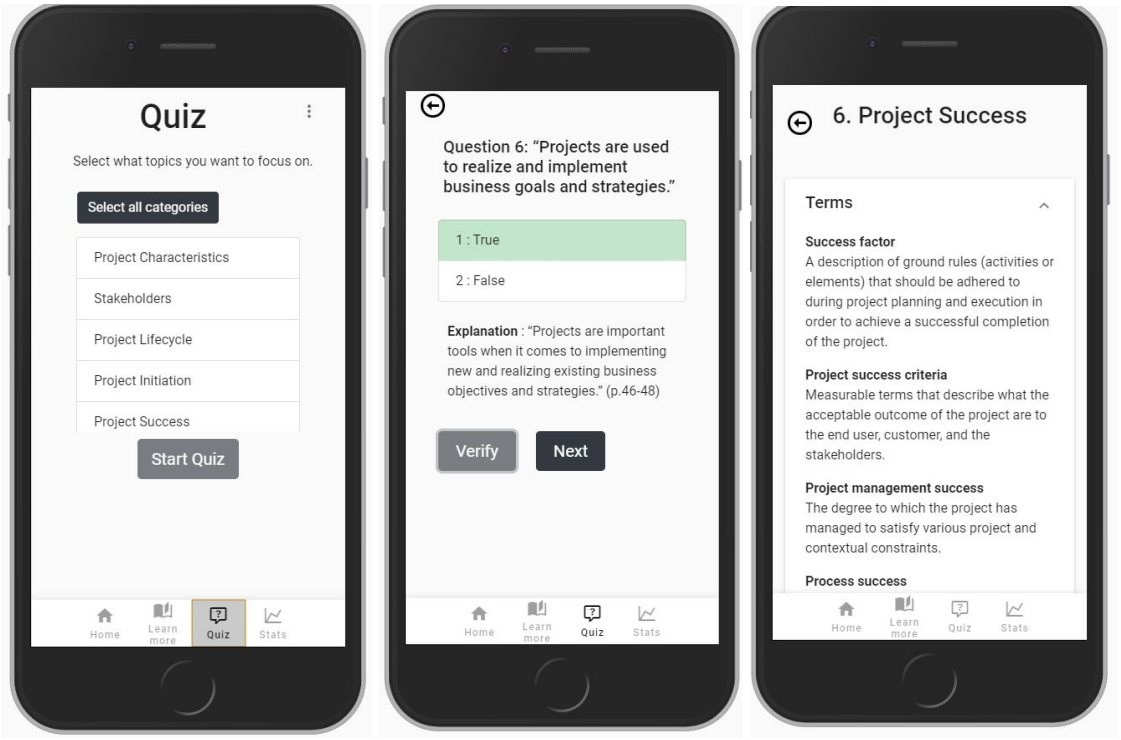
Projectify

An interactive learning app to become a professional in project management



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Preface

The purpose of this report is to evaluate our project: creating Projectify, an interactive learning app in project management. The report discusses common challenges related to digitalization projects and assess our project, in terms of project management, project process and project success. At the end, we conclude with what we have learned throughout the project, that others working on similar projects might find helpful.

We would like to say thank you to all that took their time to complete our surveys, our student assistants for feedback on our project plan, as well as Bassam Husseim, the project owner, for giving us guidance throughout the project.

1. Digitalization projects

Describe your product, its intended purpose and why you have selected to produce this product.

The purpose of the project was to develop a digital learning aid that has a significant positive impact on learning. The group has created a learning application, allowing students to read summaries and term definitions from essential topics within project management. In addition, the users may test their knowledge in the quizzes for each topic. The main motivation for using a web app as the platform for our product is centered around accessibility. As most modern digital devices employs some sort of internet browser, our users will be able to access the product regardless of whether they are using their PC, Mac, tablet or smartphone.

After having the opportunity of working on a small-scale digitalization project, what are, in your opinion, the main challenges that your group has experienced with this type of projects? You should base your statements on your own reflections and preferably support these reflections using project management literature. Scope is 400-600 words (1-2 pages)

After working on a small-scale digitalization project in this project management course, we have gained some experience with the challenges one can encounter in this type of project.

Teamwork and collaboration are important soft factors of project management that have proven to be necessary in order to achieve success in digitalization projects (Ngereja, 2019). When analyzing the results from the initial end-user survey, it became evident that the project group did not convey the technical limitations in the application and with the chosen platform before the survey was created. Some end-users specified that they wanted videos illustrating and explaining the topics. The developer in the project team indicated that this option would take a considerable amount of time, possibly jeopardizing the project deadline. From this challenge, it is possible to derive two missteps we encountered. Firstly, the limitations of the application were not elaborated before involving the end-users within the project group. Secondly, the limitations of the application were not communicated through the survey, giving them a distorted image of the possibilities in the application. The two missteps could have been avoided if the project developer and the rest of the project group elaborated on the technical limitations of the application before creating the survey,

and conveyed the result to the stakeholders. Consequently, one might have been able to obtain more valuable insights from the surveys as they would express the stakeholders' needs and wants subject to project constraints.

Another challenge we faced was to construct and execute a network design that would optimize the project's process. The developer started developing a prototype before the project group took the final decision about the layout and design of the app. This lead to several suggestions regarding changes in the design and layout to be raised after the developer had started to create a prototype. Depending on the extent of the changes suggested, it could take significant time implementing the suggested changes. The challenges could possibly have been avoided by having a more clear set of decision gates.

The project team later on discovered that the textual content did not fit to the screen size intended for the application, and it resulted in a notable amount of time spent on adapting the content. For the project team it was also evident that the quality and learning impact of the content could potentially be reduced when the format of the content needed adaption. This challenge highlights the importance of the content makers being familiar with the format requirements of a digital solution before creating the content, possibly requiring more collaboration to ensure consistency with the needs of the stakeholders and the exploitation of opportunities in comparison with other types of projects.

In light of the imbalance between end users' preferences, project duration and the required format adaption, one may conclude that the digitalization project had several constraints requiring trade-offs. It is therefore relevant to question if the application is a suboptimal solution given the limited time to implement the wants from the participants in the survey. However, the answers from the second survey, where end-users were asked to share their views on the application, imply that the end-users are satisfied with the content in the application, its quality and its significance on learning impact.

2. Self-evaluation of the project management effort in the project, success or failure? And why?

The group should make an overall evaluation of their own project. This is an evaluation of how well the group managed the project, how well was the organization of the project group. How well the group identified and managed risks. Did the group managed to deliver the project results according to your originally stated success criteria (according to your original plan)? Is there any deviations between the stated success criteria and your final evaluation of the project.

Project management success is concerned with the degree to which the project has been able to satisfy the project and contextual constraints. As outlined in the project plan, the constraints surrounding this project were a vital characteristic of the project itself, and included a short timeframe, 0 kr budget and limited digitalization competence within the project team.

The short timeframe of the project was dealt with by the early creation of a schedule, with dated milestones reflecting the most important tasks that were to be handled. This allowed us to gain an overview of the workload and complexity of the project while ensuring continuous progress. Although this proved to be a great advantage in dealing with the time constraint of the project, it also restricted the creativeness of the project group and its ability to receive new ideas from the end users, as the implementation of some features were considered to be infeasible within the deadlines indicated in the plan. The strict budget and limited experience in creating an application put further restrictions on the features and design of the application. In the project planning phase, several risks were identified and measures were created to avoid, mitigate, transfer or accept these risks. Although, most of the measures proved to be efficient, the mitigating action, as well as the severity of technology being out of scope, were evidently underestimated and insufficient. Consequently, desired features such as illustrations and videos were ignored, as we did not have a plan to deal with requests that required extensive time commitment and additional learning and development of our technical skillset. The measure would have been sufficient if the goal was merely to create a functional app, but as the objective was to create a learning tool, additional measures should have been made to deal with this scenario.

Throughout the project, we have organized ourselves using a non-hierarchical structure, with equal formal influence and shared responsibility for project progress. Despite this, the responsibilities and

formal and informal roles of the team members have evolved differently. This facilitated for an effective group dynamic, maintained continuous progress and kept the workload relatively steady throughout the project. We decided to take advantage of the skills and capabilities that one of our team members had from computer programming, who became the project's developer. The others gathered qualitative data through surveys and wrote the content of the application, thus shared the responsibility for the lion's share of the learning outcome of the application. We developed good routines and were frequently communicating our concerns for the project, in order to manage possible risks. The final product was constructed using an iterative development process, where feedback was given at the group's weekly meetings.

Although the project group faced some challenges related to the technicalities of the application, the project can be considered as a project management success, as the project was completed on time and according to budget. The application met the functional and contextual requirements that we as a group decided upon, thereby fulfilling several of the success criteria defined in the planning phase of the project.

Based on these observations we evaluate our project as successful.

Scale	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Your response				X	

3. Self-evaluation of the value to the learners

Describe your target audience and the learning objectives of your product.

The purpose of the project was to develop a digital learning aid with a significant positive impact on learning regarding project management. The intended outcome was to deliver a functional product that students would want to use and would improve their overall learning experience. In light of this, we decided to develop an interactive, educational web app. As the content of the app was to be related to project management, the target audience was current and future students in the subject TPK5100. We chose to base the content on the curriculum of this subject and designed it for high

exam relevance. In the project plan, we presented the intended learning outcome for the various stakeholder groups, herein the end-users. This will be analyzed in this chapter.

A description of the method used to evaluate the final product.

To evaluate our product, we made a survey to gather feedback through peer-review. The result from the product survey was compared to the stakeholder survey that was executed in the initial phase of the project. By using this as a baseline, we were able to compare the needs with the produced output and this way assess the achievement of our success factors. In addition, an internal review was made to both gather experience and to evaluate learning outcome from the team process in the project. This was done as an oral discussion in one of the final meetings, where learning experiences from all aspects of the project were assessed. In the meta-perspective, where the project was implemented as a learning tool in TPK5100, the project team members are the end-users. Therefore our evaluation will also be addressed in this chapter.

The number of informants who have contributed to the evaluation, and how these informants have been selected.

The number of respondents to the app review was 26, while 29 respondents completed the initial survey. The initial survey was sent to students for whom it was considered relevant and posted in a number of facebook-groups for students with some level of project management related to their degree. The review-survey was posted on Blackboard by the professor on our behalf, to reach the enrolled students. For the review, we wanted to seek out experts in addition to the expected end-users. Therefore, a number of project managers, consultants and former students of the course were asked to complete the review as well, to give expert assessment on the relevance for both the project management profession and the curriculum/exam.

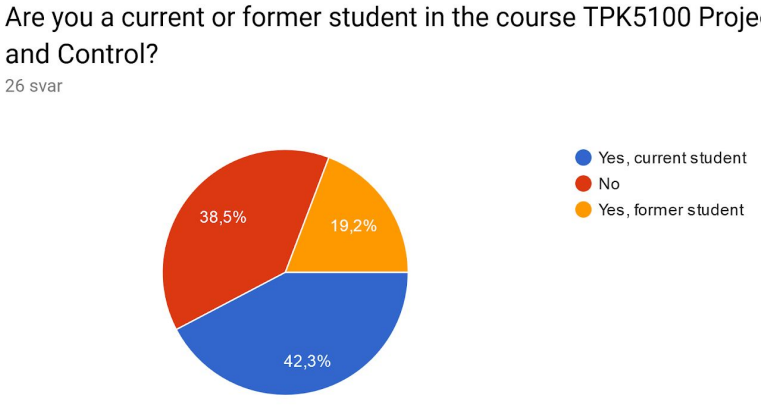

Figure 1: Distribution of respondents.

One issue we came across when analysing the results, was the ratio of currently enrolled students to the expert segment. The distribution is shown in figure 1. Ideally, we envisioned only a few experts as quality assurance, but the expert segment proved more willing to test the application than the students, resulting in a more even distribution. Still, we consider all the respondents' assessments to be valuable, and do not believe the experts' assessment of learning outcomes and relevance is far from the students' own, despite little knowledge of the selected curriculum. In addition, the previously enrolled students made up 19,2 % of the respondents and could be considered to have a foot in both camps.

Results of tests, surveys or interviews with students or persons who have reviewed the final product.

The expected learning outcomes were established in the initial phase and presented in the project plan, and will be used as a basis for the analysis. The outcomes were allocated to specific stakeholder groups and the possibility of cross effects and ripple effects were taken into account.

Users: students and other end-users

- Increased understanding of the characteristics of a project and how it should be managed in order to achieve success.
- Acquisition of knowledge, skills and general competencies that are considered to be essential in the course “TPK5100 Applied Project Management” during the fall of 2019.

In order to achieve the purpose of major impact on learning, getting students to actually use the application was a prerequisite for success. An important question in the review was therefore if the respondents would use it as a learning tool to learn about project management and/or prepare for the exam.

The response was positive, with a majority, 53,8 %, answering ‘Yes’. Only 7,7 % answered ‘No’. Considering the narrow scope and that the initial survey indicated solving old exams as the dominant study technique, this can be considered as a sign that the quality, accessibility and content of our application is largely appreciated. 24 out of 26 respondents rated the quality of the content as a 4 or 5 on a scale from 1 to 5, with 1 being very bad and 5 being very good. In the following question, where the respondents rated the relevance from 1, being not the right type of content, to 5, being excellent content, 20 out of 26 respondents gave a rating of 4 or 5. We consider these great results, especially considering the amount of respondents being professionals and therefore not directly related to the course, nor its curriculum.

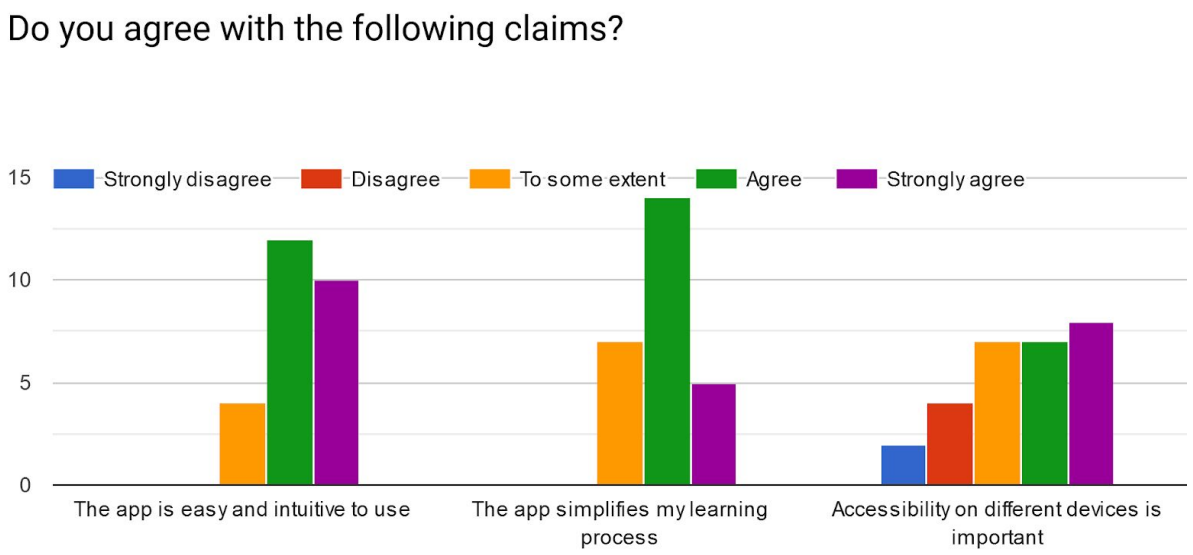

Figure 4: The feedback on user-friendliness and learning simplification was only positive. Accessibility on different devices was considered less important.

Comments on the best features of the app mainly revolved around being easy, orderly and intuitive to use. Some respondents also showed appreciation for statistics and explanations on the quizzes, while others commented that they found the content to be satisfactory. An important question, shown in figure 4, made it clear that the respondents believed the application simplified their learning process. On this note, we conclude the user objectives as fulfilled.

Please evaluate the degree of your support to the following statement (group-based evaluation)

In the project review, we specifically asked for what the respondents considered to be strengths and weaknesses. The strengths have already been presented. As for the weaknesses, user feedback mainly revolved around the application's visual design, being quite simple, a necessary tradeoff given the project's strict constraints. A few comments also pointed to bugs or flaws, such as the back button not working properly, but these were immediately handled. The project team considers it a weakness of apps in general that the content has to be customized to fit the interface, thereby limiting the type of content, possibly affecting its quality and impact on learning outcome. However, a learning application like ours is to be considered as a learning aid rather than a replacement of the existing curriculum and teaching methods, such as lectures and assignments. Even though there are flaws and weaknesses to our application, the quality of the existing content is high. Therefore, we consider Projectify as a good tool and would recommend it as a learning aid.

	"Our product is of high quality and we recommend it to be used as a learning aid in project management"				
Scale	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Your response				**X**	

4. Factors that have contributed to failure / success.

In this section students should list and elaborate on all the factors that they believe have contributed to the success or to problems of their project. Which factor was the most significant and why? Compare your identified factors with the factors listed in (Hussein 2018) pp-92.

Hussein (2018) divides factors contributing to the success of a project into three categories: case-specific, structural and cultural factors. All of these categories are to some extent represented in the success factors defined in our project plan. The factors we defined initially were:

- Develop a project plan that outlines the activities, tasks and timeframes
- Efficient team (implying common goal, mutual dependence, solidarity, mutual trust, motivation and dedication)
- Good communication among group members
- The establishment of a functional group culture
- Troubleshooting expertise
- Access to and expertise in functional technology
- Involvement of end users in the product development
- Effective utilization of the expertise of group members
- Ability to map the requirements of the stakeholders and translate it into functional and process requirements

In order to call our project a success, these factors should to some extent be considered fulfilled, through our work on the project.

Dividing the factors into the categories established by Hussein (2018), expertise within troubleshooting and functional technology could both be considered case-specific factors. These of

course apply to all digitalization projects, but in our case of bigger importance than usual, as most team members lacked knowledge of the technical aspects of the project. As mentioned earlier, only one team member possessed the sufficient programming skills to create the app. However, the technical competence was still sufficient to fulfill these success factors, as was indicated in the end-user reviews.

The development of a thorough project plan was an important structural factor. Deliverables were divided into work packages with dates for deliveries. Apart from a single deliverable, which was delayed by a day, these were all adhered to by all team members. This was however, not a threat for the success of the project, as several extra days were accounted for as a buffer in the original plan. Progress in accordance with the project plan was, among other things, a result of an efficient team working towards a common goal, defined initially. The intended outcome was agreed to be the development of a functional product that students would want to use and would improve their learning experience. By utilizing our members' knowledge and skills in a resourceful way, we managed to make a product we consider as a helpful tool for learning project management. As previously mentioned, we were unable to implement all the desired ideas and functions, but the final review suggests that the product still is satisfactory for our end-users.

Another structural factor was the stakeholder mapping and an analysis of the stakeholders' wants and needs. The mapping revealed that some of our most important stakeholders, in addition to the end-users, were our professor and those responsible for grading our work. The survey and review also allowed the end-users to give feedback; related to learning tools, content and the prototype. This enabled us to make changes underway to customize the product to its purpose and the end-users. The results of which can definitely be seen as successful, based on the previously mentioned end-user feedback.

The last important structural factor defined in our plan, was having good communication among group members. The group met regularly throughout the whole project. As a result, all members present were updated on progress, challenges and ideas. Team members who were unable to meet physically were given updates digitally. However, more formal meeting reports and templates regarding content structure should have been created. Most misconceptions along the project was related to content structure and technical limitations. By formalizing these, several misconceptions

might have been avoided and improved the overall efficiency of the group, freeing up time for other tasks.

Looking at the cultural factors, the group culture was for the main part a result of the openness and trust between the group's members. As we were all mutually dependent and affected by each other's work, this developed naturally from the beginning. It made us avoid limiting the creativity and enthusiasm of the group, which could have led to a decrease in the overall satisfaction of end-users.. Lastly, the environment facilitated quick response time, allowing the group to efficiently deal with both technical and formal challenges. We therefore feel that it is safe to say that the cultural success factors of the project were fulfilled.

The success factors of our project coincide with those extracted from the case studies by Hussein (2018, p. 92). A well conducted planning phase, and loyalty to the decisions made in it, provided us with a predictable execution phase. However, in an attempt to be agile, the group responded to feedback from end-users and problems detected along the way, adapting to them without deviating from the final goal. The team collaborated well, resulting in a good utilization of each member's knowledge and experience. Even though the group might have benefitted from having more members with technical competence, the final product ended up in a way that was satisfactory, both for us as a group, and our end-users.

5. Most important lessons from your project

If you should give clear-cut advice to other students on how they should work on similar projects what you will say to them?

Throughout this project, we have encountered several challenges related to digitalization projects and project management. Based on this experience, we hope to provide others who are planning to work on similar projects with some advice.

When building a learning tool, it is important to early identify the learning objectives, as it enables you to deduce various factors that the product must satisfy in order to be successful. These factors define the identity of the product, providing structure for the project. In a way, the product should be built based on the criterias of the learning objectives. Starting with the product, rather than the

objectives, makes it difficult to reach a satisfactory endpoint, as you will continuously find learning objectives that your initial product idea does not satisfy. This approach is risky, time and resource consuming, and will most likely not fully meet the stakeholders expectations.

Our advice is to create a structured and detailed, written project plan. Our group put a lot of effort into our project plan, which worked to our advantage. Having a complete Work Breakdown Structure (WBS) simplifies the assignment of work packages to team members, while improving communication within the group. Our risk analysis was satisfactory concerning the human and organizational factors of the project, but somewhat lacking in terms of the technical factors of the project. Having a more extensive risk analysis might have better prepared us for technological challenges during the project, improving our overall efficiency.

During the project, we also learned that communication with the end users is an important project success factor. Initially, we wanted case-based questions as part of the app, as we thought that students preferred these types of questions when studying for the exam. The survey however showed that this was not the case. This was a clear indicator of the value of involving stakeholders early in the project, clearing up misconceptions about the desired product.

Our experience concerning digitalization projects suggest that the group should have a thorough discussion regarding the expectations of the project. During the planning phase, we agreed on what kind of effort that was expected by the members, as all of us had high ambitions for the course. The group agreed to create an application as our product, but did not discuss the expectations and constraints of the project explicitly. A consequence of this was that people had different perceptions of how the app would look like. A solution to this issue might be to create a functional layout, before creating the prototype and the content to the application. This could enable the group to determine and agree upon the design and format of the application, earlier in the execution phase.

References

Hussein, B. (2018). The Road to Success: Narratives and Insights from Real-Life Projects, Fagbokforlaget.

Ngereja, B. (2019). Digitalization Projects. *TPK5100 Praktisk Prosjektledelse.* Available from:https://ntnu.blackboard.com/webapps/blackboard/execute/content/file?cmd=view&content_id=_716607_1&course_id=_16098_1 [Accessed: 10.11.201

Hussein, B. A., Pigagaite, G., & Silva, P. P. (2014). Identifying and dealing with complexities in new product and process development projects. Procedia-Social and Behavioral Sciences, 119, 702-710.

Peer-review report

Each group is assigned a peer-review group. The list of the assigned groups is shown in the following table. The table shows for instance that the product produced by group 1 will be reviewed by group 11, and the product produced by group 2 shall be reviewed by group 22.

Before writing this review report, you need first to view/test the product produced by your test group. In your evaluation you should be **objective, fair and use to time to fill in the report.** The grade you assign based on your evaluation **is a guide** to the instructors when they grade the project assignment.

Product produced by Group (Test group)	Shall be Peer-reviewed by group (Peer-review group)
1	11
2	22
4	8
6	5+12
7	4
8	1
9	10
10	12
11	13
12	14
13	15
14	16
15	17
16	18
17	19
18	2
19	20
20	24
22	25
24	26
25	27
26	33
27	34
33	36
34	6
36	7
5+12	9

Your peer-review evaluation report

What is name of the group you are assigned to evaluate: 17

A) Based on your evaluation (as a group) please indicate the strengths and weaknesses of the final product.

Strengths (what are the good things about the product) this might include; the idea, there is a need for that, you believe that the product provide real value to learner, or that the product is of high technical quality (for example excellent video quality)

- In general nice and intuitive illustrations and images (good visuals): good animation
- Calm and clear voiceover
- Good walkthrough of the case
- Provides value for learners that prefer videos over texts

Weaknesses (what are the features in the product, that you believe has impacted negatively your evaluation) that might include quality issues, lack of aiding text, lack of user-friendlyness, tedious, and so on

- Should have been more clear on the lessons from the case. Could have been some text with the key takeaways
- Could have provided additional reflections to provide the viewer with insights that are not described in the book(so that this video would not just be digitalization of a case in the book)
- Could have introduced the relevant theory to give a better understanding of the take-aways.
- Limited scope, not the best learning tool for everyone
- Some illustrations were not relevant to the case and situations i.e robustness/bodybuilder

B) Please evaluate the degree of your support to the following statement (group-based evaluation):

	The product we reviewed is of high quality and we recommend it to be used as learning aid in project management				
Scale	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Your response			X		

C) On a scale from 0 to 10. **What grade would you recommend for this product? 6**

This product can be a supplement to discuss cases in the course. This is supported by the high technical quality, such as a clear voice and nice illustrations. However, some of them were found to be less relevant for the visualisation of the case. Given the limited scope, lack of introduction to the relevant theory and additional reflections about the case and its results, we believe that it might not have a significant impact on learning, and we therefore give the product grade 6.