

## Stage 5: Critical comparative review

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### Part 1: Critical Comparison

In part 1, a benchmark about the two groups' stage 4 reports is conducted to complete the self solution evaluation. The chosen groups are CC04 group 9 and CC04 group 1 (my group this semester). The six main themes, summary, problems and solutions, risk management, stakeholder management, gantt chart and economic viability assessment, are compared and analyzed. Lastly, the short reflection is shown.

#### Summary

**Group 9** states the introduction, problem - a lack of water quality system in Mount Kembla area and solutions - **automated sampling probe, microfluidics paper-based device and community app in detail**.

**Group 1** states the introduction, problem - Illawarra region creek is facing environmental issues and provides solutions in three aspects - **hardware, software and community briefly**.

#### Problems and solutions

**Group 9** mentions two main points of problems, **no qualitative approach to the water quality monitoring system and lowering the entry barrier for the community**. The matched solutions to solve the problem are three, **automated sampling probe, microfluidics paper-based device and community app**. They illustrate automated sampling probe functions, specifications, CAD drawing and its implementation locations (map with red dot). In the microfluidics paper-based device section, functions, specifications and CAD drawings are presented. As for the community app, they demonstrate the demo interfaces with instructions. Finally, the corresponding engineering requirements are listed at the end.

**Group 1** claims three issues, **environment being defiled, a lack of qualitative water quality monitoring system and community engagement** with the corresponding engineering requirements. Solutions are also explained in three dimensions, **hardware** (data logger design with functions, specifications, CAD drawing and implementation locations), **software** (community app interface with instructions and codes) and **tour** (detailed tour plannings).

#### Risk management

**Group 9** provides a rating system for risks - **severity (1 to 5) times likelihood (1 to 5)** first. Then, they demonstrate their risk table in three categories, **internal (project or personal risk), external (uncontrollable risks) and design (prototype and system risks)**

**Group 1** has a different rating system - **potential consequences (not significant to severe) x likelihood (rare to almost certain)**. The risks tables are in three categories, **hardware, software and tour**.

### Stakeholder management

**Group 9** shows the rating system first, then the two tables, **stakeholder register and communication matrix**. Stakeholder register table is about every stakeholders' roles and positions. Communication matrix shows the plan to satisfy those stakeholders with multiple dimension considerations.

**Group 1** shows a **stakeholder register table** about interaction between project and stakeholder with referred engagement level of interest rating system.

### Gantt Chart

**Group 9** interprets a technique from a project management course called **work breakdown structure (WBS)** first. The structure can list all the required tasks with a specific completion date and can also distribute them into **five phases: initiation, planning, executing, monitoring and controlling and closing**. Then, the gantt chart is conducted based on this structure.

**Group 1** divides the tasks into **three phases, hardware, software and tours**. Each phase starts parallelly and a **gant chart is presented in a table**. The unit used to calculate time is month.

### Economic viability assessment

**Group 9** mentions two costs analysis, **budget analysis and bill of materials analysis**. Budget analysis provides an overview cost for each part in the project, and bill of material analysis provides the costs of materials that are used in the project.

**Group 1** breaks down the overall costs into three tables, **initial start-up, yearly cost and revenue**. Each cost is also provided with smaller scale, hardware, software and tour. The profit and time relationship graph is shown at the end.

### Reflection

The overall stage 4 reports from both groups are based on a similar structure given by instructions. Also, they all fit into marking criteria in range of distinction and high distinction. **Group 9** considers and demonstrates more dimensions while presenting their report especially in Stakeholder, Gantt chart and Economic viability assessment parts. For instance, in the gantt chart, they use one structure to support another which makes the gantt chart more liable and reasonable. However, **group 1** provides more visualization of graphs and figures for readers to understand easily and clearly. This improves the user experience during the reading. Finally, **group 9** doesn't smartly use the space of the appendix, hence too many contents are in one section where some of them should be in the appendix.

## Part 2: Self reflection

During semester 2, I was in the CC04 group 1 in the course of ENGG3112 at the University of Sydney. The aim of the course is to design a water quality monitoring system in the Kembla Mount area after reading through the client brief. The whole project is designed to have 5 stages - ideation brief (individual), concept evaluation and team skill analysis (group), system and concept design (group), risk analysis and development plan (group) and critical comparative review (individual).

During stage 2, I wasn't in any team because I had COVID for the first three weeks of the semester when I was supposed to be in a team from week 2. As soon as I realised it, I asked tutors and professor Tom Goldfinch for support, and they assigned me in a group fast. However, I noticed that the team had finished distributing almost all the tasks. So, it was hard for me to get involved in their communications while discussing either tasks or tutorial contents without good communication skills. For example, although I understood most of the content they were discussing, I couldn't clearly express what I wanted in my brain. Luckily, stage 2 completed after they reassigned tasks for each member in messenger (a social application used for group communication). During stage 3, members could choose which part they wanted to do. My part was to complete the 2 page-summary for system and concept. After we completed our own task, one of the members would do the final check to ensure that everything made sense and united as a group. I found that some parts of my paragraph were re-written, and these re-written made more sense and logical than the previous one I did. Lastly during stage 4, my contribution was to complete the hardware design part of the project including sensor specifications and CAD drawing. My part was done just before the due date because I didn't communicate well with my partner - we finalised the specifications for our design at the last minute which we should double check with others early. Good communication skills can cause some positive outcomes in those mentioned cases, 1. People can easily understand your thoughts and then provide feedback for you 2. You can improve efficiency with good communication between you and your partner. Therefore, it's important to have good communication skills.

Communication skills are a set of activities that ultimately make a quality public performance. The skills don't matter how much knowledge the person has, they are a set of methods to transmit the information for one person to another. Therefore, with good communication skills, it is possible for me to improve my relationship with others by letting them understand me or being understood by me and also to effectively manage the interaction between me and organisations. To improve communication skills, speaking up and thinking of different answers are effective for me to improve my communication skills. Firstly, speaking up your thoughts with others can help you practice more with your communication skills because practice makes perfect. Then, the second is thinking of different answers under different circumstances. It helps you to prepare for future conversation or communication with different people frequently. From Google to Apple all use similar techniques to improve their employees' communication skills, this increases the credit to these methods.

Application of communication skills are not only a restraint to the course of ENGG3112, but it can be applied in different places. An example effectively convinces readers to stand by me. When the boss suddenly asks you to present your projects during the meeting, you can attract and perform well with good communications. In conclusion, I will start to improve my communication skills with the methods recommended above through internships or other similar activities.