Integrating research elements into undergraduate design education?

Sharing the Hong Kong transnational top-up degree experience.

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Abstract: The study provides an explorative method to investigate the appropriateness of various research supports implemented for 4 design-related top-up degree programmes in Hong Kong. By utilizing the various conceptions of research from design students in the higher education context, we developed a quantitative instrument based on student approaches to learning (SAL) theory to evaluate the quality of teaching and learning research in the design context. Modified from the two-factor version Study Process Questionnaire (SPQ), the proposed instrument demonstrated good reliability and concurrent validity (ability to distinguish groups). The results provided insights for structuring student approaches to learning research in the design context.

Key words: Design research integration, Transnational design education, Study Process Questionnaire, Approaches to learning, Top-up degree programme

1. Introduction

Hong Kong tertiary design education is constantly evolving, primarily due to two factors. A major factor originates from the local design industry and from professional designers with an aim of structuring the curriculum to meet the local design industry needs [29]. Historically, vocational training has played an important role producing design graduates with the core competence in skill-based training emphasizing visual attractiveness [6]. Another factor comes in the form of the government initiative to widen participation of higher education [13] to face increasing global competitions in the knowledge-based economy. Reforms in the local design curriculum and programme structures are unavoidable. Internationally, different design scholars and researchers interpret and posit design education from different epistemological stances emphasizing various aspects of design-making, design planning, and design thinking (see [24] for details). Although the emphasis on design-making is a major part of the undergraduate design curriculum, design educators and researchers are developing experimental approaches in teaching and learning design in order to generate insights to tackle the unavoidable changes in the global context [7, 17]. Despite the lack of a consensus concerning the direction of design education reform, there is an emerging trend in university settings to academize design into a research-driven discipline in order to contribute to the body of design knowledge [11]. The design science approach [12] and the science of design approach together with critical reflective practice to designers' training [5] are assumed to create a more rigorous

theory-based design discipline compared to the traditional arts-and-craft approach to design education. Brew [7] suggests that "research will take on leading roles in the future working environments: directing change, asking important questions, solving problems and developing new knowledge." One notable reform is the introduction of research into the undergraduate design curriculum. The challenge of teaching design as "a way of asking questions" [11] or an enquiry-based learning that enables high level learning outcomes [22] can be overwhelming in tandem with the traditional notion of "a way of executing the technical aspect of a design solution."

Another reform comes in the form of transnational education for the design disciplines resulting from the liberation of trade in education services beginning in 2003 through the General Agreement on Trade in Services (GATS) [14]. In the local context, the traditional higher education (HE) pathway of obtaining a Bachelor degree in design is supplemented by the vocational education and training (VET) pathway through a 2-yr higher diploma programme (previously 3-yr) articulated with a 1-yr top-up degree programme collaborated with an overseas university. Although both pathways have different initial goals and requirements, graduates from both pathways are considered to be equivalent in achieving the academic standards of the local qualification framework (QF level 5)[13]. For the traditional pathway, incorporating research elements as course modules (i.e. research methodology, design research project-based learning) during the junior/final year appears to be a trivial solution and practice. Nonetheless, the integration of research elements into the vocational education (VET + top-up) pathway faces many more constraints in terms of human resources, programme ownership, and both local and overseas quality assurances. In addition, most of the 1-yr top-up degree programmes contain project-based studio learning as a major component of the curriculum and teaching research at a studio setting may even be counterproductive. "Attempting to achieve a seamless integration between the teaching of academic subjects (such as theory of research) to run alongside with design studio seems to be very challenging, having adverse effects on both aspects [17]." The combination of these issues posts an essential question that has not been asked in prior studies of how research elements should be integrated into the vocational education (VET + top-up) pathway.

2. Research design

In order to define the scope of our investigation, we employ a conceptual framework based on "student approaches to learning" (SAL) theory since the concept has been studied widely concerning learning in an institutional context in the past three decades [2, 10, 20, 21, 25]. The concept was originally proposed by Marton & Säljö [15, 16] whom emphasized the importance of learners' concept of learning in relationship to their learning process and learning outcome, thus leading to a surface or deep approach to learning. The results suggested that students adapt their ways of learning with respect to their conceptions of what were required of them and the outcome requirements. Our basic assumption is that student approaches to learning are the interaction between personal and contextual factors. Two research methods are often used in studies concerning approaches to learning. Phenomenography, a qualitative method, was used to identify what learning is from the student perspective and determine how teaching can facilitate conceptual change. "Students go about learning in qualitatively different ways and that the way they go about learning is directly related to what they think learning consists in. That is, their approach to learning is, to a large degree, determined by their conception of learning [6]." Drew [8] investigated the diverse approaches to learning in fashion design using a phenomenographic method through

semi-structured interviews asking students to talk about how they experience their learning. Four qualitatively different approaches were identified (see Table 2). Shreeve [22] noticed that "the link between approach and quality of outcomes are essential in understanding how we can change the learning situation to promote higher learning." From the quantitative side, Biggs [1–3] utilized systems theory and information-processing theory to model factors that impact learning outcomes. The results led to the development of the self-reporting Study Process Questionnaire (SPQ) to quantify different learning approaches. By integrating the various conceptions of learning research in a design context into a quantitative instrument, we aim to derive a context specific instrument suitable for evaluating student approaches to learning research in the design context. The proposed instrument can act as a proxy to indirectly measure the appropriateness of the various types of research support that tend to promote student deep learning in their final major projects. The use of a quantitative method can also facilitate future comparisons between results in the VET and HE setting. The next step involves the categorization of research supports implemented for the various programmes and the development of the research instrument for evaluating the quality of teaching and learning research in the design context.

3. Methodology

3.1 Various types of research support implemented

In the Hong Kong design education context, research at the undergraduate level is a generic term used to describe the activities that students undertake before they begin their final design projects. The final project is a culmination of student prior learning and is structured around a design brief concerning a problematic situation with tutors guiding students to iteratively explore and derive their design concepts with an aim to produce an outcome that meets the professional standards. The activities of research may include collecting and analyzing information about target users, potential markets, material selection, functions of the existing solutions, shape and form exploration, and activities related to professional practices that are required or suggested by individual tutors. Built on these existing practices and conceptions, formalized research emphasizes the theoretical aspect of conducting research and the introduction of research terminology. The introduction of an explicit description of the research process with a research question, literature review (underlying theories) and the selection of research methods provides design students with a holistic understanding of how research findings can be used to inform design decisions and generate unique insights concerning the problematic situation. Since the collaborated top-up degree programmes are owned by the overseas universities, the curriculum and programme structures are identical to that of a 3rd year Bachelor (Hons) degree programme in the UK. Table 1 shows the 4 design-related top-up degree programme structures from the 3 overseas institutions under investigation. The research-related module names have been altered slightly to facilitate comparisons among the programmes. The research supports are comparable in terms of contact hours among the 4 programmes. The content includes the theory of research concerning the research process, literature review, basic research methods (qualitative and quantitative) and how research can be applied and integrated into a discipline-specific design project. The content is equivalent to university modules for design research methods and research-based studio project that are often offered at the end of the 2nd year or at the beginning of the 3rd year degree study. Nonetheless, there are some differences in the method of delivery and the assessment criteria. In general, the method of delivery can be categorized into 3 types:

summer workshop, module-embedded lectures and tutorials, outside-module lectures and sign-in tutorials. The summer workshop is designed to be intensive that is delivered before the start of the school year including theoretical as well as practical knowledge of design and cultural research to adequately prepare the VET graduates for their up-coming final year projects. In terms of assessment for the summer workshop, some universities require all students to obtain a pass in the workshop before they are formally accepted into the top-up degree programme. This entry requirement may provide extra incentives for students to participate in the summer workshop. The module-embedded lectures and tutorials are considered to be part of the university-owned curriculum and are assessed according to the module requirements. The outside-module lectures and sign-in tutorials are additional research support provided by the local operator and thus, not part of the university-owned curriculum and are not formally assessed.

The structural variations in the delivery of research support among different programmes provide a natural experimental setting to investigate the appropriateness of different types of research support delivery in promoting top-up degree student research activities in their final year projects. One may question whether it is desirable or useful to compare the different forms of research support delivery. It should be noted that the transitions of VE graduates whom are practically-oriented to the conceptually-oriented HE context are often reported to be challenging. Moreover, due to various reasons, these formal research activities are often considered to be redundant or perfunctory by many Hong Kong students at the higher diploma level whom are habitually taught to tackle a design project by brainstorming and sketching their initial concepts while "research" is conducted later to provide evidences only to justify the initial concepts. In a higher education (HE) setting, the effectiveness of research-related modules can be assessed in the research-specific learning outcomes and course grades associated with the respective modules. Any improvements can be implemented at the module level. In the top-up degree setting, the modules are tightly integrated and the research supports need to be aligned with the university-owned curriculum. Both constraints impose limitations on how research supports can be delivered and how the content can be adapted in order to serve the top-up degree student needs.

3.2 Modification of the two-factor version Study Process Questionnaire (SPQ) for learning research in the design context

The conceptual assumptions of the original SPQ acknowledge three interacting factors that are likely to affect student approaches to learning: the presage factor including student prior knowledge and the teaching context, the process factor of learning-focused activities and the outcome factor concerning learning outcomes. The original SPQ aims to describe student approaches to learning using three dimensions (Deep, Surface and Achieving) with a corresponding motive and strategy. The deep approach is associated with students' intentions to understand and construct meanings from the learned materials while the surface approach is connected to students' intentions to memorize and reproduce facts from the study materials. The achieving approach describes students being strategic about their studies by minimizing their time commitment and maximizing their grades simultaneously. The SPQ scores can be used as quality indicators at presage, process and product levels. "At the presage level, they may describe how individuals different within a given teaching context (preferred approach). At the process level, they may describe how specific tasks are handled (ongoing approach) and at the product level, they may describe how

teaching contexts differ from each other (contextual approach) [1].” For instance, the normed individual SPQ score profiles can be used for making instructional decisions. In general, students with predominant deep profiles do well academically but Biggs [3] cautions that a student with an exclusive deep profile may not be desirable since the student may purse his/her own goals without attending to the institutional goals. A shortened version with only two dimensions (Surface learning and Deep learning) [1] has been developed and modified versions have been used in other educational contexts.

Table 1. Various top-up programmes and the associated research support implemented

Discipline / Programme (year established)	Overseas institution	Research-related modules (out of 120 credit requirements at the UK NQF level 6)	Research support implemented A) Intensive summer workshop (1.5-2.5 weeks) B) Module-embedded lectures and tutorials C) Outside module lectures and sign-in tutorials
Fashion Styling and Photography / Hair and Make-up (2010)	University K	Preparation for the final year project (20), Final year project (60)	A*, B *a pass is required to enroll into the top-up degree programme.
Fashion Design (2006)	University L	Research project (40)	B
Interior Design (2004)	University M	Competition project (30), Preparation for the final year project (30)	A, C
Product Design (2004)	University M	Competition project (30), Preparation for the final year project (30)	A, C

The study modifies the two-factor version of the SPQ following the contextual approach to investigate the appropriateness of various research supports. Through the self-reporting questionnaire instrument, we evaluate whether students are engaging in a deep or surface learning approach and the results can potentially indicate whether the particular research support is effective for the specific programme. The modified version is developed based on the assumption that there are two main dimensions (Deep vs. Surface) of student approaches to learning research with a corresponding motive and strategy since the achieving dimension is often found to be loaded into the other two dimensions.

Table 2. Approaches to research in the design project (A-D) described in terms of strategy and intention components (adopted from [22])

Strategy	Focus on	Intention		
		To reproduce visual elements of research in product	To demonstrate the process of research in product	To convey own idea/concept in the product
To find out about, collect, visual information	Visual, literal elements	Approach A		
To make visual comparisons	Visual, literal elements	Approach B		
To understand the phenomena researched	Understanding		Approach C	
To construct own response through research	Conceptual, emotional, abstract elements			Approach D

The procedure of developing the modified questionnaire items is illustrated below and the items reflect the findings and observations of earlier studies concerning the teaching and learning of research in the design context [8, 9, 17, 22].

Step 1: Identify student potential motive and strategy from literature

Shreeve [22] identified that there are several approaches including intentions and strategies (Table 2) associated with students' approaches to the research component in a fashion design project.

Step 2: Adapt and rephrase the learning approach into corresponding motive and strategy items

Approach A and B are considered to be more aligned with surface learning while Approach C and D are considered to be more aligned with deep learning. The corresponding questionnaire items are provided below.

Table 3. Sample questionnaire items development

Approach A and B	**Corresponding questionnaire statement**
Surface learning Motive (SM)	The primary aim of research is to look for visual and stylistic elements to be included in the final design outcome.
Surface learning Strategy (SS)	I imitate and produce famous design elements in my final outcome in order to satisfy tutors' expectations.
Approach C and D	**Corresponding questionnaire statement**
Deep learning motive (DM)	Understanding and exploring the research process gives me deep personal satisfaction.
Deep learning strategy (DS)	When I conduct research, I spend efforts to understand and reconstruct the design problem, or phenomenon, from my own perspective.

The pilot version contains 20 questionnaire items with 5 items for each motive and strategy based on a 7-point scale (from Never true of me (1) to Always true of me (7)). Subscale scores representing Deep Motive (DM), Deep Strategy (DS), Surface Motive (SM) and Surface Strategy (SS)) can be calculated by summing scores from the corresponding items. Corresponding motive score and strategy score can be further combined into a main scale approach score (i.e. Deep Approach (DA) and Surface Approach (SA)). Six additional statements concerning the existing research support adequacy, the different perceptions of research between VET and HE and the understandings of the final project's research requirements were added to the survey (see Appendix). The statement orders were randomized. The survey was distributed during class time and students were given 10 to 15 minutes to complete the survey. A total of 113 cases were collected. 103 cases remain for analysis after eliminating cases with missing data and outliers based on visual inspection and the Mahalanobis distance.

4. Results

Before conducting any statistical tests on the data, it is advisable to review the results at the question level to determine whether there are any overall characteristics concerning student approaches to learning research and can provide insights for improving the existing research supports. Table 4 provides means and standard deviations for all the top-up degree programmes. We start by identifying questions that have relative strong or weak responses within each subscale. The higher the mean of the item indicates the item description happens more often to the respondent and vice versa. The standard deviation is a measure of the spread of responses among respondents. For the Deep Motive (DM) subscale, Q11 has a relatively strong response compared to Q2 and Q17.

Q11 responses show that students recognize the importance of research providing new concepts for developing their ideas while Q2 and Q17 responses may indicate that students are less familiar with the concepts of research methods and design context. For the Deep Strategy (DS) subscale, Q5 responses show that students are eager to reconstruct the design problem from their own perspective. The relatively weak responses from Q3 and Q14 may indicate conceptual issues concerning target audience and literature review. These results from the Deep Approach (DA) main scale seem to be aligned with the author's observations concerning top-up degree students' strengths and weaknesses. For the Surface Motive (SM) subscale, most of the items (Q8, Q16, Q20) recorded very weak responses except Q9, the results indicate students disagree with these surface motives when learning research. Nonetheless, one surface motive (Q9) is prominent that is the primary aim of research is to look for visual and stylistic elements to be included in the final design outcome. For the Surface Strategy (SS) subscale, Q4 and Q7 received relatively strong responses indicating the student general strategy of developing their concept first before collecting factual evidence to support their arguments. For the Surface Approach (SA) main scale, the observed trend suggests that students score high in SS but lows in SM. The results seem to violate the assumption that each motive and strategy needs to be congruent since many responses from SM actually go into the opposite direction with respect to the corresponding items from SS. One potential explanation is that students employing surface strategies are being strategic changing their approach to learning according to the teaching-learning environment [19]. The observed differences between the SM items and the SS items may indicate a theoretically incongruent approach to learning but the pattern seems to be commonly found in other studies concerning student approaches to learning, especially for students studying in the Asian context to have high scores in both the deep scale as well as the surface scale [18, 19, 23]. The results are further discussed in the next section. Overall, the relatively high DM and DS scores compared to the SM and SS scores are encouraging indicating students are engaged in deep learning with an intention to understand and derive meanings from their materials.

Table 4. Means and standard deviations of various questionnaire items for each subscale

Main scale	Subscale	Question item no.	Mean (S.D.) based on a 7-point scale	Main scale	Subscale	Question item no.	Mean (S.D.) based on a 7-point scale
DA	DM	Q2	4.56 (0.94)	SA	SM	Q1	4.17 (1.03)
		Q6	4.85 (1)			Q8	3.59 (1.33)
		Q11	5.09 (1.02)			Q9	4.61 (1.04)
		Q13	4.82 (0.92)			Q16	3.86 (1.29)
		Q17	4.49 (0.91)			Q20	3.82 (1.13)
	DS	Q3	4.56 (0.87)		SS	Q4	4.97 (1.09)
		Q5	4.9 (1.08)			Q7	4.84 (0.99)
		Q14	4.5 (0.83)			Q15	4.19 (1.13)
		Q19	4.69 (1.1)			Q25	4.45 (0.89)
		Q22	4.66 (0.96)			Q26	4.74 (0.98)

For the remaining 6 statements that are not part of the instrument scales, students are satisfied with the existing research supports (Q12, Q18) with a mean score (S.D.) of 4.90 (0.90) and 4.76 (1.0). Concerning the different perceptions of research between VET and HE (Q21, Q24), Q24 recorded the highest score (5.14 (1.19)) among all the questions suggesting that students are well aware of the different research requirements between VET and HE and students start to employ different research strategies and techniques from those learned in the higher diploma era (4.44 (1.13)). The result is encouraging since there should be noticeable difference between the

practically-focused higher diploma programme and the conceptually-focused top-up degree programme. Q10 asks whether students have trouble understanding the research requirements of the final project that is reversely coded (2.87 (1.1)) and Q23 asks whether students are confident to satisfy the research requirements of the final project (4.55 (0.94)). Both responses are positive indicating students are comfortable with the research requirements of their final projects.

4.1 Results at the programme level

A multivariate analysis of variance (MANOVA) was used to test whether there are significant differences concerning questionnaire items among various programmes. The Levene's test of Homogeneity of Variances did not show any violations. The multivariate result was significant for programme, Pillai's Trace = 0.887, F(60, 246) = 1.72, p =.002. The univariate F tests showed significant effects for Q2 (F(3, 99) = 3.80, p = .013, partial η^2 =.103), Q5 (F(3, 99) = 6.76, p =.000, partial η^2 =.170), Q8 (F(3, 99) = 2.83, p = .042, partial η^2 =.079), Q4 (F(3, 99) = 6.28, p = .001, partial η^2 =.160), and Q7 (F(3, 99) = 4.91, p = .003, partial η^2 =.130). Partial η^2 (eta squared) is a measure of effect size. Cohen [4] suggested that values of 0.0099, 0.0588 and 0.1379 would represent small, medium, and large effect sizes respectively. The results showed medium effect sizes for Q2, Q8, Q7 and large effect sizes for Q5 and Q4. A post-hoc Bonferroni test for each item was performed and the results are showed in Figure 1. The significant differences are highlighted by the ovals. For Q2 (DM), fashion design student responses (M=4.92, SD=0.93) are significantly different from those of fashion styling and photography students (M=4.16, SD=0.85). For Q5 (DS), fashion design students responses (M=5.67, SD=0.96) are significantly different from the rest of the programmes. For Q8 (SM), fashion design students responses (M=2.96, SD=1.6) are significant different from product design students (M=4.05, SD=1.32). For Q4 (SS), fashion design student responses (M=5.67, SD=1.05) are significant different from interior design (M=4.67, SD=0.78) and product design (M=4.45, SD=1.19). For Q7 (SS), fashion design student responses (M=5.38, SD=1.14) are significantly different from fashion styling and photography (M=4.41, SD=0.95).

These results seem to reflect the earlier concerns for various programmes. For instance, the fashion styling and photography students seem to have a significant lower awareness of research methods compared with the fashion design students whom also displayed the highest score for using their own perspective to reconstruct the design problem (Q5 (DS)). The responses for Q8 (SM) relating to the future employer attitude toward student research skills demonstrate that fashion design students tend to consider research skills to be important from their future employer perspective while product design students regard future employers to be less concerned with their research skills. In addition, the 2 items related to Q4 (SS) and Q7 (SS) indicate fashion design students are much more concept-driven than the interior design and product design students and they are more likely to collect facts and information in order to fulfill the research requirements of their final projects. The result indicates that fashion design students tend to be more visually-oriented and the surface strategy of learning and applying research seems to be beneficial from a disciplinary perspective.

A MANOVA test was also performed on the 4 subscales (see Table 5). The multivariate result was significant for programme, Pillai's Trace = 0.228, F(12, 294) = 2.02, p =.023. The univariate F test showed only the Deep Motive (DM) subscale (F(3, 99) = 4.16, p =.008, partial η^2 =.112) had a significant effect between fashion design

students (M=25.46, SD=3.78) and fashion styling and photography students (M=22.4, SD=3.01). The results suggested that fashion design students' approaches and needs to learning research (high DM, DS and SS subscale scores) are quite different from the rest of the cohort studying other top-up degree programmes. Based on the subscale scores, fashion design students are more likely to engage in deep learning but the equally high surface strategy (SS) score may indicate pressure resulting from anxiety over examinations, deadlines and fulfilling rigid institutional requirements [3]. In terms of research support, fashion design programme utilizing only the module-embedded lectures and tutorials seems to be the most effective for promoting deep learning compared to the other types of research support. The results may appear trivial since embedded research support often has a more holistic view of the curriculum promoting an effective alignment between learning outcomes and assessment in the programme. Nonetheless, " SPQ responses are a function of both individual characteristics and the teaching context [1]." The data generated from the questionnaires are very context-bound. Other factors including disciplinary requirements and the types of assessment in each programme are likely to affect student approaches to learning research and should be further examined in the future.

Table 5. The subscale scores for the 4 design-related top-up degree programmes

Programme (N) \ subscale score (M, SD)	Deep Motive (DM)	Deep Strategy (DS)	Surface Motive (SM)	Surface Strategy (SS)
Fashion Styling and Photography (32)	22.37 (3.01)	22.25 (3.64)	20.34 (3.18)	22.96 (3.4)
Fashion Design (24)	25.45 (3.77)	24.7 (2.71)	19.37 (3.93)	24.5 (2.96)
Interior Design (27)	23.77 (3.42)	23.25 (3.59)	19.37 (3.6)	22.33 (2.64)
Product Design (20)	24.3 (2.93)	23.55 (2.87)	21.4 (3.91)	23.25 (3.5)
Total (103)	23.83 (3.45)	23.33 (3.36)	20.06 (3.65)	23.21 (3.19)

4.2 Reliability and validity of the subscales and the main scales

The Cronbach alpha values for each subscale and main scale are reported in Table 6. This procedure checks whether the subscales are internally consistent at the item levels. The Cronbach alphas for the subscales range from 0.60 for both SM and SS that are considered to be marginal to 0.76 and 0.72 for DM and DS that are considered to be acceptable. The DA main scale achieves a good value of 0.85 while SA main scale achieves a value of 0.71. The values are similar to those obtained in [1].

Table 6. Cronbach alpha values for the subscales and the main scales

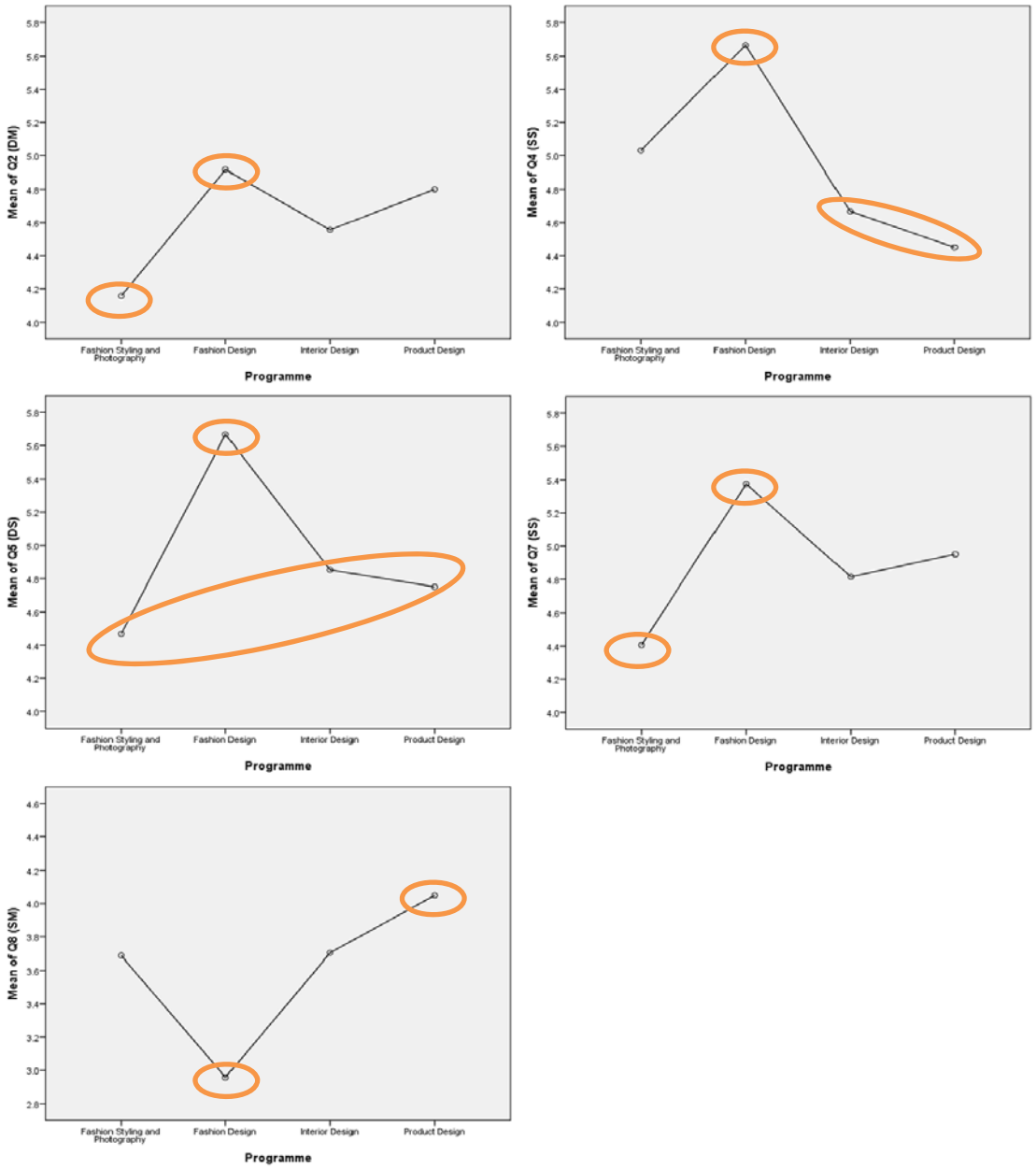
Subscale	**Cronbach alpha**
Deep Motive (DM) combing scores from Q2,6,11,13,17	0.76
Deep Strategy (DS) combing scores from Q3,5,14,19,22	0.72
Surface Motive (SM) combing scores from Q1,8,9,16,20	0.60
Surface Strategy (SS) combing scores from Q4,7,15,25,26	0.60
Main scale	**Cronbach alpha**
Deep Approach (DA) combing scores from DM and DS	0.85
Surface Approach (SA) combing scores from SM and SS	0.71

5. Conclusion

The paper presented the first part of analysis concerning the development of a quantitative instrument for evaluating student approaches to learning research in the design context. Using the explorative method, we

investigated the appropriateness of various research supports implemented for 4 design-related top-up degree programmes in Hong Kong. The proposed instrument utilizing the concepts of student approaches to learning demonstrated good reliability similar to the reference instrument (the 2-factor version SPQ) and concurrent validity (ability to distinguish groups). The second part will focus on verifying the dimensionality of the subscales based on statistical analysis and propose new hypothesis for structuring student approaches to learning research in the design context.

Figure 1. Questionnaire items that show significant differences among programmes



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Appendix: Questionnaire items for Approaches to Learning Research in the Design Context

1 Conducting research is an important academic requirement but, in reality, it doesn't affect my professional design practice.

2 I am both aware of, and committed to, the research methods and strategies used in my research.

3 I identify an intended audience for my design project before conducting research.

4 I develop my concept first and then find evidence to support my design concept.

5 When I conduct research, I spend efforts to understand and reconstruct the design problem, or phenomenon, from my own perspective.

6 Understanding and exploring the research process gives me deep personal satisfaction.

7 I collect facts and information from books, interviews and surveys to satisfy the project research requirements.

8 I see no point in learning design research because my future employer will not care about my research skills.

9 The primary aim of research is to look for visual and stylistic elements to be included in the final design outcome.

10 I have trouble understanding the research requirements of the final project.

11 Research not only provides background information, it supplies me with new concepts for developing my ideas

12 Research support provided (through lectures, workshops, and tutorials, etc.) is effective in assisting me to integrate research into the final project.

13 The aim of doing research is to support both my design claims and position for the final proposal.

14 I conduct literature reviews and use accepted research methods to test my proposed design solution.

15 I imitate and produce famous design elements in my final outcome in order to satisfy tutors' expectations.

16 The final design outcome doesn't need to be related to the research conducted because development and realization are more important.

17 I find it exciting to define the design context before constructing a personal response to the design challenge.

18 Tutors provide me with adequate support during the research process.

19 I compare, contrast and blend my research content in order to generate new connections and ideas.

20 Research hinders my desire to design without constraints and it doesn't improve my design outcome.

21 I use the research skills that I learned during my high diploma (HD) study for the final project.

22 During the research process, I collect evidence, prepare and develop arguments to defend my design proposal.

23 I am confident that I can satisfy the research requirements for the final project assessment.

24 Research requirements at the top-up degree level are very different from those at the high diploma (HD) level.

25 I spend little time to justify my design through research because judging the final design outcome is very subjective.

26 I spend lots of efforts on refining the technical and stylistic aspects of my design outcomes because they are the essential assessment criteria.