Table of Contents

1. List of figures

2.Introduction

For decades, scientists have been observing the development of small teams in order to come up with a perfect model. The most popular model of small groups development belongs to Bruce Tuckman. In 1965 he proposed four stages linear model, which is described as *'the most predominantly referred to and most widely recognised in organisational literature'* (Miller 2003, 122).

However, it might be quite puzzling whether one model can fit all small groups. Some teams might not experience all stages, may experience the same phases many times, or might experience more than one stage at a time. Since the 1970s, many articles have been published, in purpose to review this model and find its limitations.

The aim of this study is to observe the development of a small team, operating in a short period in a university environment. The collected results in the form of qualitative and quantitative data confirm that it is impossible to generalize all teams, and the development of the different teams do not always follow specific rules. The group's development may be affected by many factors, such as personality, creativity, team size, external influences, so it is not possible for the Tuckman's model to fit all small teams. This study confirms this argument.

3.Literature Review

3.1 Bruce Tuckman theory

In 1965 Bruce Tuckman, a psychology professor, reviewed 50 published articles reporting on studies of the development of the groups of different kinds: therapy groups, human relations training or T-groups and natural and laboratory-task groups. Tuckman separated the 'social realm', including social/interpersonal group activities and the 'task realm' included task-related activities. As a result, Bruce T. proposed a model of developmental stages for all groups over time. Group structure development phases were labelled as follow: *testing and dependence, intragroup conflict, development of group cohesion and functional role-relatedness*. The stages of the task-activity realm: *orientation to the task, emotional response to task demands, open exchange of relevant interpretations*, and the final one *emergence of solutions.* Tuckman (1965) summarised the development model by identifying four main stages: <u>forming</u>, <u>storming</u>, <u>norming</u> and <u>performing</u> – its related to all groups, each phase contained activities in both realms.

Subsequently, in 1977 Mary Ann C.Jensen and Bruce Tuckman reviewed an additional 22 articles to investigate any new models of team development through the further testing. As a result, they added a fifth stage called "adjuring".

Over the years Tuckman's model (1965) became the foundation for other scientists to create different models of the development of the team. In 2000, T.Rickards and S.Moger (p.277) described this model as "*a simple means of discussing and exploring team dynamics.".* However, in the same article, they mentioned that the Tuckman model (1965) as well as Jensen-Tuckman model (1977) does not give the answer to those questions: *"What is the storming stage never end?"* or *"What is needed to exceed performance norms?"* (p.277), so the model cannot completely explain of how teams alter over time.

Additionally, it can be said that this model prove the assumption, that *"the small group represents a single entity and that one model can fit all groups.",* according *to* Sundstrom, E., K. De Meuse and D. Futrell (1990, p.128). What is more, the Tuckman model does not take into account the creativity of the team, and how it can affect the performance. In 1988, C.Gersick published *'a qualitative study of 8 naturally occurring teams working on short-time projects.'* The results did not support the popular Tuckman's view of group development, because it is not possible that all small groups follow the same historical linear path. Moreover, she mentioned that the model is inadequate because it

frames all groups as closed systems. Instead, Gersick proposed an alternative model called "*punctuated equilibrium*." (1988).

3.2 Myers-Briggs Type Indicator

The MBTI created by Katharine Cook Briggs and her daughter Isabel Briggs Myers (1962) was based on Jung's conceptual theory proposed in his book Psychological Types (1921). MBTI quantitative results helped to identify essential strengths and weaknesses of group members, as well as allowed to become more self-aware of behaviours and how those affect others.

4.Methodology

4.1. Procedures

The primary purpose of this research was to analyse the development of the team in small groups. The task of each group was to select one technical subject, perform the research, prepare a presentation and present the conclusions to the peers. Each of the presentations was subsequently evaluated in order to receive a constructive opinion. My research group consisted of 5 people: two female and three male students. In this section, I will discuss the procedures used to manage the project and what data collection methods have been utilised to evaluate team dynamics.

4.2 Data collection methods

Quantitative and qualitative methods have been criticised by scientists for years. According to Gelo, Braakmann, & Benetka (2008), the qualitative methods are blamed for lacking of generalizability (p.268), while the quantitative research met with criticism in the Aaro Toomela article (2008), because of short of participants' voice and a meaningful interpretation. In this study, mixed method research was used, as that kind of research, where quantitative and qualitative methods are combined, provides more extensive and profound results, making use of the most valuable features of each. (Schulze, p.19)

4.3 Data collection tools

At the beginning of group formation, each member carried out the MBTI (Myers-Briggs Type Indicator) typological test. Qualitative data was gathered from group conversations held on Whatsapp by exporting chat as a Word document. Moreover, throughout the entire project, the team have controlled activities, meetings and development thanks to the wide scope of features offered by Trello.com.

The evaluation of the quality of our work was measured through the OneDrive mixed-method survey (Appendix 1,2), carried out directly after the presentation. Qualitative results might be divided into negative and positive commentaries. In order to measure the performance of the group, an additional OneDrive mixed-method survey (Appendix 3,4) was performed in the final phase of the team's development.

5.Results

5.1 Myers Briggs Test

Figure 1 is a graphical representation of the results of the MBTI test that all team members undertook.
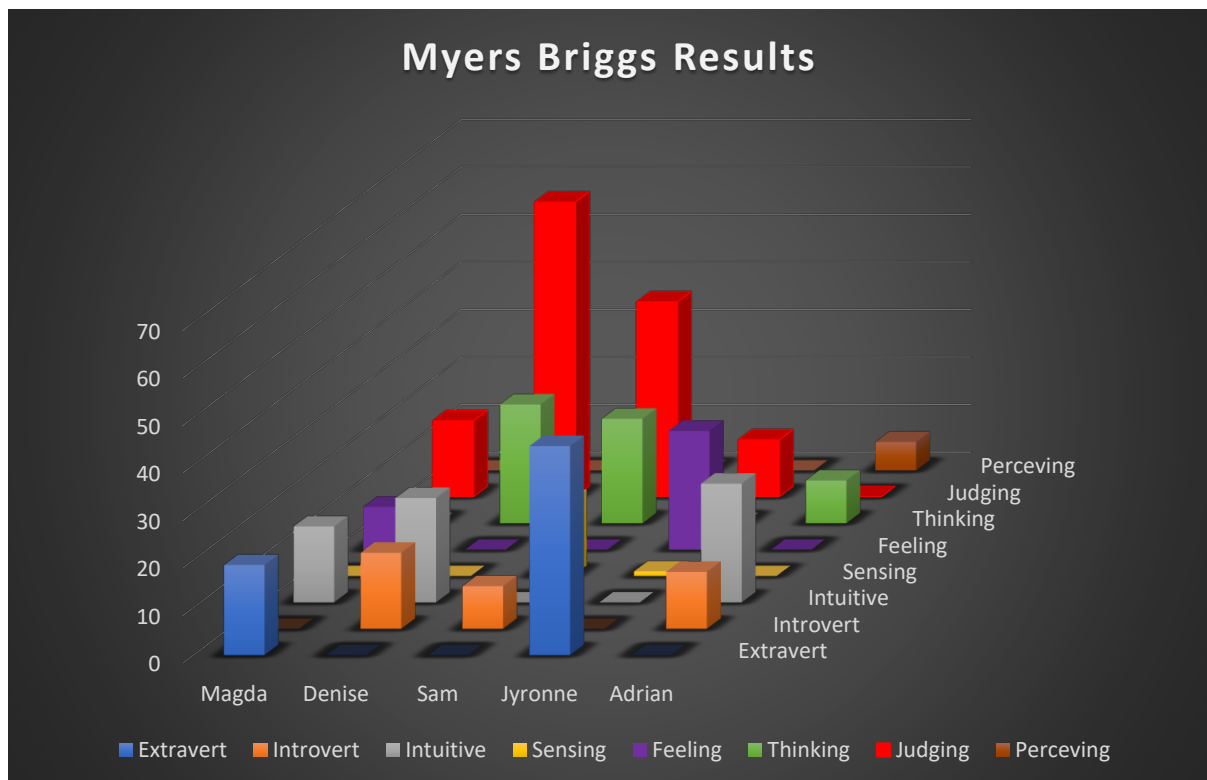

Figure 1: MBTI results

Based on The Personality Type Portraits, ENFJ (Magda) might be described as a forthright and truthful person. However, ENFJ's are more reserved about reveal themselves than other extraverted types. INTJs(Denise) live in a world of ideas and strategic planning; they are quick to express judgments. When under stress, INTJs might become obsessed with mindless repetitive. ISTJs (Sam) are quiet and withdrawn persons who are interested in security and peaceful living. ISTJs are finding uncomfortable to express emotions to others. ESFJ's (Jyronne) crave to be liked. ESFJs have a natural predisposition to control over their surroundings. INTPs(Adrian) do not tend to control or lead others. They are very easy-going and adaptable in most situations. (The Personality Page, 2018)

5.2 Trello data

After analysing data from Trello, it may be noticeable that at the beginning one of the members took the lead role. This person created a trello board, invented and created all the cards, invited all members. It could happen because not all the members had experience working with trello before. The trello board was divided into four main sections: *meetings, priorities, to do, done.* This idea helped to keep control over the work of the team, as well as to plan future activities. The image below (Figure2) presents a sample card from the trello board. Each meeting performed has its own created card, which includes: the date of the meeting, a photo documenting the presence of members, all additional related to meeting files and a description of the activities.
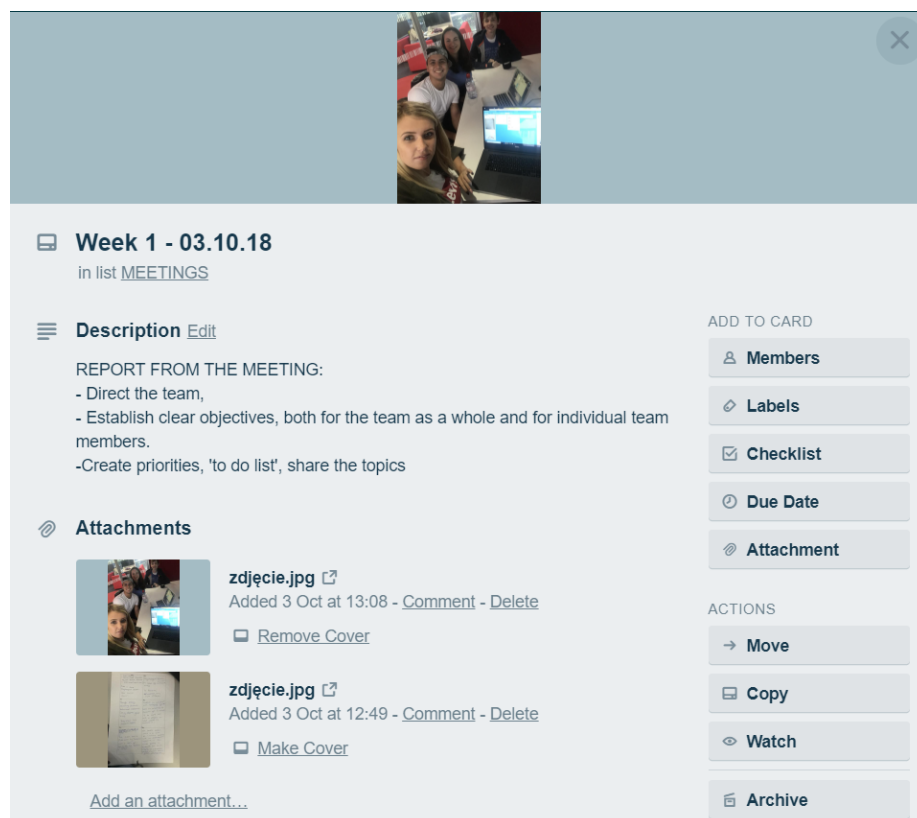

Figure 2: Example of meeting cart – Trello.com

As mentioned above, Trello's board contained all the necessary information to complete the project. Each task had a team member assigned as well as a due date. Once the task was finished, each member of the team moved that card to the section: "done".(Figure3)
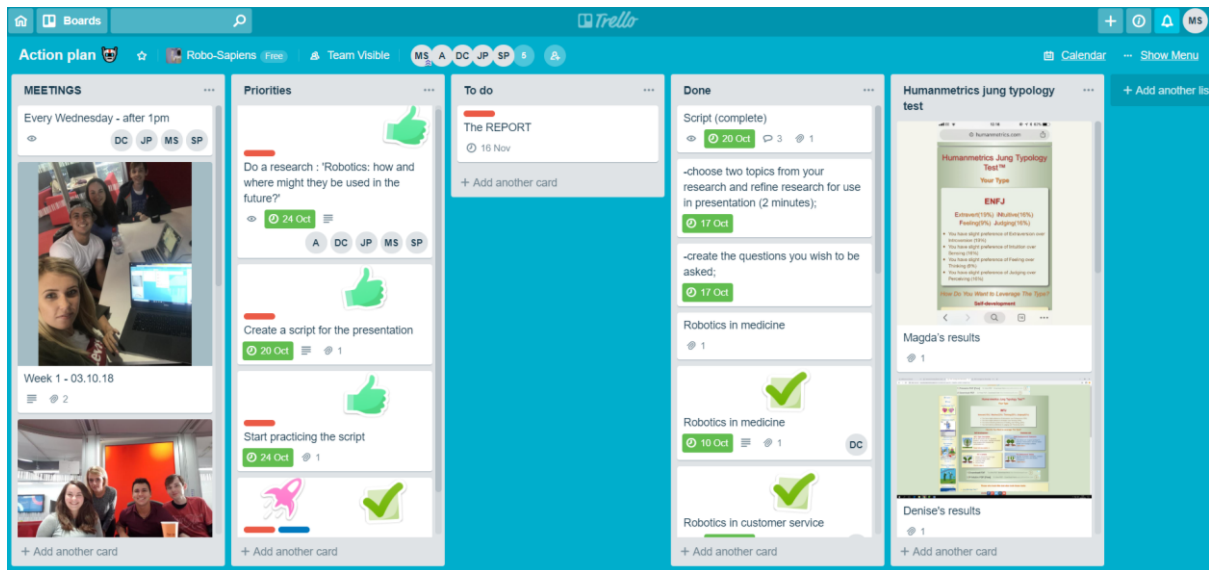
Figure 3: Main trello board

5.3 WhatsApp data

When analysing the data from Whatsapp, it is evident that the group had a problem with defining goals and did not know how to start work on the project. Member 1 stated *"..soo whats the plan we start officially next wed or we each do a bit of our own independent research?*", Member 2 answered: *" We need to set up our goals and action plan..".* As a next step, Member 2 offered to open Trello board by stated: *" We need to also create the team on trello, send me your emails I can do that."*

In order to push actions forward, one of the members proposed its vision of an independent study*: "Hi everyone, how is your research going? I though that we can share the topics, ex. Denise robotics, jy robotics in manufacturing etc. What do you think?".* The whole team supported this idea. All stated*: "yeah thats cool, ill happily do manufacturing", "Good idea*", *" Yeah, good with ne".*

From the second week, the group started to perform their meetings. Not everyone felt comfortable with the assigned tasks, so the first meeting's topic was proposed, one of the members stated: *"Hi all, just to let you know that I've booked the study room for tomorrow (1pm). Don't worry if you haven't done your research about robotics yet, we can discuss everything tomorrow and also choose some strategy, methodology etc. Everyone agree?"*

In the last week, some misunderstandings between team members have occurred. Not everyone approached to the project seriously, leaving the most critical tasks for the last minute. Members felt a bit irritated and upset about the lack of communication. One of the members stated: *" Hi, Are we gonna meet today?",* due to a lack of response, stated again a few hours later: *"Do we meet before presentation to practice? Or not?".*

5.4 Peer feedback

After the presentation, the peers had a chance to evaluate teams' work. Based on qualitative and quantitative data retrieved from feedback (Appendix 1,2), our group failed a little bit on presentation skills. Our presentation was based on "question-answer" concept, which unfortunately did not please everyone. In general, the presentation was described as an informative and interesting, what shows that we could work as a group. We failed more as individuals as a consequence of lack of eye contact and body language.

6.Discussion

The result of our work has met the previously established requirements and goals. As a group, we worked reasonably well, based on team members' feedback (Appendix 3,4). However, much work was done individually, for instance, each of the team members had to conduct their own research on a given topic, and then as a group, we chose the most interesting findings and discoveries. Describing our "forming" phase can be quite difficult because the team members knew each other before the team formation and members already had the opportunity to work together as a group earlier. The personalities of the group members were already known, and some behaviours could be predicted. This may be the reason for the lack of the "storming" phase in the initial stage of the team's development. Instead, the "storming" stage occurred slightly later, the day before the planned presentation, when the research was already completed. Misunderstandings on the last days caused that the critical meeting on which the presentation should have been practised, unfortunately, was performed in an incomplete team. As a result, we had only 2 hours before the actual presentation to practice scripts as a group. The group did not have enough time to feel

comfortable and confident presenting, so based on peer opinions the group presentation came out quite unnatural with the lack of presentation skills.

The leader's position has not been established for the duration of the project. However, it can be said that alternately two members of the group took over the role of the "unofficial" leader, by taking over the management of the trello board, managing the tasks entrusted to the group members and controlling the deadlines.

The analysis of Robo-sapiens' team performance does not support the linear model of Bruce Tuckman (1965). It can be noticed that the development of this team is more related to The Punctuated-Equilibrium Model (Gersick,1988). The first meeting set the group's direction, and all goals have been established. Then the group was working on a similar effort level until realised that time has passed, and increased performance is obligatory. Not everyone was fully committed, that is why conflict arose, and action was required to get the job back on track. The team managed to do that, and the second phase started when the team was working on the highest level of commitment. Using Tuckman's terminology, our team performance can be described as follow: team building began by merging the forming and norming phases, after that went through a term of low performing, afterwards storming, then a period of high performing and the last one adjourning.

7.Conclusion

Based on the observation of team development, it can be confirmed that the Tuckman model has no reference in reality. Each person is different and different personalities can build the team, so it is not possible for each small group to follow the same linear model. This study denies the position of the second phase of the Tuckman model - "storming", as it may occur a little bit later than immediately after the team formation, or it may be repeated many times. Moreover, this research confirms the Gersick's theory that Tuckman's model is inadequate because it frames all groups as closed systems.

It should be considered that this study was carried out only on one team, and the duration of the study was very short. For better results, additional studies should be performed.

8.Appendices

8.1 Appendix 1 – Peer feedback results – quantitative data
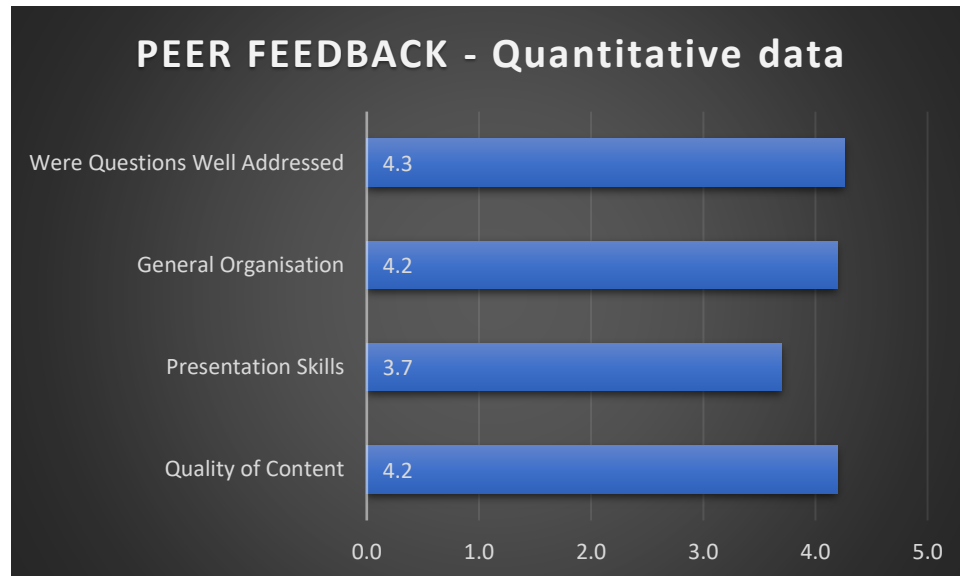
8.2 Appendix 2 – Peer feedback results – qualitative data

PEER FEEDBACK - qualitative data
The chatty conversational approach, in my opinion, was good and bad. It made the talk very engaging, but t times I was unclear what was your opinion or the opinion of the research. The talk showed that a great deal of research had been conducted
Its good
NO NOTES ON THE SCREEN !! the only problem I had with this presentation is they had no notes on the screen for the audience to look at and read from.
Question and Answers between the presenters was interesting however there was sometimes a lack of eye contact/or body language (backs to us while speaking) with audience
Felt more like a 3rd person perspective of a discussion instead of a presentation; however it was idiot-proof and provided people with a friendlier and alternative introspect into their topic.
It was much better than ours is going to be
lots of information, presented well, lack of eye contact//not facing us
very informative
The presentation was well organised and a wide scale of the topic robotics was covered. However I would have loved to hear the advantages and disadvantages of the robots
Overall very good presentation, I liked the concept as you guys asked and answered questions which shows how you were able to work together. Presentation skills let you down slightly (body language, leaning, eye contact) but you all projected your voices which was good.

8.3 Appendix 3 – Team members feedback – quantitative data
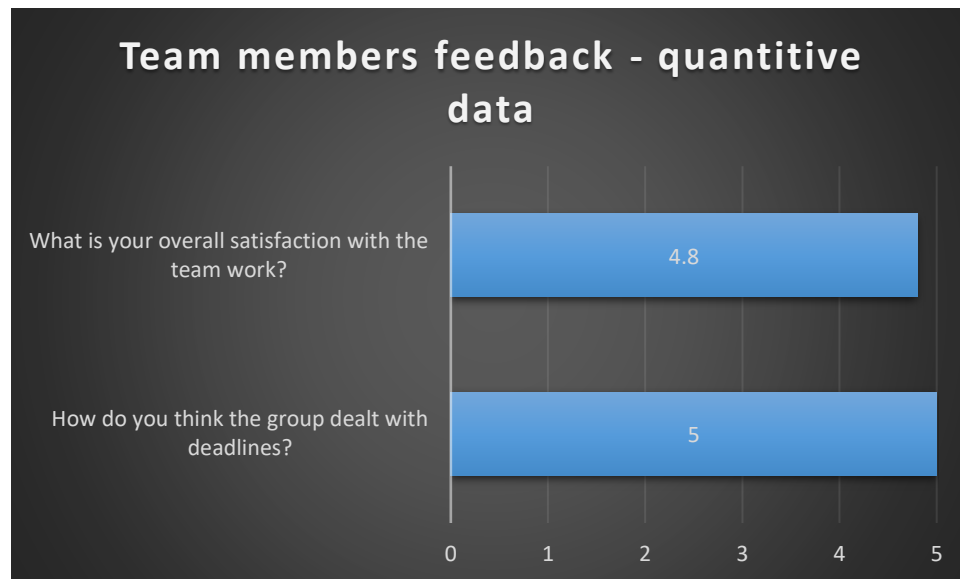
8.4 Appendix 4 – Team members feedback – qualitative data

The survey was conducted among the group members. The results are as follows:

How do you feel about the performance of the team?
In my opinion, the performance of the group was good. The team had clearly identified actionable steps to achieve its goals and planned useful meetings with clear identification of tasks. All team members showed commitment, which can be proved by the fact that each member of the group learned the script by heart and was able to tell it from memory.
I think the team performed well. This is because we researched our topics thoroughly, effectively planned our presentation and rehearsed so that we could present to the best of out abilities.
All in all I am delighted with how our team performed. In my opinion the team reached the end goal which was to present our research of our chosen topic; Robotics how and where they will be used in the future. Nobody had to chase anyone up as we all took this task very seriously and never missed a deadline. I am very pleased with the fact that our whole team memorised a script that we all took part into creating being the questions we asked each other and the responses. I strongly believe we projected our voices in the presentation and transitioned our turns to present very smoothly.
I feel like the team performed quite well. We know each other pretty good and that help a lot in performing well as a team.
Good team management with good presentation results.

Do you think the group was well organzied
I think that the group was well organized in most cases. The group's goals were clearly established, tasks divided and always everyone kept the deadlines. The only organizational problem was the fact that it was very difficult to set the date of meetings convenient for all members. As a result, some of the meetings had to be carried out in an incomplete team.
The group I think has mostly been well organised, with regular meetings definitely helping us keep focused on the task at hand. The only thing that was a problem was scheduling meetings, which ment that sometimes the whole group didn't attend them.
As far as group projects go, I would say our group was well organised. Magda or Denise would book one of the library pods for us to share our ideas and start creating the presentation, this happened every Wednesday at 1pm. However, we didn't always have a full team as members sometimes had to go to work in those hours. All deadlines, objectives and script work was all documented on Trello so nobody was confused what work they had to do whether they showed up or not with labels so everyone knew how urgent their work was.
Using WhatsApp helped a lot in organising the meetings and helping each other with possible problems/questions/announcements that we had.
Trello came very handly in scheduling our work and everything that we've done and what we have to do.
Yes, many meet ups outside of lessons have taken place to prepare for the presentation.

How well do you think the team collaborated?
In general, I think team cooperation was good. Various communication tools were used, such as: trello and WhatsApp. There were no major conflicts. As I said in the previous answer, the only problem was that some of the meetings, especially in the initial planning phase, were held with an incomplete team, so the vision and opinion of all members could not be considered during the allocation of tasks.
On the whole, I think we collaborated well. The use of Trello and Whatsapp definitely helped us communicate and set goals.
Personally, I strongly believe our group collaborated very well. We all had each-other's details, using Trello (as mentioned before) and the Whatsapp application to communicate within one another. We were all understanding when a member couldn't make it to the meeting and we just filled the individual with the required information when we next met.
We had our ups and downs, but we managed them. I can say that the final meeting before group presentation united us as a strong team.
Very well. Also the communicative presentation approach has went well.

8.5 Appendix 5 – LinkedIn profile

https://www.linkedin.com/in/magdalena-smole%C5%84-152861106/

8.6 Appendix 6 – CV

https://ssu-my.sharepoint.com/:b:/g/personal/3smolm28_solent_ac_uk/ERk7WjrrvapNpAT-YKkk4ZwBua9tc5Au_wTEaEBAUd96Ug?e=XQgyuk

8.7 Appendix 7 – Behance Profile

https://www.behance.net/msmolen25857ef

9.References

Bonebright, Denise A. (2010) '40 years of storming: a historical review of Tuckman's model of small group development.', Human Resource Development International. Feb.2010, Vol. 13 Issue 1, 111-120

Gelo, O., Braakmann, D., & Benetka, G. (2008). Quantitative and qualitative research: Beyond the debate. Integrative Psychological & Behavioral Science, 42, 266-290.

Jung, C. G. (1921). Psychological Types. The Collected Works of C. G. Jung, Vol. 6, Bollingen Series XX

Miller, D.(2003). The stages of group development: A retrospective study of dynamic team processes. Canadian Journal of Administrative Sciences 20, no. 2: 121–43.

Myers, I. B. (1962). The Myers-Briggs Type Indicator: Manual (1962). Palo Alto, CA, US: Consulting Psychologists Press.

Rickards, T and Moger, S 2000.: *Creative leadership Processes in Project Team Development: An Alternative to Tuckman's Stage Model,* British Journal of Management, Vol11. 273-283

Schulze, S.(2003). Views of the combination of quantitative and qualitative research approaches. Progressio, 25(2), 8-20.

Sundstrom, E., K. De Meuse and D. Futrell. (1990). Work teams: Applications and effectiveness. *American Psychologist 45,* no. 2: 120-133.

The Personality Page. (2018). Personality Portraits. [online] Available at: https://www.personalitypage.com/html/portraits.html [Accessed 14 Nov. 2018].

Toomela, A. (2008). Variables in psychology: A critique of quantitative psychology. Integrative Psychological & Behavioral Science, 42, 245-265

Tuckman, B. W. (1965), "Development Sequence in Small Groups', *Psychological Bulletin*, 63(6), pp. 384-399

Tuckman, B.W. and M.C. Jensen(1977), 'Stages of Small Group Development Revisited', *Group and Organisational Studies, 2,* pp. 419-427