TEAM ROLE SELF-PERCEPTION INVENTORY: A TOOL FOR DEVELOPING CREATIVITY

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ABSTRACT

This paper proposes we take a close look at team role diversity and composition in a creative design programme. Dr. R. Meredith Belbin [1] originally described eight team roles with 'a tendency to behave, contribute and interrelate with others in a particular way' with each role having a combination of strengths and allowable weaknesses. Belbin argues that each of these team roles must be present in a balanced and effective team. Higher education rarely assesses students on their ability to perform in a group yet real world performance is often determined by how individuals perform and behave. Team work requires individuals to contribute from a plethora of strengths ranging from creative and strategic to orthodox or conscientious. This paper continues the discussion concerning the validity of Belbin's team roles through observation of individual behaviour during live design projects.

Keywords: Belbin, team roles, performance, learning, teaching and assessment strategy

1   INTRODUCTION

The need for greater realism in undergraduate design projects is being driven by professional consultancies that claim they need to retrain graduates in order to perform competently as soon as they walk through the door. Team role play will enable students to take full advantage of cross-disciplinary opportunities and learning processes and experiences. Exposing students to more authentic design problem situations will enable them to implement key aspects of their role to a given problem such as problem solving tools, decision-making and communication skills and the ability to demonstrate what they know and can do. These factors alone encompass a broad range of personal and academic skills involved in the determination of and resolution to creative problems. This activity aims to lead to significant developments in learning, teaching within the creative environment and quality enhancement over the coming academic year and reflects the School's shift from teaching to learning with greater emphasis on student-centred learning. This experiment will directly impact the personal development plans of all students as their individual strengths and weaknesses will be identified which could also lead to a more targeted academic assessment for all students. This research was undertaken with Belbin Associates one of Britain's leading people and performance analysts.

Belbin [2] describes a team role as *'a tendency to behave, contribute and interrelate with others in a particular way.'* Belbin's work at The Henley Management College identified nine clusters of behaviour – each of which is described as a team-role and where each team-role has a combination of strengths and allowable weaknesses.

Personality and aptitude assessment tests have been widely used to determine individual preferences towards team working in the business management and financial sectors Fisher, Macrosson & Sharp [3] whereby many companies use these methods to ensure that they recruit the right people for the right position. Belbin and his research team studied the behaviour of managers from in different locations. Managers completed a range of psychometric tests and comprised into teams to undertake complex management tasks. Individual personality traits, intellectual styles and behaviours were recorded. Over a period of time, clusters of behaviourial traits were identified as underlying the success or failure of the team. Belbin referred to these traits as 'Team Roles' (Table 1). Belbin's team role research concluded that the performance of a balanced team would be higher than that of randomly selected team players.

Table 1 Belbin's team roles and their core characteristics.

Action-oriented roles	Shaper (SH), Implementer (IM), and Completer Finisher (CF)
People-oriented roles	Co-coordinator (C), Team worker (TW) and Resource Investigator (RI)
Cerebral roles	Plant (P), Monitor Evaluator (ME) and Specialist (S)

2   METHODOLOGY

Academic assignments were suspended for one week in order to conduct this research. Two design projects were prepared and judged by two leading industrial links and provided the professional interaction and motivation for students to collaborate at an unprecedented level. To conduct this research 100 students completed the Belbin Team Role Self Perception Inventory (BTRSPI), a series of 10 preference questions in seven sections. Test scores were calculated to determine their preferred role within a project team. Ten teams of eight students were then compiled based on their preference towards Belbin's eight team roles including Plant (P), Resource Investigator (RI), Coordinator (C), Shaper (SH), Monitor Evaluator (ME), Team Worker (TW), Implementer (IM) and Completer Finisher (CF). Groups 1-4 comprised students were carefully selected from their BTRSPI scores and were expected to play to their strengths and demonstrate some known allowable weaknesses for each role. Groups 5 – 8 comprised, an equal number of students placed in control groups of eight based on random selection (the usual method of team selection for undergraduate projects).

To draw further evidence from the experiment, group 9 was compiled of eight students that demonstrated a preference for the role of Plant (P). Each scored higher than 90 for this role. Group 10 comprised students that demonstrated a strong preference for the role of Shaper (SH). The groups undertook two two-day industry prepared design projects following accepted academic new product development process [4], starting with a conceptual design phase, development and evaluation and concluding with presentations of final design proposals. Teams were assessed on their ability to implement the product development process to specific problems; employ various creativity techniques and evaluation matrices during problem solving and selection; communication of the process and final solution; develop key skills including effective teamwork and management skills; employ cognitive skills to communicate solutions effectively and persuasive.

3 TEAM ROLE APPROACH

It is common for undergraduates to graduate from higher education with little awareness of their core competencies, motivation, drive, aspirations or indeed anything relating to their personality strengths. Educators have a responsibility to understand the client, to find out what inspires them, what are their objectives are from studying on the course and ultimately, *'what's their point'*. This paper presents the outcome of a controlled creativity experiment in which 100 design students completed a Belbin self-perception inventory producing a 'fingerprint' relating to their disposition to each of the nine Belbin roles. Using this snapshot of data, the design undergraduates were compiled into teams based on Belbin's set of team roles. At no time prior to the experiment were students notified of their role or whether they were assembled in a team that was being monitored. Two short design projects were prepared for the students to undertake, whereby each outcome would be independently judged by industry representatives. It is important to note that this Belbin test data represents personality traits at a given moment in time and these may alter as the individual develops.

For a balanced team to be effective it is noteworthy that many respondents may have high scores for more than one team role as highlighted in Figure 1. Roles are identified as 'natural' in individuals who score 70 or above in a particular role in the BTRSPI. Note that this team member playing the role of Resource Investigator (RI) also recorded high scores for Shaper (SH) and Implementer (IM). This characteristic is not unusual and Belbin argues that as long as all team roles are represented then a team need not comprise of eight individuals.
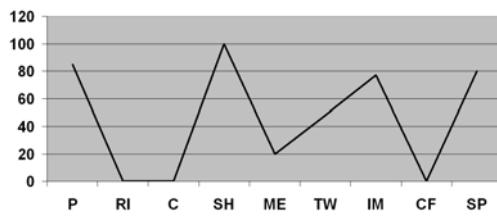

Figure 1 Team role preference scores.

4 THE IMPORTANCE OF BALANCED TEAMS

Teams work best when there is a balance of primary roles and when team members know their roles, work to their strengths and actively manage weaknesses. To achieve the best balance, Belbin concludes that ideally there should be one Co-ordinator (CO) or Shaper (SH) (not both) for leader, a Plant (PL) that would stimulate the ideas phase, a Monitor/Evaluator (ME) to maintain honesty and clarity and at least one Implementer (IM), Team worker (TW), Resource Investigator (RI) or Completer/Finisher (CF) to make things happen.

The objective of this research was to determine whether teams, assembled from the Belbin data could outperform those groups compiled randomly. The effectiveness of these ten teams would be measured on performance, quantity of work produced and viability, in other words the appropriateness of the output to the design brief would be some of the criteria used when judging the output from each project. Typically, designers are creative and innovative people that rarely like to work in a team as illustrated in the design staff BTRSPI scores in Figure 2. This confirms weak preference scores for the role of Team Worker (TW), above average scores for Resource

Investigator, Coordinator and Shaper, below average scores for Plant and Completer Finisher and a high score for Implementer.
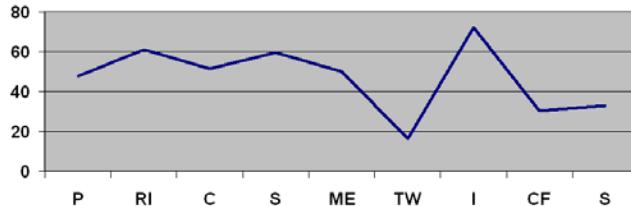

Figure 2 Staff BTRSPI profile

5 OBSERVATIONS

Throughout the five-day experiment, the teams were observed by staff that monitored the contribution of each team member and the interaction between roles, diplomacy and decision-making. Observations were used to record how team members interacted with one another. Partington & Harris [5] noted that successful team working was more complex than simply putting random selected people together and expecting them to function as a coherent and balanced team. Observations of each team were recorded throughout the research (Figures 3, 4) and in most cases the characteristics displayed by team members reflected the Belbin description for the role.

Figure 3 Team working

Figure 4 Team Presentations

Despite the intensity of the activity, there was very little disruption displayed and any conflict appeared to be resolved amicably despite some students being naturally possessive over their contribution to design ideas. To minimise this conflict, teams adopted De Bono's Six Hats [6] evaluation technique to select preferred ideas for development. Teams appeared to perform well under pressure and indeed enjoy the challenges they confronted. Following the event, all students were required to complete a Reflective Questionnaire (RQ) in which they were required to comment on their contribution to the team and that of their colleagues. The number of responses that matched exactly their Belbin preferred and least preferred role predictably low. Only 18% of the respondents accurately matched their self-description with that of their BTRSPI. Many viewed themselves as the antithesis of the role they played during the project. Many saw themselves as team players suggesting self-assurance that was rarely shared by their colleagues. The reflective questionnaire also posed questions that would support personal development planning. Participants were asked what skills and behaviours they needed to develop further. Time management, leadership, persuasion, presentation and negotiation skills were some of the main characteristics that students

felt they could benefit from having greater support and mentoring during their higher education. The reflective questionnaire also highlighted those that led the team, usually the Shaper, were recognised by their colleagues as being those that demonstrated leadership qualities and contributed at a level over and above their team colleagues. The team comprising wholly of Plants (team 9) often seemed disorganized and lacking direction. Many innovative designs were suggested but these were not fully supported by other team members and not developed or evaluated thoroughly suggesting a lack of engagement to ensure the idea was adopted by the team and fully resolved. This was borne out by reflective questionnaire responses which stated that there were no big role leaders or people who were good and prepared to present. The reflective questionnaire required students to rank themselves between one and nine against each of the Belbin team roles. Figure 5 is typical of the results when compared against the BTRSPI. In most cases, the students' perception of themselves and the results from the Belbin test were often the antithesis of one another.
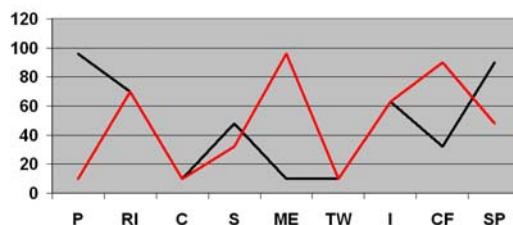

Figure 5 Reflective questionnaire results versus BTRSPI score

The data compiled from the BTRSPI tests also provided an opportunity to compare gender scores across a year group. Typically, year cohorts consist of 15% females yet from observation results the female team member often adopted a dominant role within each team. The role of Shaper (SH) or Completer Finisher (CF) appeared to be a comfortable role for the females within a group. This was verified by peer responses from the anonymous reflective questionnaires. These team members often dominated the proceedings, directed the team towards a preferred design and often led the final verbal presentations. The results from the BTRSPI confirmed the valuable contribution that females in the groups made and how well they worked together and avoided conflict. Figure 6 also indicates relatively low score for females for the role of Plant (P) and Team Worker (TW), contrasting that of their male counterparts who scored below average for the role of Completer Finisher.
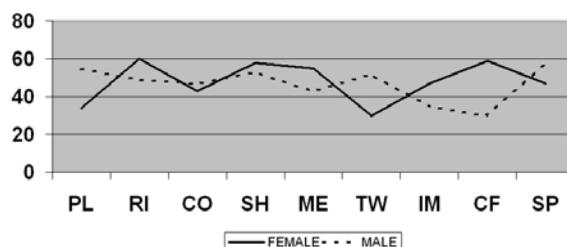

Figure 6 BTRSPI – Gender comparison

6   CONCLUSION

Team working is a critical element of the workplace and it is critical that design graduates are comfortable working within in a team and are aware of their strengths and their preferred working role within a team. The 'balanced team' approach is as critical for the creative industries as it is for any other area of manufacturing or service sectors of the UK. Analysis of the BTRSPI in which students were asked to determine which role they believed they were best suited to concluded that more than 64% of the respondents accurately predicted the role they performed during the experiment. This figure is encouraging however a significant proportion (33%) selected a team role that was the antithesis of their BTRSPI result.   This experimental exercise adds some validity to the BTRSPI results for the creative sector and supports Belbin's claim that teams selected on individual role preferences can, under controlled circumstances outperform those teams that have been selected randomly. The strong level of facilitation, coordination, discipline and leadership demonstrated by females in the groups suggests a need to raise the level of female recruitment to product design courses.   Additional validity was given to the BTRSPI when the independent judges selected winning teams for both projects from those teams selected to demonstrate their Belbin team role. Furthermore, a team of Plants was acknowledged as providing the most innovative idea throughout both experimental projects. Further research should be conducted using the BTRSPI in one year when data can be gathered to reflect the changes in the preferences shown for the same cohort of students as they progress through their creative higher education and their personalities and core competencies evolve.

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