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Crafting the 'dream' design brief: smells like team spirit

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ABSTRACT: Crafting the design brief is often the first task of the design process and an arduous one. Design brief serves as the guiding beacon for the designer or design team to understand needs and envision intent, position stakeholders, qualify requirements, identify key criteria, outline objectives, and clarify if the 'task' is in line with the ask. Literature reports on the process of 'briefing' and 'reframing', and further articulates the structural components of a brief. Vision, Need statement, Criteria; and Goals characterise the final state of a brief, yet designers struggle with the process. This paper investigates the quality and structuring of design briefs developed by novice designers, individually versus in multi-disciplinary design teams, to assess the implication of teaming up and finds a significant improvement. After all, design is a team sport!

KEYWORDS: design brief, collaborative design, design education, creativity

1. Introduction

Design is an arduous, iterative process that is anything but brief, but a 'design brief' is usually where it starts. It is a "description of the proposal to conceive something that is needed for use in future" (Rao and Mathew, 2022), and is regarded to be a stimulant in the domains of product design and architecture (Lawson, 2004; Blyth & Worthington, 2010; Paton & Dorst, 2011), marketing (Phillips, 2004), advertisement (Rothenburg, 1999; Hackley, 2005) and construction (Ryd, 2004). While 'design brief', synonymous with 'problem statement', is commonly provided to the designer(s) by important and influential stakeholders who may or may not be the primary user; it requires rigorous structuring and reframing by designer(s) to formulate a relevant brief (Cross, 2005).

Teamwork is known to compensate for the lacunae in individual members and so, it only seems obvious that a team would perform better than individual, as the team will bring in varied perspectives, knowledge and expertise. However, informal interactions with students revealed otherwise which motivated this study. Students from varied years of study in Undergraduate and Postgraduate design programs, were found to repeatedly lament on the challenges and shortcomings faced during teamwork, stating that they lose a lot of time in negotiations to arrive at a consensus, leaving them with little time to focus on quality and often dissatisfied with the creative direction eventually undertaken. Several preferred working individually rather than in a team or preferred their 'friends'. However, Hong and Page (2004) note that a team of randomly chosen problem-solvers outperformed a team of established problem-solvers, whereas there is close to no difference between the productivity of the design process employed by individuals and homogenous teams (Goldschmidt, 1995). In contrast, however, (Kokotovich and Dorst, 2016) found that non-homogenous multidisciplinary design teams have outcomes similar to that of novice designers. This beckoned investigation into how homogenous but multidisciplinary team members may produce better output, i.e., design brief.

This paper examines the quality and structuring of design briefs by 'advanced-beginner' designers, i.e., postgraduate design students - individually versus in multidisciplinary design teams, to assess the implication of teaming up. This research is a subset of a larger body of work aimed at supporting designers and design educators with appropriate tools and strategies for improving understanding of problem space, briefing and developing list of requirements, and potentially the quality of solution outcome.

2. Literature review

The crafting of a design brief entails moving from an initial or start state to a goal or end state through a transformation from incomplete specifications to less unspecified, resulting in an articulation with a higher level of refinement and representation (Reitman,1964; Dixon et al. 1988; Ullman 1992). Kokotovich and Dorst (2016) stress that expert designers 'step back' or abstract the brief while the novice sticks to objective features and rules, and recognises that between the expert and the novice lies the 'advanced beginner', the 'competent' and the 'proficient', each characterised by certain approaches towards briefing. Schon (1983) notes that this 'reframing' involves interactively naming things to attend to and the context in which to attend. Dorst (2003) characterizes these "things" as, 'partly determined' - things that must be attended to, such as needs, requirements, and constraints; 'majorly underdetermined' - things that are arrived upon, individually or collaboratively; and 'partly undetermined' - things where the designer has freedom. The articulated brief comprises a (description of the) problem statement, limitations and constraints on the solution, and the criterion for the outcome (Cross, 2005). It may also state client's or users' needs, functional and non-functional requirements, target audience, context, timeframe, objectives and parameters, existing products, artifact type, etc. (Blyth and Worthington, 2010; McAllistar, 2010; Jones and Askland, 2012; Silk et al. 2014; Kelley, 2020). Further little is understood about how briefs are written. Branda et al. (2019) studied strategies adopted by design student groups and found that their backgrounds influenced the strategies. Eströmer et al. (2017) explored questioning of client briefs through role-playing and reported that the method showed promise in addressing the ambiguity of design challenges. However, the impact of team was not delved into, nor were the influence of competencies and pre-requisites of individuals and teams discussed.
Thus, an empirical study is undertaken to assess the impact of teaming up on the quality of briefs and the objectives as follows;

(i) To conduct a comparative evaluation of the quality of design briefs crafted by 'advanced beginner', i.e., post-graduate design students, as individuals versus in multi-disciplinary teams, and
(ii) To examine the perception of the design students, individually and then collectively in teams, on their written design brief.

3. Empirical study

Comparative studies were conducted across a single, homogenous subject group in 2 instances - first, as individuals and later as members of multidisciplinary teams. The study subjects were 58 newly joined students of the 1st year Masters in Design (MDes) program in their 1st week of class, all having cleared the national Common Entrance Examination for Design, a design aptitude test mandated for entry to the program, deeming that they all are at similar levels of competencies. They have varied design experiences from none to up to two years in the industry, and all have an undergraduate degree, either from Engineering and Technology, Architecture, Industrial Design, Fashion Design, Visual Communication, or Fine Arts. In addition, they are all exposed to the same pre-requisite design courses that introduce design elements, principles, process and methods, including what is a brief.

3.1. Methodology

The methodology (Figure 1) of the study entailed two empirical studies of 1.5hrs each, conducted on two separate days where the participants, either as individuals (Study 1) or in teams (Study 2), were given a need statement and asked to craft a brief followed by conceptualize design solutions. Different need statements were given of products of similar complexity, but not of same functionality. In both studies, the subjects were asked to rate their experience of, writing the design brief (1a / 2a) and conceptualizing on a qualitative scale across Poor-Neutral-Good (1b/2b).

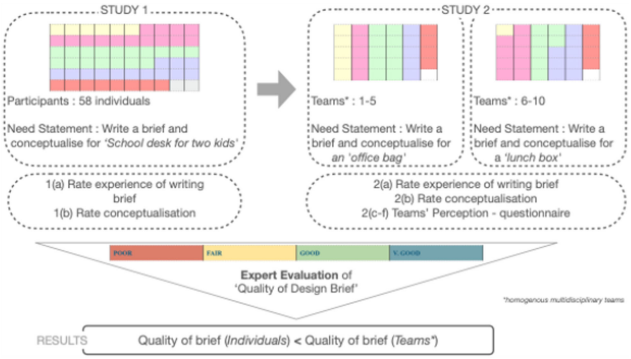

Figure 1. Methodology

Study 1: Individual study

Subjects - 58 students of MDes 1st year with UG degrees in Design, engineering, Architecture, etc.
Given need statement - Write a short design brief (500 words max.) and then conceptualize design ideas for 'School desk for two kids'.

Study 2: Team study

Subjects - 10 homogenous multidisciplinary teams, such that there was an equitable distribution of people with different UG degrees in each team (*Figure 2*).
Given need statement - Write a short design brief (500 words max.) and then conceptualize design ideas for: (i) an 'office bag' (Teams 1-5), and (ii) a 'lunch box' (Teams 6-10).

Additionally, in Study 2, to capture ***teams' perception***, a questionnaire on; whether teamwork improved their design brief (2c), their conceptualizing (2d), and the creativity of their ideas (2e) was asked. The teams were also asked to reflect on; their ability to *'address all the needs or requirements or what they had in mind written in brief'* (2f), across the scale of Partially (more than half were addressed), Mostly (1 or 2 got left out), and Yes (all were addressed).

Team 'x'	Member 1	Member 2	Member 3	Member 4	Member 5	Member 6

Key :		
		B. Architecture
		B. Design/B.FA / B.Sc.Fashion
		B. Engg / B.Tech (Mechanical)
		B. Engg / B.Tech (Computer Sc.)
		B. Engg / B.Tech (others)

Figure 2. Team distribution across disciplines (UG degrees)

3.2. Analysis

The quality of the resultant briefs was analysed by two experts, who have authored this paper, based on the *Content of the Design Brief - Vision, Need, Criteria, and Goal*; pre-classified with respect to the level of abstraction of structural components of the Design brief (Dorst, 2003) in a scale to assure common understanding and consensus.

The experts are members of the Faculty of Design from two different National Institutes of Eminence, having PhDs relevant to design science. Expert 1 has over 20 years of teaching and research experience, while Expert 2 has 5 years postdoctoral experience. They co-developed an evaluation scale for rating the briefs based on the content present in brief classified with respect to Dorst's proposed components of Design brief to ensure common understanding, as in (*Table 1*). The experts rated the quality of the brief through the judging method of consensual agreement.

Table 1. Expert evaluation scale

Classification of content of Design Brief	Components of the Design Brief (Dorst, 2003)	Qualitative Scale
The brief is too vague and has only a few criteria.	*Structural components are*: *'majorly undetermined'* *'very sparse partially determined/ undetermined'*	POOR
A few criteria and needs were identified, with a narrowed-down focus, but not well written!	*Structural components are*: *'partially determined'* *'majorly undetermined'*	FAIR
Clear contextual description, user groups, several Criteria, and needs/problems identified. It is well written with explicit vision and expected goal.	*Structural components are*: *'partially determined'* *'partially undetermined'* *'majorly undetermined/ leaves space for exploration'*	GOOD
Clear contextual description, user groups, several Criteria, and needs/problems identified. Coherently written, giving a sense of priority to the considerations and defining a clear goal. Explicit Vision and Goal.	*Structural components are*: *'partially determined'* *'partially undetermined'* *'majorly undetermined/ leaves space for exploration'*	V. GOOD

4. Results

In ***Study 1***, as exemplified in (*Table 2*), out of 58 briefs eventually admissible for the study, experts rated - 26% as Poor, 43% as Fair, 25% as Good & 6% as Very Good.

Individuals reported;

(1a) experience in writing the design brief: 10% Poor, 55% Neutral, and 35% Good.
(1b) experience in conceptualising design ideas: 5% Poor, 57% Neutral, and 38% Good.

Whereas in ***Study 2***, as exemplified in (*Table 3*), experts rated the quality of brief as; 30% Very Good, 60% Good, and 10% i.e., 1 team as 'Fair', who surprisingly crafted a unique focus out of the given problem and defined an unconventional goal.

Impact of teaming up was assessed upon the scores of the design briefs were qualified as: V. Good – 5; Good – 4; Fair – 3 and Poor- 1, and the total of all the individual scores of each member of the Team, from Study 1, was averaged to achieve an Anticipated Team performance score. This was then compared to the Actual Team performance score assigned by experts from Study 2, as in (*Table 4*).

Table 2. Study 1 - Expert evaluation of design briefs (Individual)

Q.1) Design brief (500 words max.)	EXPERT SCORES	(1a)	(1b)
RESULTS	***4/58 V GOOD*** ***14/58 GOOD;*** ***24/58 FAIR;*** ***16/58 POOR;***	***20/58 Good;*** ***32/58 Neutral;*** ***3/58 Poor***	***22/58 Good;*** ***33/58 Neutral;*** ***6/58 Poor***
(a) Major components for a desk include a tabletop, storage space and the table legs. A bottle/stationary holder, space for keeping bags can be considered as additional requirements for enhanced user friendliness. Rectangular form is followed for maximum space efficiency. Since the desk is for two kids, although the desk serves as a shared space, some sense of privacy can be brought through a partitioned storage space. The tabletop can be a combination of both flat and inclined surfaces for multiple uses in which the inclined surface can be made adjustable to be set according to user preference. The platform for keeping bags is movable 90° which can be kept vertical when not being used.	Descriptive of solution rather than needs/problems. **FAIR**	Neutral	Neutral
(b) Design a school desk suitable for 2 kids, ensuring a fun, safe and comfortable experience while taking care of essential everyday needs, adding an element of interest beyond the conventional available options.	Too vague! - Only the provided user detail is outlined, everything else is undefined. **POOR!**	Neutral	Neutral
(c) A school desk for two kids considering that they are having a water bottle, a school bag, books and notebooks, lunch box and pencil box with them. For using this desk in a classroom, it should be comfortable and design in a way that each and every student in the class can get a clear view of the board and also it could be produced in mass. Along with writing and studying there are other activities for which kids use their desk for example they use to rest (head down), play pen fight and other similar kind of games etc.	Clear contextual description, needs & criteria identified. Well written - **GOOD!**	Neutral	Good
(d) Design a school desk for children of the age group 4-6. The design should be ergonomic to promote correct posture development, baby proof and should not topple to prevent injury, support various seating arrangements to promote various class activities and games, durable and easy to clean/maintain, stackable to clear up classroom space when needed. *The desk should not have elements that cause distraction or small parts that may potentially loosen and cause injury to the children.* *The design should not obstruct the teachers view of the children, so that they may be well monitored.* *The top of the desk should be spacious enough to hold all stationary or toys and also be within reach of the children. It should also keep objects from falling off.*	Partly determined', 'partly undetermined'. Problems & criteria are outlined clearly. No major commitment to solution. Well written. - **V. GOOD!**	Poor	Neutral

Table 3. Expert evaluation of design briefs (Teams)

(2) Design brief (500 words max.)	EXPERT SCORES	(2a)	(2c)	(2b)	(2d)	(2f)
RESULTS	***3/10 V.GOOD; 6/10 GOOD, 1/10 FAIR***	***6/10 Good; 4/10 Neutral***	***10/10 Yes***	***7/10 Good; 3/10 Neutral***	***10/10 Yes***	***3/10 Yes; 6/10 Mostly; 1/10 Partially***
Design objective: To design office bags for young adults working in a corporate background from 9-6 pm during working days. *Design specifications: The bag must accommodate specific needs of the user that includes but not limited to special medical requirements, daily essentials, modularity for ease of use and be durable to weather conditions and adaptable across genders.* *It should allow for self-expression.*	Partly determined', 'partly undetermined'. Problems, needs & criteria are outlined clearly. No major commitment to solution. Well written. - **V. GOOD!**	Good	Yes.	Good	Yes. We were able to understand multiple perspectives and different dimensions.	Yes (all were addressed)
Designing a Lunch Box for individuals suffering from Parkinson's disease, who wish to lead an independent life. *The design should help the individual overcome the issues caused by the tremors by:* *- helping them carry their box without shaking the contents* *- Making the box stay in place so that it doesn't skid on the surface or shake or topple.* *- Devising a method that makes it convenient to open and close while facing tremors.* *- Presenting the food in an convenient way such that they can eat without the fear of spilling* *- Making the container easily washable.*	Clear contextual description, needs & criteria identified. Well written - **GOOD!**	Neutral	Yes. We're able to put in the whole brief in better words than we would have written individually	Neutral	Yes	Mostly (1 or 2 got left out)

(*Continued*)

Table 3. Continued

(2) Design brief (500 words max.)	EXPERT SCORES	(2a)	(2c)	(2b)	(2d)	(2f)
Office bags are boring, and they could use a makeover. The Task is to design an office bag that inspires a person to step out while being easy to carry and durable. The bag is to be designed for the age group of 25-35 years with q focus on the commuters who use public transportation. Consider the various components of the bag and make the decisions based on environmental impact. Breathability and long-term ergonomic effects on the user.	Unique target audience and goal! 'Partially determined' contextual description, needs & criteria. NOT Well written - **FAIR!**	Neutral	Yes	Good	Yes, it did	Mostly (1 or 2 got left out)

Additionally, in ***Study 2*** the Teams reported (as in *Table 3*);
(2a) experience in writing the design brief: 40% Neutral and 60% Good.
(2b) experience in conceptualising design ideas: 30% Neutral and 70% Good.
(2c) teamwork improved their brief: 100% 'Yes'
(2d) teamwork improved their conceptualizing: 100% 'Yes'
(2e) teamwork improved the creativity of their ideas: 100% 'Yes'
(2f) their ability to *'address all the needs or requirements or what you had in mind written in brief'*: 10% Partially (more than half were addressed), 60% Mostly (1 or 2 got left out), and 30% Yes (all were addressed).

Table 4. Anticipated vs actual team score on design briefs

TEAM No.	Member 1	Member 2	Member 3	Member 4	Member 5	Member 6	Total	Anticipated TEAM SCORE	Actual TEAM SCORE
Team 1	4	3	3	4	3	3	**20**	3.3	5
Team 2	3	3	3	1	5	1	**16**	2.7	5
Team 3	3	1	3	4	5	1	**17**	2.8	4
Team 4	1	1	1	3	4	1	**11**	1.8	5
Team 5	1	5	3	4	3		**16**	3.2	3!
Team 6	4	4	3	3	3	3	**20**	3.3	4
Team 7	1	1	4	4	3	3	**16**	2.7	4
Team 8	1	4	4	3	3	1	**16**	2.7	4
Team 9	5	3	3	4	4	1	**20**	3.3	4
Team 10	4	1	1	3	3		**12**	2.4	4

5. Findings and inferences

The findings from Study 1, with a slim number of highly adept (scoring V. Good) and most (over 40%) students exhibiting a 'Fair' sense of design briefing, balanced off with equitable distribution of 'Poor' and 'Good' craftmanship, was as expected. However, the significant jump in the quality of the brief in Study 2, with 30% and 60% being 'very good' and 'good' respectively, is a welcome surprise and is a noteworthy improvement. Furthermore, the jump in score of Team 4, from 1.8 to 5, is a fascinating find as four out of the six members had scored 'poor' in the individual assessment of study 1 while the other two had done relatively well.

Upon comparison of the anticipated and actual Team scores, the 'jump' can be further appreciated as most Teams, 8 on 10 (save Teams 4 and 10) scored 2.7-3.3 on 5 in the anticipated Team score, prompting to assume that they should gross 'fairly' in Study 2. But the study revealed that 9 out of the 10 teams did better than anticipated, and one team, Team 5, while showing no significant improvement, did craft the most 'unique' brief out of the lot. It may be noted that Team 5 only had 5 members, 4 out of which fared well and only one individual did 'poorly' during study 1.

It was evident from both studies that students' self-reporting of their own experience of writing the brief and later undertaking conceptualisation, be it as individuals as in (1a) and (1b), or in teams as in (2a) and (2b), is not reflective of the quality of the brief. However, there was a unanimous agreement that teamwork positively improved both these activities, as in (2c) and (2d). The students additionally reported in complete agreement that teamwork also improved the creativity of their ideas, as in (2e). Finally, as a proxy measure to assess the potential usefulness of the solution – a measure of creativity along with novelty, the students reported that in most instances, they were able to 'address all the needs or requirements or what you had in mind written in brief'. It was observed that 2 of the 3 'very good' brief had addressed all the needs and requirements outlined in their briefs.

6. Discussions, limitations and future directions

The empirical study presented in this paper is indicative of the value and potential of the homogenous yet multidisciplinary team to positively impact the quality of the design brief crafted. Yet the subjects reflected that they were still not confident of the quality and appropriateness of the briefs they drafted, seeking further support to do so. This might be inherent to the 'advanced beginner' and confidence may arise as they grow from becoming 'competent' to 'proficient' to 'expert' and have the ability to 'step back' (Kokotovich & Dorst, 2016). Nonetheless, it is meaningful to investigating the impact of theoretical and practical interventions on crafting the illusive 'dream' design brief, and the authors are presently undertaking a prescriptive study on supporting design briefing.

The study also showcased a steep rise in quality overall upon team building. While maybe attributed to specific high-performing individuals as it has proven influence (Branda et al., 2019), the advent of an otherwise 'low performance' anticipated team in breaching the glass ceiling challenges this widely accepted phenomenon. This poses an important question to be further studied - Who determines the design brief outcome in a team - is the burden borne by the few?

However, the data collection was limited to questionnaire and reflection, and did not capture the team interactions and dynamics that may have proven more insightful to determine the key factors, pre-requisites and conditions that influence the crafting of a quality design brief. Future directions include conducting protocol studies on homogenous but multidisciplinary design teams to assess optimal team compositions which can significantly contribute to design practice.

As discussed in literature, homogenous teams have shared mental models that allow effective communication and productive design process, while multidisciplinarity expands the knowledge space (Goldschmidt, 1995; Kokotovich & Dorst, 2016). So, the positive impact may also be due to broader exploration. This is in line with teams stating that they perceive an increase in their creativity upon teamwork, underscoring the possible contribution of multidisciplinary knowledge from the various members.

Acharya, et al. (2024) stress on the virtue of problem-based learning approaches in design for addressing real-world challenges and emphasises on cycles of individual and collaborative learning by members of multidisciplinary teams to regularly review and share to arrive at a common, more comprehensive understanding. This approach may be particularly appropriate as design teams today work from varied locations and collaborate often through remote tools, and developing hybrid modalities to enhance multidisciplinary exchange has potential to greatly support design practice.

Design theory and practice can both gain from understanding the relationship between briefing and conceptualisation. However, the improvement in the conceptualisation as a process and the outcome ideated by the team, in comparison to that performed by the students as individuals, is presently limited to perception of the team members. This unanimous optimistic perception is inadequately corroborated with the team-reported 'ability to address all the needs or requirements', i.e. Requirement satisfaction, a great proxy for predicting 'usefulness' – a metric of creativity. And while it is highly likely that an improved, i.e., 'better' brief will tend to inspire better outcomes, it is yet to be substantiated by experts. Expert evaluation of the ideas generated are presently underway to gauge whether the outcomes by such teams

are in fact better than those by individuals, and perhaps identify the types of skills, be it cognitive or psychomotor, that attributes to the improvement.
Future directions of research may also entail exploring the use and role of Generative AI (artificial intelligence) agents as potent team members.

7. Closing remarks

The 'dream team' sits at the crossroads of homogeneity and multidisciplinary, and attempting to formulate the optimal team composition may breed contempt or camaraderie, which in turn may impede the creative process. The design brief has the promise of being a great starting point on this creative journey and the process of briefing has the possibility of becoming a great tool to not only improve the eventual solution outcome but also the designer in question.
This study iterates that design as a practice remains deeply grounded in collective interpretation and implementation, heavily relying on varied members collaboratively working together to initiate change. After all, design is a team sport!

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