Davis, 2005, 2018e; Frascara, 1998; Lim, 2015; Marks, 2015; McCoy, 1990a). In such programmes, the capability to

create beautifully crafted objects, such as publications, brochures, posters, logos, and product packaging is highly valued (AIGA, 2015b). Nevertheless, as shown in **Figure 1.1**, technical knowledge for production is no longer served as the only entry requirement in the contemporary model of GD practice. The graduates can be prepared for more specialised roles such as strategic design or technology development to enter the profession.

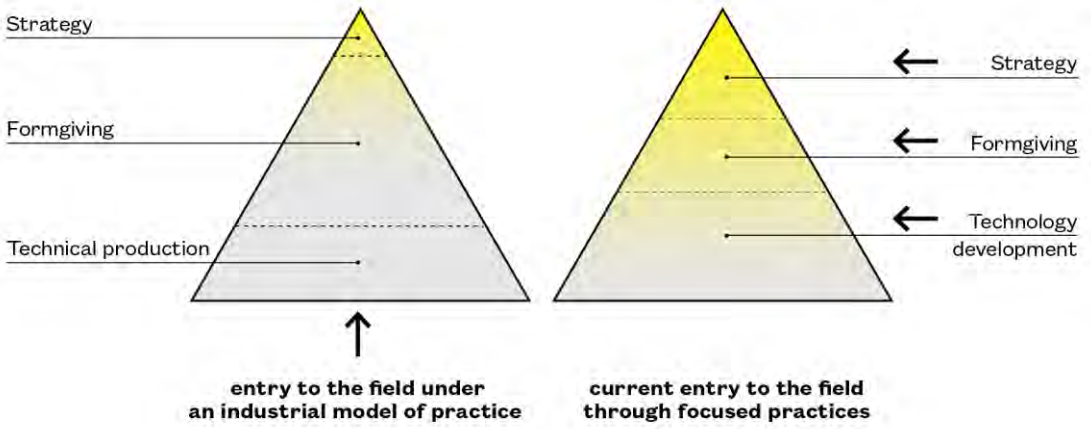

Figure 1.1. Entry to the profession under previous and current model of graphic design practice. Source: Davis, M. (2018e). *Introduction to Design Futures*. American Institute of Graphic Arts (AIGA). https://www.aiga.org/aiga-design-futures/introduction-to-design-futures/

With respect to this, many design scholars and international design bodies (e.g., Adu, 2015; AIGA, 2015a; Davis, 2005, 2015a, 2015b, 2018e; Heller, 2005a, 2015a; ICOGRADA, 2011; Ramneek, 2017) stated that future GD graduates must possess a range of new competencies beyond the traditional scope to gain an edge in competitive employment market. And this, in turn, raises critical questions about what competencies should be imparted at university to sufficiently prepare graduates for the new challenges and opportunities in the practice, and how to measure if they have acquired the desired competencies effectively.

Since employment market for designers is in many ways global (Dziobczenski, Person, Tonetto, & Mandelli, 2018), the investigation of the required competencies for GD graduates should take place not only on a local level but also in comparison to requirements in other countries. With the intention to establish the groundwork for the study, this chapter discusses several competency issues in relation to GD graduates from both global and local perspectives. In specific, the chapter contains the background of the study, statement of the problem, research objectives and questions, conceptual framework, significance, and delimitations of the study, definition of terms, and lastly, organisation of the study.

1.2 Background of the Study

1.2.1 Graphic Design Graduates' Competencies: The Global Perspective

The issue of GD graduates' competencies is always a concern to design educators and industry professionals (Dziobczenski & Person, 2017). However, the quality and perceived levels of competency among them are not up to industry expectations (Adu, 2015; Butler, 1995; Heller, 2005b; McCoy, 1997). There appears to be a 'gap' between what the graduates learn at university and what they are expected to perform in design practice (Cheung, 2012, 2016; Hsieh, Guan, & Wu, 2010). Consequently, as Naveiro and Pereira's (2008) study found out, design graduates, including GD, encounter difficulties to secure positions in the industry. The role of formal education in developing the required knowledge and skills of GD graduates is questioned under such phenomenon (Debbie, 2011).

There are a few possible reasons for the existence of this 'learning gap'. First, the scope and content of work in the practice are changing and expanding (Bennett, 2006; Davis, 2005; Harland, 2011), but GD education is long overdue for rethinking curriculum structure in response to the latest employment information in the job market (Davis, 2015a; Marks, 2015; Swanson, 2004). Both D'Amico (2018) and Rosner (2014) mentioned that the ability to manipulate visual elements to produce print-based media remains the key focus of many GD programmes today. Thus, the graduates are inadequately prepared for other professional knowledge required for successful employment (Cheung, 2016).

Another reason is the absence of a precise definition of GD (Bridges, 2016; Van der Waarder, 2009). As McCoy (1990b) questioned, "Is graphic design an art, science, business, craft, or language" (p. 1)? She argued that professional field of GD is facing 'identity crisis' due to the multiple titles of how it is named, such as 'graphic design', 'visual art', and 'visual communication' (McCoy, 1990b, p. 1). Subsequently, it leads to inconsistent standards in curricula among GD programmes for what and how GD should be taught (Bridges, 2016; Harland, 2012). Finally, Heller (2015b) claimed that there are too many things for university students to learn. A typical four-year GD programme is insufficient in preparing them for working effectively in the complex 21st century design field.

Graphic designers with relevant competencies to deal with emerging trends such as complexity of design problems, technological fusion, economic feasibility, and divergence in people's preferences and behaviours are in demand in the global employment market (AIGA, 2015a; Camocho & Alexandre, 2019; Davis, 2014, 2018e).

In such a context, design education at university level must advance in tandem with these trends to produce qualified graduates who can meet the current expectations of the industry (Kowaltowski, Bianchi, & De Paiva, 2010). Previous studies (e.g., Adu, 2015; D'Amico, 2018; Ramneek, 2017) suggested that GD graduates are expected to demonstrate a clear evidence of additional knowledge and skills, such as business awareness, marketing skills, creative thinking, communication, teamwork, project management, problem-solving, strategic thinking, emotional intelligence, adaptability, and so forth when starting their professional careers.

In recognition of the influence of emerging trends on designers' roles and responsibilities, AIGA (2015a) had conducted a rigorous survey to anticipate the future of GD. The results uncovered a range of desired competencies that will be needed, in various combinations, by the practitioners for superior work performance. In specific, future graphic designers are required to possess the ability to: develop meaningful visual response using up-to-date tools and technology to solve communication problems; respond to audience contexts that shape design decisions; adapt to the changing workplace dynamics; construct verbal arguments for design solutions; work in a global context; collaborate productively in interdisciplinary teams; understand issues related to different design contexts; and, apply sustainable and ethical principles in design process (AIGA, 2015a).

Except for merely 'making beautiful things', these competencies suggest the diverse and influential roles graphic designers can play in a broader and strategic context. According to AIGA (2015a), they are important to be considered by higher

education institutions (HEIs) for curriculum development and delivery to enhance the employability of future GD graduates.

A number of studies have been conducted in different countries to identify competencies that GD graduates should possess (e.g., Cheung, 2016; Dhavarath, 2003; Dziobczenski et al., 2018; Dziobczenski & Person, 2017; Hsieh et al., 2010; Opoku et al., 2020). Wang (2006) identified 66 significant competencies, 63 desirable competencies, 12 most important competencies for GD curriculum development and delivery at university level, and 20 most needed competencies for employment through surveying design educators and industry professionals in Kansas and Missouri, United States. According to Wang (2006), the identified competencies could be further classified into design-, soft skills-, technical-, and computer-related category. The design-related competencies are among the most important for employment and therefore must be integrated into GD curriculum.

Similarly, Bridges (2016) investigated the essential skills, contents, and tools that must be included in an effective GD programme. The top five skills as identified by the GD experts from North and South Carolina are: (1.) apply the basic principles of graphic design aesthetics; (2.) perform graphic design creatively; (3.) apply the concepts of typography; (4.) exhibit interpersonal skills; and (5.) write clearly, concisely, and correctly. The top five tools are: (1.) Adobe Creative Suite; (2.) Microsoft Office; (3.) sketchbooks; (4.) Adobe Dreamweaver; and (5.) printers. Bridges (2016) suggested that her findings could serve as a benchmark for HEIs to self-evaluate the scope of their GD curricula.

Adu (2015) explored the employable skills, behaviours, and knowledge needed by contemporary Ghanaian GD graduates using qualitative approach. His results indicated that employers in design industry expect graduates to be multi-skilled. They must acquire a wide array of additional competencies, including industry knowledge, changing nature of work, time management, collaboration, work experience, broaden knowledge, communication skills, problem-solving, technology, emotional intelligence, self-respect, self-usefulness, and confidence to gain a competitive advantage in professional design practice.

In an attempt to enhance GD graduates' employability in Brazil, Dziobczenski and Galeotti (2017) evaluated the relevance of 25 skills for graphic designers to perform competently in the industry. They classified these skills into four categories: (1.) conceptual design skills; (2.) project management skills; (3.) software skills; and (4.) technical design skills. Their results showed that there was a significant difference in how the industry professionals perceive the role of graphic designers as compared to design educators.

1.2.2 Graphic Design Graduates' Competencies: The Local Perspective

GD is a popular discipline in Malaysia. According to Ong (2017), the number of design students in Malaysia increased gradually between the year 2000 to 2010, from 8,000 to 10,000 each year, and it is believed that the number is still increasing. This phenomenon has accelerated the development of GD education in Malaysia (Debbie, 2011; Lim, 2015). The One Academy, Malaysian Institute of Art, Raffles College of Higher

Education, UCSI University, Taylor's University, and Limkokwing University of Creative Technology are among those private HEIs that provide GD related programmes in Malaysia.

Higher education in Malaysia is adopting outcome-based education (OBE) system (Akir, Eng, & Malie, 2012). The reason for implementing this system is "to ensure that accreditation practices in Malaysia meet the practices by the international accreditation accords" (Alias & Bhkari, 2007, p. 72).

In order to assure the quality of design graduates in Malaysia, the Malaysian Qualifications Agency (MQA), an accrediting body of academic programmes of HEIs, has developed Malaysian Qualifications Framework (MQF) 2.0 to guide the design, development, and implementation of Art and Design related programmes in 2017. All design programmes, including GD, are required to include the five clusters of learning outcomes (LOs) to ensure the graduates obtain the necessary knowledge and skills in design practice. They are: (1.) knowledge and understanding; (2.) cognitive skills; (3.) functional work skills with focus on practical skills, interpersonal skills, communication skills, digital skills, numeracy skills, and leadership, autonomy and responsibility; (4.) personal and entrepreneurial skills; and, (5.) ethics and professionalism (MQA, 2017).

MQA Art and Design Programme Standards document was updated in 2020 based on the MQF 2.0 five clusters of LOs. The document offers specific programme learning outcomes (PLOs) for different levels of design study. These PLOs can be viewed as the competencies that the graduates will need to obtain upon the completion

of their studies. Design graduates of bachelor's degree level are required to achieve seven PLOs: "(1.) interpret and apply knowledge and skills including the use of numeracy techniques in relevant areas of Art and Design for innovative practices; (2.) critically analyse historical, contextual, conceptual theories, and ethical judgment in Art and Design practice; (3.) create and conceive ideation and innovation for the practice areas of art and / or design; (4.) articulate and communicate ideas and concepts comprehensively in visual, written, and oral engagements; (5.) execute design concept and cost analysis through the use of digital and other technologies for effective delivery; (6.) construct a portfolio for Art and Design, through reflectivity, review, and evaluations; and, (7.) communicate and interact with experts, peers, clients, superiors and society under work and organisational related environment for the development of art and / or design" (MQA, 2020, p. 15).

In 2013, The Department of Skills and Development (Ministry of Human Resource) and Ministry of Education (MoE) co-initiated a skill standards development project to emphasis on the concept of competency for superior work performance. This project is called the National Occupational Skills Standard (NOSS). The established skill standards describe the required employment level and competency level by employees in a specific industry in the context of Malaysia (Department of Skills and Development, 2013).

Surprisingly, GD is classified under printing technology sector. Printing technology is a sector listed in the NOSS directory concerning skills profession associated with technical and vocational education training (TVET). These skill standards are generated through a rigorous job analysis procedure. They can serve as a

guide for employees to gain insights into an ideal career pathway. **Table 1.1** and **1.2** below indicate the occupational profile chart and occupational area analysis as well as category levels of Malaysia Skills Certification for GD in Malaysia (Department of Skills and Development, 2013).

Table 1.1

Occupational Profile Chart for Graphic Designer

	SECTOR **PRINTING**				
	SUB-SECTOR **PRINTING TECHNOLOGY**				
Level 5	Print Production Manager				
Level 4	Print Assistant Production Manager				
Level 3	Pre-Press Supervisor	Offset Lithographic Press Supervisor	Narrow Web Printing Supervisor	Post-Press Supervisor	**Graphic Designer**
Level 2	Pre-Press Senior Technician	Offset Lithographic Pressman	Senior Narrow Web Printing Supervisor	Senior Post-Press Operator	Desktop Publishing Artist
Level 1	Pre-Press Technician	No Level	Narrow Web Printing Pressman	Post-Press Operator	No Level

Source: Department of Skills and Development. (2013). *National Occupational Skills Standard: Graphic Design (Printing Technology) -- Level 3*. Ministry of Human Resource Malaysia.

Table 1.2

Occupational Area Analysis for Graphic Design

	SECTOR **PRINTING**
	SUB-SECTOR **PRINTING TECHNOLOGY**
Level 5	Print Production Management
Level 4	Print Production
Level 3	**Graphic Design**
Level 2	Desktop Publishing
Level 1	No Level

Source: Department of Skills and Development. (2013). *National Occupational Skills Standard: Graphic Design (Printing Technology) -- Level 3*. Ministry of Human Resource Malaysia.

In NOSS document, the required job competency areas for graphic designers are: (1.) layout design; (2.) colour concept design; (3.) typography design; (4.) image manipulation; (5.) graphic illustration; (6.) final artwork confirmation; and (7.) computer software and hardware troubleshooting. Employability skills, which cover essential core abilities and social skills for graphic designers, are also included in this NOSS document (Department of Skills and Development, 2013). The higher education providers in Malaysia are required to produce graduates who can perform effectively in these job competency areas with related employability skills to meet the fundamental workplace demands.

There is a tremendous change regarding the standards for assessing the efficacy of GD education (Higgins, 2008). Further, the criteria for measuring GD graduates' competencies have continuously been shaped by the rapidly changing technological, economic, cultural, and social demands (Davis, 2005) and business environment

(Higgins, 2008). According to Gonczi, Hager, and Athanasou (1993), competency-based assessment can be described as "the process of determining whether a candidate meets the prescribed standards of performance, i.e. whether they demonstrate professional competence" (p. 5).

Nevertheless, previous studies provide little evidence on the existence of such assessment tool for GD graduates. There seems to exist a very few studies on the prescribed standards of performance for new entrants to GD profession that can be found from the literature. Therefore, the purpose of this study is to develop a competency assessment model and instrument for future GD graduates in the context of Malaysia.

1.3 Statement of the Problem

From the literature review, it is found that there is a lack of specific standards within the GD education system in Malaysia. Although GD related programmes constitute of more or less the same courses, complying to MQA's (2017, 2020) requirements, in reality, students are taught differently from institution to institution. Levels of teaching excellence and graduates' quality also vary between institutions (Debbie, 2011). Both Heller (2015a) and Wang (2006) mentioned that it is challenging to suggest a set of prescribed standards for what and how GD should be taught at university level.

Nevertheless, some disciplines in Malaysia, such as architectural design, interior design, engineering, law, medicine, and accountancy, have developed a set of

professional standards for their respective programmes to follow to ensure their graduates obtain the essential competencies in the practice. It is unfortunate, however, to note that there are hardly any professional standards for GD programmes in Malaysia to refer or adhere to. In other words, GD graduates may not require any professional qualification for the right to practice in the profession. The entry requirements for GD profession in Malaysia are rather low, and anyone can claim themselves as 'young professionals' after graduating from relevant programmes (Debbie, 2011).

Yet, currently, there is no easy and effective way to determine the competency levels of GD graduates in Malaysia. Despite the fact that cumulative grade point average (CGPA) has long been using as an overall academic achievement indicator of all university graduates, including GD, there is very little scientific evidence to suggest that it can effectively predict their actual performance in the industry. Previous studies (e.g., Debbie, 2011) implied that the employers in the design industry are facing difficulties in recruiting qualified graduates to join their companies.

Hence, the study argues that there is a need to establish a set of competency standards to guide the development and delivery of GD curricula at university level. There is also a need to develop a valid and reliable instrument to sufficiently and appropriately measure if the graduates possess the competencies expected of the entry-level professional design practice.

Several studies have tried to identify the design knowledge, technical abilities, soft skills, and personal qualities required by GD graduates. However, a few gaps were found after a review of these attempts. First, some studies (e.g., Bridges, 2016; Cheung,

2012, 2016; Dziobczenski & Galeotti, 2017) have suggested that the 'criteria of competency' as perceived by GD design educators are different from industry professionals because their perception of training, in terms of the purposes, scope and content, and requirements are fundamentally different. Consequently, the graduates suffer from a 'learning gap' during the transition from education to the actual workplace environment (Cheung, 2012). Cheung's (2016) study highlighted that GD graduates are taught insufficiently on some of the professional knowledge that has been seemed explicitly important in practice. Lim (2015) also claimed that design graduates are ineffectively trained to react to the real needs of society and lack of the capability to develop new and viable innovations to drive economic growth. In this case, it is significant for design educators and professionals to come to some 'agreements' regarding the competencies expected for new entrants to GD profession to fill the 'learning gap'.

Another observation is that ethics and values were paid relatively less explicit attention in previous studies. However, a number of design scholars (e.g., Berman, 2009, 2013; Heller & Vienne, 2003b; McCollam, 2014; Perkins, 2011) and design associations (AIGA, 2010; Australian Graphic Design Association , 1996; International Council of Design [ico-D], 2011, 2020; Society of Graphic Designers of Canada, 2019; Graphic Design Association of Malaysia [wREGA], 2013) have highlighted their significance to professional practice and development in GD field. In addition, while some studies have been conducted thus far on the competencies required by GD graduates, none have gone beyond to develop a psychometrically sound measurement instrument in order to provide a more feasible and holistic solution for stakeholders involved in the educational or employability process. Lastly, many past studies have

focused on the context of developed countries, in particular the Western society. To the best of the researcher's knowledge, limited studies have been done in developing countries such as Malaysia. Therefore, this study intends to fill these gaps in the literature.

There is an insufficiency of empirical data on essential competencies and curricula in GD because it is a fairly new discipline at higher education (Rosner, 2014; Wang, 2006). In comparison to an abundance of studies on the domain of industrial designers' job (Bohemia, 2002; Valencia, Person, & Snelders, 2013), empirical studies on GD discipline (Harland, Corazzo, Gwilt, Honnor, & Rigley, 2018; Logan, 2006) and the scope of graphic designers' job (Dziobczenski & Person, 2017; Van der Waarder, 2009) remain limited. In order to obtain a more comprehensive understanding of the professional realm GD, more empirical studies need to be conducted (Tan, Melles, & Lee, 2009; Walker, 2017). Both Bridges (2016) and Wang (2006) suggested that due to the incessantly evolving technology and global consumer market, there is a significant need to conduct more studies on GD competencies in different geographical nations to ensure relevant curriculum is always available for various stakeholders. The goal of conducting related studies, as pointed out by Wang (2006), is to "impact the supply of well-educated workers, advance numerous careers, and provide students with high-quality education and potential for employment" (p. 81). Therefore, the purpose of this study is to develop a model and instrument for competency assessment of future GD graduates in the context of Malaysia.

1.4 Research Objectives

The research objectives of the present study are:

1. To identify a number of required competency constructs in each competency dimension for future graphic design graduates to work effectively.
2. To develop a set of performance indicators for each construct to measure the competency dimensions.
3. To evaluate the psychometric properties of the competency measurement instrument.

1.5 Research Questions

In correspondence with the research objectives, the specific research questions addressed by this study are:

1. How many required competency constructs do each competency dimension constitute for future graphic design graduates to work effectively?
2. How many performance indicators do each competency construct constitute for measuring the competency dimensions?
3. How valid and reliable is the developed instrument in measuring the competency dimensions?

1.6 Conceptual Framework of the Study

The term ‘competency’ appeared regularly in empirical studies in the field of law and psychology before the 1960s (Shippmann et al., 2000). The development of competency was accelerated in human resource management practice by a publication titled ‘Testing for Competence Rather Than for Intelligence’ by David McClelland in 1973 (Guerrero & De los Ríos, 2012; Klink & Boon, 2002; Rodriguez, Patel, Bright, Gregory, & Gowing, 2002; Vathanophas & Thai-ngam, 2007). McClelland (1973) argued that traditional academic aptitude and knowledge tests could predict neither high work performance nor success in life for they were mostly unfair to minorities. He suggested that the underlying personal attributes or capabilities, or so-called competencies, could be used as significant, unbiased, and valid predictors of outstanding occupational performance and success in life (McClelland, 1973). Boyatzis (2008) described competencies as “behavioural manifestations of talent” (p. 10) that can be generalised, measured, and observed across a wide range of work situations. He also mentioned that competencies could be developed in adult life.

The conceptual framework of the study was developed by adapting three well-established generic competency models. The first model is ‘Model of Contingency Theory of Action and Performance’, which was developed by Boyatzis (1982). In this model, Boyatzis (1982) argued that effective performance will more likely to happen when any two of the three critical dimensions, i.e., organisational environment (e.g., culture and climate, systems and structure, and external contexts surround the organisation), job demands (e.g., tasks, functions, and roles), and individual factors (e.g., vision, values, competencies, knowledge, and interests), are in correspondence

with each other. The opposite effect will occur if any two of those dimensions are inconsistent. While the performance is enhanced when any two dimensions of the model are in consistent, as highlighted by Boyatzis (1982), it is maximised when all three are in sync.

The second model is 'The Iceberg Model and The Onion Model', which were established by Spencer and Spencer (1993). According to them, there are five types of competencies: motives, traits, self-concepts, knowledge, and skills. They can be arranged based on their degree of visibility and centralness to personality. While knowledge and skills are more visible and relatively surface; self-concept, traits, and motives tend to be hidden, deeper, and central to personality. This means that knowledge and skills are relatively easier to develop and train than self-concept, traits, and motives (Spencer & Spencer, 1993).

The third model is 'Holistic Model of Competence'. This model was developed by Le Deist and Winterton (2005). It comprises four key competence dimensions: cognitive competence, functional competence, social competence, and meta-competence. The key feature of this model is that it highlights the importance of meta-competencies in enhancing, developing, or acquiring other competencies. This means that certain competencies are generic in nature and appear at higher level than some other competencies. The graphical representations and further elaboration of these three models are allocated in **Chapter Two**.

Figure 1.2 illustrates the conceptual framework of this study. It includes the proposed five key competency dimensions (CDs) required by future GD graduates for

superior work performance in the profession. They are: (1.) cognitive competency dimension (CCD); (2.) functional competency dimension (FCD); (3.) personal competency dimension (PCD); (4.) ethical competency dimension (ECD); and (5.) meta-competency dimension (MCD). The relationships among these CDs are dynamic and inter-related. They constantly complement each other to allow the graduates to perform the given tasks at the workplace. Following Le Deist and Winterton's (2005) model, this framework places meta-competencies at a higher level because they are critical for the graduates to obtain and develop other related competencies in other dimensions.

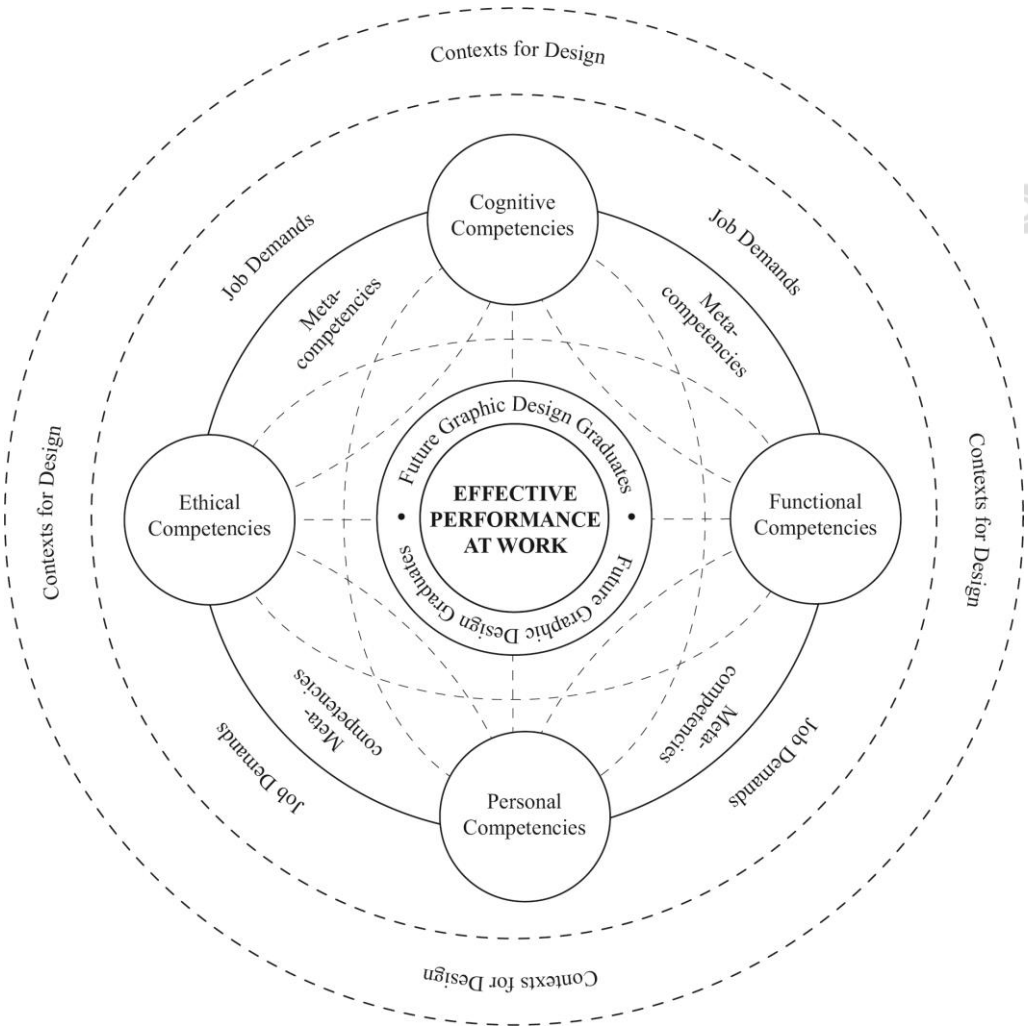

Figure 1.2. The conceptual framework of the study. It was developed by referring to three generic competency models.

Design is a social practice that serves as a response to a situated problem or a setting with specific conditions at work (Cooper, 1998). Inspired by Boyatzis' (1982) model, the conceptual framework of the study considered the external and internal factors that ongoingly influence the required competencies of GD graduates. The external factors are the contexts for design. They refer to the physical, cognitive, social, cultural, economic, and technological setting where the graduates will perform their skills and the design will be used (AIGA, 2015a; AIGA & NASAD, 2010; Harland, 2011). The internal factors are the job demands, which can be described as the role, responsibilities, and tasks that need to be performed by the graduates at the workplace (Boyatzis, 2008).

In short, this conceptual framework outlines the relevant concepts in association with the phenomenon under study and establish the theoretical and empirical rationale for the study.

1.7 Significance of the Study

GD has been well recognised as one of the most widespread and popular design disciplines and professions in the global arena. However, Woodham (2013) claimed that research and publications on GD have been dominated by a small number of countries in the developed world, in particular the Western society with English speaking cultures.

Indeed, there are limited literature and resources available on the GD field in the context of Malaysia (Debbie, 2011; Marwan, 2010; Yunus, 2007). Although the demand for GD education is growing (Debbie, 2011; Ong, 2017), the amount of related literature and published resources does not increase simultaneously. Consequently, as pointed out by wREGA (2012), "further research into the [graphic] design industry in Malaysia is currently hindered by the lack of cohesive data" (p. 31). Therefore, the study hopes to contribute valuable empirical findings to the literature in this field in Malaysia.

The significance of this study also stands on its valuable contribution to the ongoing discussions on how the educational practice in Malaysia, including GD discipline, can be best reformed and reorganised to keep abreast with emerging global trends (Ministry of Higher Education Malaysia [MoHE], 2018; MoE, 2015). The study deals fundamentally with the questions about what competencies should be emphasised now to prepare GD graduates for the future and how to effectively measure if they have obtained these desired competencies. In specific, it explores a wide array of knowledge, skills, abilities, values, and personal traits required by GD graduates to perform successfully in the complex and ever-changing future. This study believes that the graduates will be able to meet the national human capital resource requirements and the professional industry demands if they are trained holistically based on the identified competencies.

A number of stakeholders in Malaysia will be benefited from the findings of this study. First, for academic programme administrators, this study sheds light on a set of competencies that need to be developed and enhanced by the graduates when they

are at university. These competencies uncover the immediate challenges that must be addressed in GD education because they are developed through a group of prominent and experienced experts in the field. They can be served as a set of prescribed standards for the administrators to evaluate the value, quality, utility, effectiveness, and significance of their existing programmes (Fitzpatrick, Sanders, & Worthen, 2004; Higgins, 2008). Accordingly, deficiencies can be detected, appropriate refinements made, and quality assured.

Curriculum is the core of a programme. The study argues that these competency standards, if properly developed, can serve as a sound empirical basis for design educators to self-examine what ought to be the purposes of the GD curricula, and also, how the scope and content, pedagogical strategies, and assessment methods ought to be developed and implemented to strengthen the immediate employability of GD graduates in design industry (Dziobczenski & Person, 2017; Kang, Chung, & Nam, 2015; Lewis & Bonollo, 2002).

This study is also meaningful to existing students. The findings may offer an advisory reference for students in understanding the competencies the industry is seeking in graduates. Further, students may conduct self-assessment to know better about their strengths and weaknesses. With the information, they can work more strategically towards developing a competitive edge during the job searching process (Adu, 2015). Besides, students can expect to receive more relevant learning experiences and acquire the needed competencies for effective job performance before they begin their professional careers.

Several studies on designers' skill sets and how organisations benefit from design expertise have been conducted (e.g., Bruce, Cooper, & Vazquez, 1999; Valtonen, 2005). However, studies on how designers enter organisations and what employers expect when recruiting designers are somehow insufficient (Dziobczenski & Person, 2017; Ramírez, 2012). Therefore, the findings of this study are also important to employers in the design industry. They are useful in various phases of the human resource management practice, particularly in recruiting, selecting, placing, leading, training, and appraising individuals (Ennis, 2008; Lucia, & Lepsinger, 1999; Rodriguez et al., 2002).

For regulatory agencies such as MQA and Department of Skills and Development, the findings of this study can serve as a valuable reference for them in developing, fine-tuning, or updating related policies or required skill standards of GD education and profession. For design associations such as Malaysia Design Council (MRM, or also known as the Majlis Rekabentuk Malaysia) and wREGA, they can refer to the findings and organise relevant competency-based enrichment activities or workshops to boost design expertise, capabilities, and standards of the industry in Malaysia. Lastly, although this study is conducted in Malaysia, it is believed that the outcomes will be greatly beneficial to all researchers who intend to conduct similar studies in the future.

In brief, the significance of the study lies in its specific attempt to: (1) develop a competency model that constitutes of a set of constructs required by future GD graduates for effective work performance; (2) identify a set of performance indicators to measure the graduates' competency levels; and (3) evaluate the psychometric

properties of the competency measurement instrument. The study believes that such attempts will bring a common vocabulary and perspective to design educators, industry professionals, workforce development professionals, university students, and other relevant stakeholders with respect to the standards of performance for all new entrants to the GD profession, and thereby enhancing the educational and employability process (Adu, 2015). A constant growth of design knowledge is crucially significant to build the discipline and to distinguish designers' work from other professionals' work (Horváth, 2007). This study hopes to offer insight that can contribute to the growth of knowledge and serve developments of design in both education (Dorst, 2008; Valencia et al., 2013) and professional practice (Conley, 2004, 2007), particularly in the GD discipline.

1.8 Delimitations of the Study

Delimitations need to be put in place to better manage the scope of a study (Creswell & Plano Clark, 2011; Creswell, 2012). The delimitations of the current study are described as follows.

1. This study focuses on developing a model and instrument for competency assessment of future GD graduates in the context of Malaysia.
2. This study focuses on bachelor's degree level GD related programmes. Based on the definition of GD given by ICOGRADA (2012), there are three categories of GD programmes: visual communication design, advertising design, and digital and interactive design. This study only considers these

three categories of GD programmes provided by either public or private HEIs in Malaysia.

3. The CDs covered in this study are CCD, FCD, PCD, ECD, and MCD. The study explores the competency constructs and their respective performance indicators that need to be acquired by future GD graduates in a dynamic and constantly changing world based on these five dimensions. This study also investigates if the identified constructs and items can serve as an effective means of measuring the dimensions.
4. This study consists of two distinct phases. The key participants in the first phase were experts in GD field. These experts were categorised into two groups: university-level design educators and industry professionals. They were selected purposefully based on their knowledge, expertise, and experiences. Snowball sampling technique was used to identify the most relevant experts to participate in this study. In the second phase, the target participants were final year GD degree students who are currently studying at either public or private HEIs in Malaysia. They were selected by means of simple random sampling technique.

1.9 Definition of Terms

A number of terms are used throughout the present study. To ensure a consistent understanding of these terms in the context of this study, their definitions are provided as follows.

1.9.1 Competency or Competencies

Competencies are individual characteristics or behaviours that contribute to superior work performance. These characteristics cover knowledge, skills, self-concepts and values, traits, and motives (Spencer & Spencer, 1993). They can be generalised, measured, and observed across a wide range of work-related situations (Boyatzis, 1982; McClelland, 1973).

1.9.2 Competency Model

A competency model is a valid, measurable, and observable collection of competencies needed to work effectively in a specific job and to assist the business to achieve its tactical objectives (Campion et al., 2011; Lucia & Lepsinger, 1999; Rodriguez et al., 2002; Shippmann et al., 2000).

1.9.3 Cognitive Competencies

Cognitive competencies refer to the acquisition of relevant knowledge, awareness, understanding or information, and the capability to use these effectively in given work-related situations (Cheetham & Chivers, 1996, 1998).

1.9.4 Functional Competencies

Functional competencies refer to the capacity to successfully perform a variety of work-related tasks using available technologies and tools to achieve specific outcomes (Cheetham & Chivers, 1996, 1998).

1.9.5 Ethical Competencies

Ethical competencies refer to the proper professional and personal values and the capability to make sound judgments based on these in given work-related contexts (Cheetham & Chivers, 1996, 1998).

1.9.6 Personal Competencies

Personal competencies refer to the acquisition of appropriate and observable social behaviours, desires, psychological impulses or emotions in work-related situations (Spencer & Spencer, 1993).

1.9.7 Meta-Competencies

Meta-competencies are those generic and overarching ‘soft-qualities’ (Boak & Coolican, 2001; Brown, 1993; Linstead, 1993) that deeply embedded in learning and

that enabling introspection and self-assessment (Brown & Mccartney, 1995). They are of a higher level than other competencies and able to support the acquisition and development of other competencies (Brown & Mccartney, 1995; Cheetham & Chivers, 1996, 1998).

1.9.8 Competency Assessment

Competency assessment is a procedure to judge and determine the competency levels of a person based on the prescribed standards of performance (Emat, 2005; Gonczi, Hager, & Athanasou, 1993; Greenstein, 2012).

1.9.9 Graphic Design

GD is an intellectual, creative, tactical, managerial, technical, interdisciplinary, and problem-solving activity that involves the creation of visual solutions to communication problems. There are three categories of GD, including visual communication design, advertising design, and digital and interactive design (ICOGRADA, 2012).

1.9.10 Industry Expectations

In the context of this study, industry expectations refer to the prescribed 'work standards', 'traits' or 'abilities' that need to be demonstrated by the graduates in the workplace to be considered as competent or proficient, e.g., to be able to complete specific tasks.

1.9.11 Delphi Technique

Delphi technique is a structured group communication procedure that contains iterative rounds of questionnaires to a panel of experts. This procedure starts by asking the experts to answer a set of broad and open-ended questions to lay the groundwork for the subsequent rounds of questionnaires (Delbecq, Van de Ven, & Gustafson, 1975). This technique is usually employed to "elicit, distill, and determine the opinions of a panel of experts from a given field, seek consensus among the experts, and make predictions or decisions" (Nworie, 2011, pp. 1-2).

1.9.12 Modified Delphi Technique

Modified Delphi technique is also a structured group communication procedure. However, a set of items is pre-determined in the initial round of questionnaire for the experts to review. These items can be generated through extensive literature review, document analysis, consultation with experts in the field, and/or adaptation of

previously validated questionnaire (Bridges, 2016; Lunkenheimer, 2002; Stahl & Stahl, 1991; Wang, 2006).

1.10 Organisation of The Study

This study is organised into six chapters. **Chapter One** introduces the study and establishes the focus of the investigation. It offers a general background of the study with reference to previous literature and encloses the statement of the problem, research objectives and questions as well as the conceptual framework, significance, and delimitations of the study. Some key terms used in the present study are also defined in this chapter.

Chapter Two explores related issues and literature concerning the research topic and area. In order to identify research gaps, several interrelated topics were reviewed. **Chapter Three** outlines the research design and the methodology used to answer the research questions addressed by the study. It offers details on the research framework of the study. The selection of participants, sampling methods, instrument construction and data collection procedures, and data analysis approaches can also be found in this chapter.

Chapter Four and **Chapter Five** reports the major findings by analysing the data collected from the first and second phase of the study. **Chapter Six** summarises, interprets, discusses, and concludes the major findings presented in Chapter Four and Five. This chapter aims to answer the questions posed by the study and discuss the

theoretical and practical implications of the findings. The chapter also contains limitations of the study, recommendations for action, and guidance for future research on related areas.

1.11 Summary

In comparison to some other creative disciplines such as architecture and fine arts, GD is a relatively young profession (Ambrose & Harris, 2006; Short, 2011). The range of competencies that a GD graduate must possess is always under refinement due to the constantly changing context for professional design practice (AIGA & NASAD, 2010; Dziobczenski et al., 2018). An abundance of evidence has suggested that the shift in what the design industry demands is already underway, and it will continue to progress much faster in the future.

Despite this, GD education has been regarded as rather 'slow' to catch up to this shift (D'Amico, 2018; Davis, 2015a, 2018e). Consequently, the perceived levels of competency among graduates are not up to industry expectations. There appears to be a gap between what graduates learn at university and what they are expected to perform in the industry. Nevertheless, previous studies on competency standards for GD graduates are very limited. There also seems to exist a very few studies on the instrument for competency assessment of GD graduates that can be found from the literature review.

Accordingly, the purpose of the study is to develop a model and instrument for competency assessment of future GD graduates in the context of Malaysia. With a holistic competency model and instrument, the study believes that GD curricula and its various components, i.e., purposes, scope and content, pedagogical methods, and assessment strategies, can be restructured, the overall educational atmosphere enlivened, employable graduates produced, and ultimately, the professional status of graphic designers elevated.

In other words, firstly, the study intends to develop a competency model that consists of a set of constructs required by future GD graduates for superior work performance. Secondly, the study aims to identify specific performance indicators for each identified construct to serve for the purpose of competency assessment. The development of these constructs and indicators is a proactive response to the growing demand for accountability of GD education in recent years (Higgins, 2008). This study argues that competency assessment is crucial to determine if the graduates are receiving a quality education with sufficient preparation for their future employment, professional careers in design, and personal lives (Davis, 2018c; Dziobczenski et al., 2018). Thirdly, the study intends to evaluate the psychometric properties of the instrument. This exercise is essential because it reduces the probability of measurement error and enhances the accuracy of the instrument. Accuracy, in this sense, means that the assessment results are reliable and a valid measure of the graduates' knowledge, skills, abilities and performance.