

THE EFFECT OF PROFILING ON TEAM DYNAMICS AND CREATIVITY

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ABSTRACT

How do we, as educators, create and support effective teamwork with our students? This study focuses on the role of profiling tools. In particular we look at the use of such tools to create diverse, or heterogeneous, teams. We find that although there is a general preference for heterogeneous teams, there are other more powerful factors at play, including the nature of the task, familiarity of the participants, and cultural background. It is possible to have highly effective homogeneous teams given the right circumstances. Exploring further, we find that individuals in such teams consciously adapt their style to fit with the environment. Thus, equipping students with knowledge of their own (and others') profiles can be a valuable enabling factor in effective teamwork. We therefore suggest that profiling tools are useful as: a tool for self development; and a way of developing team work within a high trust culture.

Keywords: Group working, profiling, VIEW, Belbin, Hofstede, Profiling.

1 INTRODUCTION

Creativity is often portrayed as coming from an individual spark of genius. However, as Edison [4] and the Wright brothers [8] demonstrate, creativity in engineering design often arises from the team rather than the individual [11]. An important question for the educator is how to create, support and nurture these teams.

One principled approach is through the use of profiling tools. These tools suggest a set of behavioural preferences for each individual. The obvious questions that arise include: do these tools work; which is the best tool; should we create heterogeneous or homogeneous teams? The main focus of this paper is the latter question, including the importance of contextual factors.

The paper is structured as follows. In the next section we provide some background detail on the profiling tools used. We next describe the methodology, which is a mixture of quantitative and qualitative analysis. This is followed by a discussion and consideration of related work.

2 THE PROFILING TOOLS

VIEWTM [9] is a profiling tool concerned with preferred problem-solving styles and is credited with driving superior team performance [10]. VIEWTM characterizes problem solvers along 3 dimensions:

- **Orientation to Change** – Explorers “seek to break new ground” and “find structure confining”. Developers on the other hand are comfortable with structure and focus on “organizing, synthesizing, refining and improving outcomes”.
- **Manner of Processing** –when problem solving, people may adopt an External style, interacting with others and sharing information. The Internal style is more reflective and deliberative.
- **Ways of Deciding** – A Person-oriented decider is sensitive and preserves harmony. The Task-oriented decider is more concerned with logic and objective justification.

We also used Belbin styles [2] which include (mostly self explanatory) team roles such as: Coordinator; Implementer; Completer Finisher; Specialist. Plants are ideas generators; Resource Investigator the networkers; Shapers the salespeople. Monitor Evaluators provide a critical ‘reality check’ while Team Workers (an unfortunate name that downplays their significance) create and preserve team harmony.

Another key factor is that of cultural orientation. This is particularly pertinent for our cohort, which has 34 students spread across 14 nationalities. Hofstede [5] suggests a number of key cultural attitudes; the one we focus on is the Uncertainty Avoidance Index (UAI). Uncertainty avoiding cultures tend to minimise ambiguity by use of explicit rules.

3 METHODOLOGY

A cohort of MSc students were asked to work on four immersive design challenges, each using a different profiling approach. In each case the students were asked to fill in a survey appropriate to the profiling method being used. The responses were analysed by the course leader and used to allocate groups. The survey responses were not shared among students, although students were at liberty to reveal their profile to their team members if they so chose. In a few cases, due to absence or preference, students did not fill in a survey. Such students were allocated on a team size basis.

3.1 Challenge 1: 16-17 October 2014

The students were split into teams with a diversity of VIEW™ profiles and given a design exercise (involving the innovative use of cardboard) and allowed to organize their own time over a short (2 day) period with a presentation being required at the end of this time.

3.2 Challenge 2: 14-21 Nov 2014

The same cohort was split into teams with homogenous VIEW™ profiles and asked to contribute to a live project involving the innovative design of a baby incubator. The students were allowed to spend almost a week exclusively on this task. The assessment was a presentation and design brief given to the course leaders and the external innovator who had originated and was leading the project. The students were asked to write reflective logs on their experience during this 2nd challenge.

3.3 Challenge 3: 24-28 Nov 2014

The same cohort were asked to create a team presentation on a real product development challenge. This presentation needed to be prepared during the week, with limited free time being provided between and after lectures for group work. A simple cultural questionnaire based on Hofstede [6] uncertainty avoidance index¹ was used and the students were grouped into heterogeneous teams. The assessment was by presentation to the course leader and industrial guests who had set the challenges.

3.4 Challenge 4: 6-11 Feb 2015

The final group project involved the use of Belbin to create a well balanced team. The teams in this case worked on an immersive challenge concerned with organizational change. The teams had almost 3 working days (and a weekend) to work on this challenge. The assessment was a presentation to the course leaders and an invited industrial CEO, who role-played various actors in the given scenario. In each case, quantitative results were collected.

A survey and a focus group were both conducted after all challenges had completed. The reflections gathered in the second exercise were analysed for comments relating to team work and the use of the profiling tools.

4 RESULTS

4.1 Quantitative Results

The cohort (34 students; one null response) had a bias towards Developer (Dev: 23/33), External (Ext: 27/33), and Task focused (23/33) preferences. Within this constraint, teams were allocated to maximise diversity. The effect on creativity appears muted; the marks were spread over a relatively narrow range (12%) with no obvious correlation between team profile and performance.

In Challenge 2 the teams were arranged homogeneously. In this case, the marks were spread over a wider range (25%) with a similar mean. The top team had some mixing of Developer and Explorer styles; on the other hand the next best team was completely homogeneous (all Explorer, External, Task).

¹ See <http://www.itapintl.com/tools/culture-in-the-workplace-questionnaire-cw/itapcwquestionnaire.html>

The cultural questionnaires used on Challenge 3 gave rise to scores from -4 (uncertainty avoiding) to +7 (comfortable with uncertainty) and the teams were created using a balance of scores. The ranking is again over a fairly narrow range (13%). Finally, on Challenge 4 the students were arranged into heterogeneous groups using Belbin, with a mark range of 18%.

4.2 Survey

A survey was conducted in which students were asked a variety of simple questions on team working. 23 responses were received by 27 February 2015. Only 1 participant thought that team profiling was ‘completely irrelevant’ (and that person changed their mind after doing the challenges). On the other hand, only 1 person thought it would be the ‘major determinant’ with most ascribing a ‘minor effect’ (2) or ‘important effect’ (14) with 5 being not sure. Table 1 shows a noticeable preference for Belbin.

Table 1. Results of the survey. The table shows the responses to questions 2-4

	Useless and/or misleading	Not really useful	Somewhat useful	Very useful	Essential in team work situations	Other
2: What is your opinion of the VIEW tool?	2	4	14	1	1	1 (neutral)
3: What is your opinion of the Belbin tools?	0	1	12	8	2	0
4: What is your opinion of Cultural profiling?	0	6	7	8	2	0

Most students (14/23) preferred the heterogeneous VIEW work, with 7 preferring homogeneous and 2 declining to state a preference. Survey respondents were also invited to leave free text comments and some of these (with spelling and grammar left uncorrected) are noted in the next section.

4.3 Qualitative Findings

Reflective logs were collected in the 2nd challenge. In addition, a focus group was held on 16 February 2015. Thirteen students attended, and gave very useful feedback. In the following, various themes are explored backed up by comments from the focus group, survey or from the reflections. The comments are presented as they were received with no changes to grammar or spelling.

Students were generally positive, though they commented about the stability of profiles:

there might be some truth about VIEW profiling in the end.. [though] I still feel that the VIEW profiles are likely to change when you work with different groups

I do trust Belbin but you can work in different roles

Most people in the focus group (9/13) found the heterogeneous group easier. This was also true about the survey (9/13 respondents). It is interesting to look at the reasons why homogeneous groups are more difficult – or in some cases, easier:

In the second project, the group consisted of people with 'similar' mindsets and profiles. I felt a lot of disconnection and experienced conflict

[with] different people/profile grouped together – they would create a conflict [in the] heterogeneous ... easier in homogeneous.

[when] group members are mostly from the same or similar categories, we either understand each other very quickly, or stick with one topic and very difficult to reach agreement.

These comments suggest that profile diversity is not the overriding factor in team effectiveness. Digging a little deeper, it appears that successful team members can adapt to a new environment:

The 2nd one went better because I understood better how the other cultures behaved ... I had [also] practiced team working

This time I could not be as external as I could in the first group work (which probably was a problem) because my team members seemed to be as external or even more than me. This time I almost had to fight to be allowed to answer questions in our presentation whereas my last team seemed to encourage me to answer the questions for them.

for the homogeneous, I was getting everything together – constructive discussion was already happening. For the heterogeneous – I tried to get some constructive conflict into the group. Difficult to say one was better.

I think learning how to work in a team and being flexible with roles within the team might be more important or at least equally important as the composition of the team.

The last time I played the role of an explorer – this week I had to be the one organizing the team and getting them back to the right track

Thus, context appears to play a major role:

Other factors can also affect the performance in a group like culture and language.

I am not sticking to one tribe – I am changing...because of the environment — one year later [my] answer will change...

language make[s] me into another person - [I would have a] different result in China. (I think I am a coordinator not a shaper in China).

Introvert/extrovert - this is context dependent.– I am both.

behaviour is very context dependant. Even though I am a task focussed person according to VIEW I had a very person and emotion focussed approach this week and I am sure it is not just the topic but my ability to easily and naturally adapt to situations when necessary.

The students made some additional suggestions for the use of profiling tools, including

profiling tools should take into account the views of other colleagues.

Suggest doing profiling after a self select exercise.

5 DISCUSSION AND RELATED WORK

In the survey, most students (15/23) initially thought that team profiling would have at least an *important* effect, a suggestion that is echoed in the literature [8, 9]. Most students (both of focus group participants and survey respondents) preferred the heterogeneous teams, though a significant fraction had the reverse preference. It is also interesting that the range of marks is higher when the groups are homogeneous. This might suggest that the students had a greater diversity of experience with the homogeneous groups. Alternatively, it might reflect the nature of the task and/or the marking practice of the course leader. Of course, given the data it is impossible to do more than speculate whether the homogeneous VIEW™ profiles would have performed similarly in challenge 1. The qualitative findings are helpful in exploring this further.

These results are supported by the literature. Heterogeneous teams do appear to generate superior results [9], although a meta analysis [3] shows that this effect is both small and non significant, being outweighed by the context of the task. In addition, heterogeneous teams may be less co-operative at first [5] though this effect is transient. Even conflict within a team can be positive if it is creative rather than personal [7].

An important finding in this study is the importance of context; this factor appeared to greatly outweigh any advantage or disadvantage of profile matching within the team. This is also noted in the literature; for example problem characteristics appear to be highly pertinent [9, 7]. This later point is stressed in [1] in which the task environment (mechanistic or organic) directly affects the working style of the team. Examples of other relevant factors include

- The nature and difficulty of the task
- The familiarity of the participants
- The skills and experience of the participants
- The profile and personality of the participants (requiring an individual to adapt and take on a different role when necessary)
- Past success with a particular role (eg leader)
- The shared (or otherwise) language of the team
- The cultural background of the participants or task (eg tasks in different countries).

Perhaps the most significant finding is the transience of profiles (and therefore the adaptability of students). This does mean that any correlation between individual profile and performance is complex and arguably meaningless. However, the deeper finding is that the use of profiles enables students to learn about themselves, about others and about teams. The team challenges, when enriched with profile data, allow deeper reflection and experimentation with different behavioural styles.

It is therefore possible to discern a general acceptance of the usefulness of profiling tools. However, it must be acknowledged that the context has a major factor in determining how individuals behave within teams. Ironically, some of the contextual factors (particularly culture) are themselves measured

by profiling tools. A suggested next step would be to make the profiling tools more open for the students to experiment with, to examine, critique and to share. Team members should be encouraged (not coerced) to share their preferred working styles and students should (individually and collectively) reflect on how these could be used to improve team performance. Further experiments (eg with different profiling tools, self select groups, peer feedback and so on) could be co-designed with the students. Finally, the role of context should form an integral part of any evaluation.

6 CONCLUSIONS

The findings suggest that profiling does not directly enhance the creativity of teams. Contextual and environmental factors are equally or more important. Nevertheless, knowing and reflecting on your own (and others') profiles can be a valuable enabling factor in effective teamwork.

We therefore suggest that profiling tools are useful

1. As a tool for self development
2. As a way of developing team work within a high trust culture.

REFERENCES

- [1] S. J. Armstrong and V. Priola, *Individual differences in cognitive style and their effects on task and social orientations of Self-Managed work teams*, Small Group Research, vol. 32, no. 3, pp. 283-312, Jun. 2001. [Online]. Available: <http://dx.doi.org/10.1177/104649640103200302>
- [2] R. M. Belbin. *Team roles at work*. Routledge, 2012.
- [3] C. A. Bowers, J. A. Pharmer, and E. Salas, *When member homogeneity is needed in work teams*, Small Group Research, vol. 31, no. 3, pp. 305-327, Jun. 2000. [Online]. Available: <http://dx.doi.org/10.1177/104649640003100303>
- [4] T. Brown and B. Katz, *Change by design: how design thinking transforms organizations and inspires innovation*, 1st ed. New York: Harper Business, 2009
- [5] J. A. Chatman and F. J. Flynn, *The influence of demographic heterogeneity on the emergence and consequences of cooperative norms in work teams*, Academy of Management Journal, vol. 44, no. 5, pp. 956-974, Oct. 2001. [Online]. Available: <http://dx.doi.org/10.2307/3069440>
- [6] G. Hofstede, G. J. Hofstede, and M. Minkov, *Cultures and Organizations: Software of the Mind*, Third Edition, 3rd ed. McGraw-Hill, May 2010. [Online]. Available: <http://www.worldcat.org/isbn/0071664181>
- [7] S. G. Isaksen and G. Ekvall, *Managing for innovation: The two faces of tension in creative climates*, Creativity and Innovation Management, vol. 19, no. 2, pp. 73-88, Jun. 2010. [Online]. Available: <http://dx.doi.org/10.1111/j.1467-8691.2010.00558.x>
- [8] K. Sawyer, *Group Genius: The Creative Power of Collaboration*. Basic Books, 2008.
- [9] Selby, E. C., Treffinger, D. J., Isaksen, S. G., and Lauer, K. J. (2004). *Defining and assessing Problem Solving style: Design and development of a new tool*. The Journal of Creative Behaviour, 38(4):221-243.
- [10] S.-T. Shen, S. D. Prior, A. S. White, and M. Karamanoglu, "Using personality type differences to form engineering design teams," Engineering Education, vol. 2, no. 2, pp. 54-66, Dec. 2007. [Online]. Available: <http://dx.doi.org/10.11120/ened.2007.02020054>
- [11] Treffinger, D. J., Selby, E. C., and Isaksen, S. G. (2008). *Understanding individual problem solving style: A key to learning and applying creative problem solving*. Learning and Individual Differences, 18(4):390-401.
- [12] Vissers, G. and Dankbaar, B. (2002). *Creativity in multidisciplinary new product development teams*. Creativity and Innovation Management, 11(1):31-42.