
Project Audit 3 Feedback

Example Team

Capstone Project Participants
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1 Example Team

1.1 Team Member Contributon

This feedback has been generated from members of your own team.

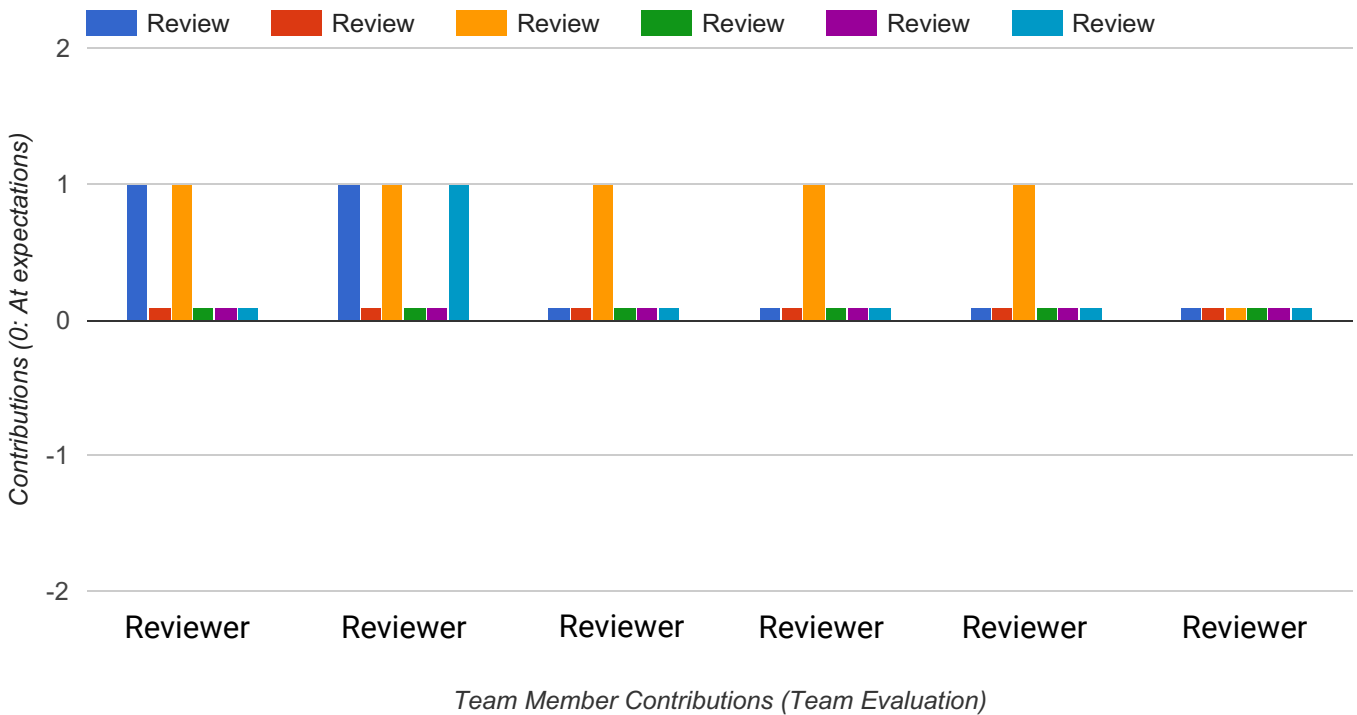


Figure 1: Team Member Contributions

-2: Well below expectations; 0: At expectations; 2: Well above expectations

Agreement is shown with similar values within categories. Individual reviewers are shown with colours.

1.2 Text comments from Team Members

member

The team has been tackling all of its problems one after another very efficiently. The team has been very receptive to feedback and has not been afraid to change its way of doing things. The team’s internal problems are resolved very quickly and, this can be seen during tutorials and audits by observing the team’s composure and confidence in itself. All members of the team have had to work hard to not become complacent with their performance and have dedicated many hours to this project. The has been hindered by infrequent client meetings and issues arising from having a rotating roster of meeting chairs and minute takers. Sometimes the team has wasted time by going off topic during meetings and joking around but that has helped in team building.

member

We have greatly improved and we should be very happy with the project outcomes. We all made a conscious effort to work better and we have been. We actively used feedback to make changes and improve our performance and strategies. The group was very accommodating of shifting workloads.

However, the project isn't over yet, so we need to maintain our pace. Some people might be relaxing a little too soon. We also need to maintain communication standards amongst ourselves and respond to messages in a timely manner.

member

Team performance has been great post-PA2 feedback. Everyone has contributed to the best of their abilities, particularly during the weeks leading up to the outreach workshops. Quality of work has improved as the number of revisions made to project documentation was minimal with minor improvements being made in each refinement. The project can be deemed a success as we have exceeded our client's expectations of solving the azimuth rotation and building an enclosure.

member

Overall the team worked very well together for most of the project. There were definitely cases where someone was overloaded (or underloaded) for a period of time but this was quickly remedied and no long-term overloading occurred. Communication was generally quite good with only very few Slack messages going unnoticed and we did well to quickly address our clients concern with the level of communication by creating weekly updates to send to him. I'm happy to say I enjoyed working with this group and they made ENGN4221 an extremely enjoyable experience and I believe we have delivered a successful product to our client.

Main points of constructive feedback for the team are

- Try to make the flat structure work next time, with a bit more self-discipline the flat-structure might have worked with our team leaving some members more time to focus on technical work rather than managerial work. I believe with the experience we have know a flat-structure would work much better as the team has learned how to work in this sort of environment.
- While we addressed our clients concerns on lack of communication its better if we never let it get to that stage. Moving forward from this project I believe its important that if we take anything away from this projects its to realise the importance of communication with the client and keeping them updated on progress regularly.
- Our project started much slowly than it should have. The team was still getting settled in and while that's only natural we definitely were a bit too slow, this led to a lot of stress at the beginning of the project and caused large workload discrepancies. In future making sure this stage of settling into projects is hastened in order for the real work to begin is a useful take-away from this experience

member

The team has made great progress in working cohesively and effectively together. I think we should be really proud with how we have come together as a team and developed better processes and practices around assigning and managing work. Our use of Planner and Slack is significantly better, and we are doing well at providing honest feedback to each other and feedback regarding our work.

While there has still been some discrepancy in workloads between team members, I think this has largely been due to constraints on people due to work or other courses, and over the past month it has balanced out. Something that would be valuable if we were to repeat this project is mapping out each team members workload throughout the semester, and developing a more detailed project timeline.

In terms of project deliverables, I believe we have far exceeded expectations and have been able to deliver real value to our client. The choice to pursue user validation workshops at the start of the semester was an effective way for us to extend beyond a typical engineering approach. It was also a very important way of ensuring the team collaborated together, as it required a cross-disciplinary approach (both in delivering the workshops, as well as teaching each other about the different sub-systems).

member

we started out ok as a team, but we picked our pace around week 4 or 5. our team communication and ability to work together withincreased drastically. in the beginning, we were having issues with deciding who does what, and gauging who is getting overloaded with work and who is doing less work. but in the following weeks, we were able to solve all these issues. our decision to have one person as a management head made things much easier. we might have had some issues in the beginning but towards the end, everyone was doing exceptionally well.

2 Peer Feedback and Reflection

The quantitative data below is a representation of the average evaluations by role (self, shadow, etc) type. Bars represent the evaluation of the team, lines represent the average from the course.

When interpreting these data, the absolute value is less important than the relative difference between inputs.

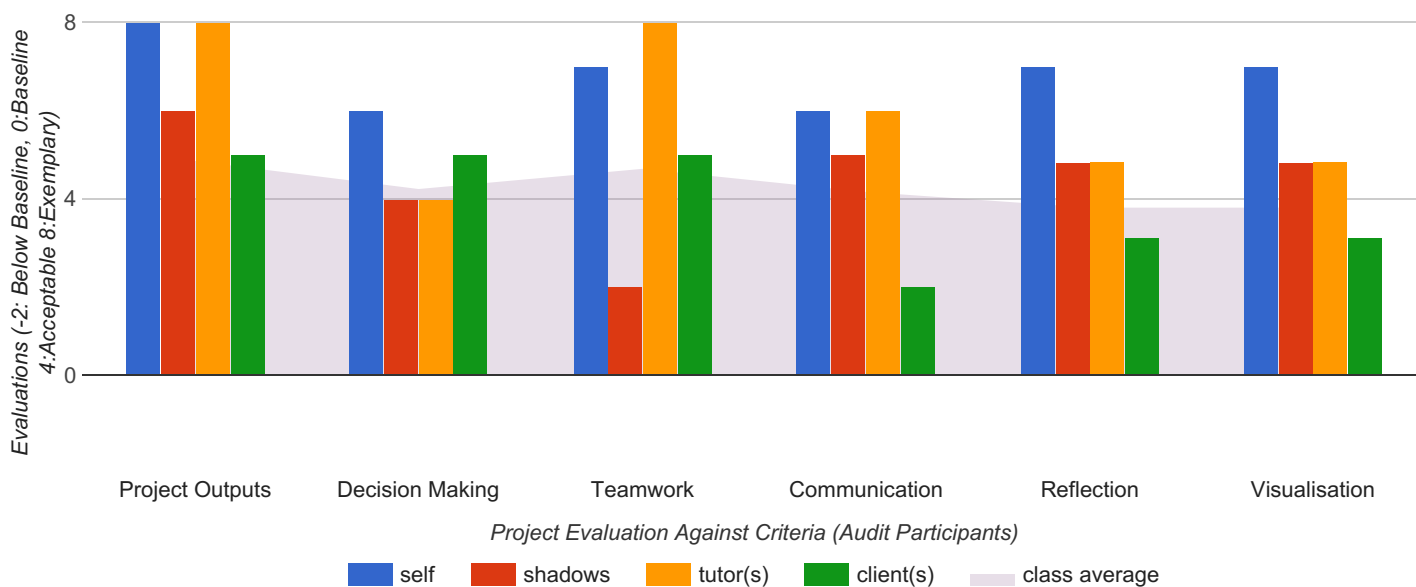


Figure 2: Quantitative evaluation of feedback

Note on calculation: the course average field is calculated as: $\text{ave}(\text{ave}(\text{self}), \text{ave}(\text{shadow}), \text{ave}(\text{tutors}), \text{ave}(\text{client}))$

2.1 Project Output

reviewer I believe we delivered a great final output in terms of a physical device along with supporting documentation for our client and future teams. Some areas for feedback are; - Perhaps our Lessons Learnt document and recommendations document could be combined in order to condense things to make it easier for future teams to navigate. The difference of these documents is understood but the line is a little blurred as they serve similar purposes of guiding the future teams moving forward. - Within the Engn design document a more modular layout for the electronics sections might be beneficial. Having a sub-section for each component and briefly explaining its purpose would give a great over-view of the sub-system.

reviewer I believe that our teamwork related to project output is Exemplary, we have completed everything we declared in our scope in the beginning, and we even went an extra mile to create documents such as Engineering documentation, Recommendation Documentation and a Wiki page for product. we even did product demonstration at schools to provide our client with some real-life product usage data, and to improve product design. and our client was really happy with the final product we presented to him.

reviewer After the recent audit, it is shown that at least one of their model is working. It is commendable that they started the presentation with explanation on why the other models are not working (which is due to quality of the part from

supplier) and they even had a video recording to show that it worked before as a backup plan. The prototype has been tested by several students and feedbacks from the users have been solicited.

reviewer They have a folder named as project output where all the relevant documentation outputs are listed clearly. It was clearly divided into four files which make it easy for other people to see the content. In the engineering design document, there are introduction of each physical part. Those CAD design figure clearly showed the detailed structure of each part. There is little barrier to understand their outcome products. They got a good design of the physical structure including base, table, holders... And I personally appreciate the design of their table legs. That amazing design provide a small size of the top and large size of the bottom and ensured enough space at the bottom to hold the breadboard. Similar to our project, Product also has a webpage interface which need Python installed to operate. From my personal experience, it can be complicated to correctly install and set up python, so maybe a brief instruction of python installation is good. product got a file named as lessons learned which provides good value to the client. Since they going to hand in this project to a future team, it is very important to let the future team to know where things may go wrong. This file will be very helpful for the future team.

2.2 Decision Making

reviewer It took some time to get used to the decision register, but we did record all decisions in the register. All our decisions were done with broad stakeholder engagement where appropriate. We used engineering processes to guide our decisions. For example, for each component purchased, we did thorough research and created documentation that justified each component, providing clear traceability. Crucially, decisions were made in a timely manner. After each audit, we made decisions on what changes were to be made based on feedback given. These decisions were transparent. We found ways to respectfully renegotiate client requirements that would have resulted in lower quality or more expensive projects, balancing the needs of the project. All our decisions were done with the purpose of adding value to the project (choosing a stepper motor that reduced costs or buying PLA to allow for more rapid printing and prototyping.) One of the greatest strengths of our decision making was the workshops we ran with the Primary School and Girl Guides. Early in the project, we decided to run workshops for user testing. This ensured our work proceeded at a reasonable pace. We were able to quickly develop a design that had to be close to finished. The workshops revealed issues which might not have been caught without the deadline of the workshops. The issues resulted in more decisions to be made with a clear justification for changes if and where they were needed. Overall, the decisions around the workshops made for a more valuable project for our client in the end. We perhaps fell short when it came to recording decisions in a timely manner. Sometimes it took a little too long to update the register. I think this is because the register wasn't the most useful tool for us. Unfortunately, we couldn't come up with an alternate method that was more valuable to the team.

reviewer the main reason we decided to grade our decision making as acceptable exemplary was because we didn't update our decision registers at regular intervals. even though we made so many important decisions we didn't show it in the decision register until recently where we updated the decision register. except for this, I believe our decision making was exceptional.

reviewer The team got a decision register where all those decisions are recorded. Information includes title, description, date, status, are well listed. They also got a comment block where explanation of each decision was listed. And there are several links shooting to corresponding meetings to show the source of how this decision was made. The status of decisions are mostly approved by the clients (or team) which shows that client is happy about those decisions, ensure those decisions would not lead to a wrong direction. One thing I think it can be improved is not using these links since these links just go to the corresponding meetings but not to show more details. It still needs viewers to go through the

meeting agenda to find more information of the information. My suggestion is not only putting links to corresponding meetings but also have an explanation about how the decisions are made and what purpose you want to achieve by making those decisions.

2.3 Teamwork

reviewer At the beginning of the project, we had an uneven work distribution. However, over the course of the semester, it has evened out. We did this through recognising individual strengths and weaknesses. Everyone had responsibility at some point during the project which meant that we were able to distribute workloads more fairly and ensure best possible project outputs. We also established a team vision that we were all working towards. We embraced our initial failures as an opportunity to improve our teamwork. Using Planner helped us to overcome some hurdles and reexamine our teamwork. No one person remained a specialist or in their initial role. The sub-teams at the beginning of the project meshed together for a single, unified, transdisciplinary team. Evidence of this is at the stage where we were preparing for the Workshops, everyone had to learn and understand every aspect of the the product. There was little room for error. The success of the workshops depended on individual team members having confidence in their knowledge of the product. I am confident that we transcended disciplinary boundaries. Everyone learned something new from learning CAD and 3D printing for the first time, or how to run effective workshops. New skills were developed, and we supported each other through those processes. If there was anything that could have been improved, it was perhaps our engagement with experts. We did receive guidance from several experts (outreach, 3D printing etc.), but we might have waited a little bit too long to reach out. For example, we spent valuable time trying to find solutions by ourselves when experts were available to us. However, this was not detrimental to the success of the project.

reviewer The teamwork of our has continuously improved since PA2. Better use of the planner improved productivity during the weeks leading up to the outreach workshops as all members were able to monitor the progress of all other members. All team members monitored the tasks being completed by other members and offered assistance when tasks were falling behind schedule. An improvement in teamwork could be to distribute the workload a little more evenly to ensure that everyone has a similar workload to manage.

reviewer Firstly, I would like to congratulate the team as I believe that since the first audit where teamwork appeared to be lacking there has been a dramatic change and the team appears to be working with each other much better. This is even obvious comparing between audit 3 and audit 2. The unequal distribution of work appears to still exist but this is reflected in the project contributions and leads to what I believe and hope each team member sees as being a fair project where the team members are valued. Congratulations on running the outreach night and from it looks like the night gave your project a lot more substance. Please find a list below of my observations that I believe are important to your team: The student that recommended that the dome should look like the night sky and the product could look like a shooting star is onto something! I do understand the client likes the product but I really think you could make the argument to him that it would improve the design and improve outreach with schools. I could not seem to find any feedback that was directly from the teacher? Might just have been rolled into the raw feedback forms. The project is wrapping up now but I would love to hear what the team sees the long term plan for the is rather than just focusing on future projects. Strategy is only 50 compared to execution 95 but that strategy can be interesting and visionary and help drive future teams towards an amazing outcome. Is mass manufacturing a possibility? Could this be deployed in all schools? If not, could this device be incorporated in either existing university societies such as Robogals? Robogals or similar societies might be willing to buy a few products in order to be able to expand the types of workshops they are running. Could a future project look at expanding the options for tracking? I think something that the team has missed a little that would have been helpful

but is worth keeping in mind for any future project is the importance of mentors in the field. Meeting minutes appear quite good and indicate a strong number of meetings with reasonable notes taken for each of them. I do notice that there appears to be no meetings with the client recently but presenting him with the spray painted dome is going to make him super excited. Simplify your feedback into your handover documentation and focus on lessons learnt there is a lot of information on your workshop and you what to ensure future teams understand your points you do not want them to miss. The instructions should look like LEGO instructions. Bright colourful pictures designed to get kids excited about building something! Since my last piece of feedback I wanted to note that you responded incredibly well to my feedback and I hope you do well in your response to feedback to criterion. In particular: - Your teamwork improved - Your focus on prototyping quickly was much better - You ran your outreach events and talked to Robogals The only piece of feedback that was not followed was trying to form a mentor network but this is understandably a hard one.

2.4 Communication

reviewer Communication within the team as well as the communication between the shadows and the tutor have improved significantly after PA2. The weekly updates sent out by email to all stakeholders were useful for tracking progress. Active feedback was asked from shadows and tutors to review new progress made within the team. An improvement that could be made is to have a quick skype meeting with our client earlier in the week to better engage the team with them.

reviewer Originally and in audit 2 your team identified that communication was one of the hardest problems for the project. I think that is often the case and that your team has done an excellent job to improve internally on this front, at least from the outside. Also reaching out to your stakeholders appears to have been successful with your team actually engaging with schools during your outreach. Important Stakeholders In the second audit one member of your team identified Chris Browne as the main stakeholder that you needed to engage with and I do not necessarily agree with that. I think the most important stakeholders are your client and any stakeholders that are directly involved in your project. I guess I look at this like a company which means the following: - Your internal team is the project team working on the project - The shadows are fellow team members who are just working on different projects but can be called on for help. - Your tutor is your manager who is meeting with regularly and directly overseeing the project. - Chris is the big boss, the one who steps in when things are going badly but otherwise does not know or want to know the exact semantics of your project. Apart from general interest. My personal opinion on this is that your most important stakeholder is your client followed by over experts who can help you with your project which in this case includes outreach groups, schools and community groups. Handover Documentation The number of different handover items that you are preparing is great but I would be careful that you think of a new team coming in and being overwhelmed by what they can read. I think the handover document itself should be obvious and make reference out to the various different other files you have created. Essentially I would recommend that unless the new team is looking for detail then handover document by itself is enough to get them up to speed on the project. Meetings Your team seems to be meeting often and that is reflected by your teams improved communication and cohesion. I have noticed however that according to your minutes it does not look like you have met with your client recently? I am sure you have been communicating with him but I would just keep this in mind. Involving shadow team Your team could improve communication with the shadow team by encouraging them to give more feedback during meetings and raising problems more than raising outputs as this will give more opportunity for feedback. Lately, it has been good that Jordan has been putting out the emails to receive feedback unfortunately it is the busiest time of semester and so the least likely time for people to be able to respond and provide a hand. The latest on the poster is very good here are my two cents of feedback on the poster: - Your wiki can also include prices and links to the rest of the items in your bill off materials (aka what you need to make the device). It would be great to be able to take a list along to Jaycar and get all the gear not just get the designs for the 3D print. That would truly enable someone to build at

home easily without needing to have a good understanding on an optointerruptor for example. - Same idea but can you link the software for download to again enable ease of use for someone wanting to try at home. - It would be great to know what the positive feedback you received from outreach was as that is a major part of the project. - Can you put the cost in a pretty circle or graphic somewhere on your poster? I believe it should cost less than your goal \$80 so it would be good to show that you met that goal and that also again give an idea of its applicability to people just trying to build one at home.

reviewer Their communication within the team seemed strong. In the audit they mentioned trying to increase their communication frequency with their client. I think this would be beneficial for the team, and furthering the goals of this project.

2.5 Reflection

reviewer This has been one of the team's greatest strengths. Members have meticulously gone through feedback from past audits and made documents classifying and responding to feedback in their repository. The team has made design changes by taking into consideration the recommendations of shadows and the client. The team has also changed their poster design after receiving constructive feedback from the tutor. The team has gone an extra mile by incorporating user testing and validation in the project scope. The team has successfully tested their design and documentation at 2 workshops conducted by a few members of the team. Feedback from these workshops has also been compiled and finalized. The team also consulted with external sources (Makerspace mentors, RoboGals) to help design the 3D body and the workshops. A few members of the team have been very vocal as shadows and have helped their shadow teams by re-evaluating their choices, and considering new possibilities.

reviewer I think the team's response to feedback and incorporation has been an important area of growth for everyone. Towards the start of the project, we behaved fairly defensive in response to constructive criticism or feedback, which was not at all useful for anyone. In one of our meetings before the mid-semester break, we decided a strategy to address this was to record all feedback we receive and constructively discuss in our team meetings, which allowed us to take the time to consider and respond to feedback. Since PA2, we have also made sure to ask for feedback explicitly when we believe we need it, which has been useful for our poster and final project outputs. Overall, I believe this improvement has been very strong, and has reflected in the quality of work our team has delivered. The feedback we have received has been fairly and equally reviewed in team meetings, and documented through our feedback registers (for PA1 and PA2), with follow up action where appropriate in Planner. We have acted well on feedback both explicit and implicit, for example implicit feedback when our client rated us lower than we expected for communication, which led us to create weekly feedback documents and ensure we were more active with him on Slack. In project audits, tutor meetings, and client meetings, we are significantly more receptive and engaging with feedback we receive. However, I think one area we could have improved is through utilising our shadows more in the review process. Within the team, we had a strong discipline of reviewing each others work, which is something we could have involved our shadows in. While we did this with the poster, there was other work where this would have been useful, such as our stepper motor evaluation document. I believe our team has played an active role in supporting our shadow teams, however I believe not all team members engaged as much (or gave as much detail in feedback) as they could have, which we should have improved on. We discussed this as a team several times throughout the semester, however the engagement during tutorials still could have been stronger.

reviewer I think the team has implemented much of the Audit 2 feedback as seen by the change in colour of the device. Their attention to detail with the responses given by their demonstrative workshops should contribute majorly to the next iterations and changes in the future of this project. The team can improve in simplifying the wording of their instruction manual so that it is easier to build the device.

2.6 Visualisation

reviewer The poster follows a very similar format as the Audit 3 presentation. The poster breaks down the team's work and uses images and models to show the team's progress. Since a working prototype will be present at the showcase, the team will be able to physically show their design and demonstrate their progress. The poster also has a QR code which audiences can use to get more information on the project. The poster follows a simple logical flow and is easy to read. Information is very succinct and goes over motivations and outcomes of the team's work.

reviewer I believe our poster turned out great with it having a clear structure, colour scheme and a nice mix of text and figures. Minimal white space is present but the poster is not so condensed that the view is thrown off. Main points of feedback are; - very minor but the arrow from the central real-life photo of the device to the electronics is orange and blends into the outline of the central photo, perhaps another colour within our colour scheme with a bit more contrast to the orange would have been a better choice for that arrow. - Currently both photos of the outreach workshops are from our time with girl guides but we also had some great photos from Frasier primary. The group photo taken at Frasier primary I believe would've been a really nice addition to the poster. - Figure3 would be a bit clearer if the CAD model of the stepper motor is removed. It is not part of the mechanical system and is blocking the full view of the table.

reviewer The poster has been designed through collaboration amongst the entire team, as well as seeking feedback from our client, shadows, and tutor. This has been a very valuable process, and the poster has drastically improved. For the poster and poster presentation, we chose to paint the product in colours that would make it more attractive and engaging, which we also decided would be important for our client who wishes to showcase our final design. We also spent quite a long time ensuring we took good quality photographs of our design at Mt Stromlo (giving it context!) for the poster, which has been effective in providing a clean and visually compelling look. The choice of colours and theme have been consistent across all output documents to match the product colour scheme, and that is no different for the poster. While the aim of the poster is to convey the work we have done over the past semester, it was important to ensure we kept in mind this was an outreach/educational device and so we wanted to avoid too much of an academic look. I think the team has achieved this very well. The logical flow of the poster is well thought out and conveys the major elements of this project in a clear manner. The use of additional colours to separate themes, at the suggestion of our tutor, was a very useful one and guides the reader down the page. While the project is for an outreach/educational device, it is important to keep in mind that the poster is about what we have done, not just about the project. As such, it was important that we strike a balance between engaging for a non-technical audience, while still discussing the work (technical and otherwise) that the team has completed. I believe we have achieved this very well.

reviewer The team has always been clear and precise with their documentations (problem scoping, recognising stakeholders, design documents, etc.), progress in the project were either on time or completed before its intended date. Their progress updates on the repository is always kept up to date. Repository is well labelled and documents can be found in folders which I expect them to be. Prototype has been demonstrated to work during the last audit and they even had a video of it.

3 Tutor and Client Feedback

3.1 Aspects Done Well

Matthew Patrzalek ProjectOutputs Good to see the iterated prototypes and real-world user testing and validation - Girl Guides and the school DecisionMaking Good to see the broad stakeholder engagement. Teamwork It was good to see that the roles within the team evolved during the project and you engaged people with expertise in outreach programs. The end results were noticeable. Also, it was good to see that each member supported one another to develop new skills in 3D printing and the outreach program. Communication It was good to see the team members communicating and listening with outside audiences and engaged with new audiences for the outreach program. Feedback It was good to see that you constructed processes to gain external validation for the outreach aspect including additional review processes in the tutorials, seeing help on the outreach aspects and conducting two different outreach sessions. Poster Your poster builds a strong narrative, appeals to a broad audience as it is simple and easy to read. The poster also enables further opportunities and understanding by providing links for new audiences.

client The team has shown excellent initiative in approaching external groups to evaluate their work, and has approached the project with a “big picture” view, which is excellent. Technical progress has also been very good.

3.2 Aspects To Improve

Matthew Patrzalek ProjectOutputs No suggestion as your outputs were great. DecisionMaking The design could have been improved if you had of been able to obtain advisory boards and/or reference groups for parts of your design. Teamwork At the start you were not working well as a team but this changed and you all worked as a team which showed in your results. If you had of worked as a team soon then your results might have been even better. Communication As pointed out in the feedback from the client from Audit 2, you could have developed a better strategy with communicating with your client which would have facilitated better communication between the team and client. It is noted that a weekly update was implemented between Audit 2 and the finalisation of the project. Feedback Some of the feedback was undertaken a little bit later than expected at the start but this improved a lot throughout the project. Poster Have already been made on the poster for some minor improvements.

client Communication channels with the group have been a little quiet at times. Luckily for me, the team has operated autonomously with great success, so this has not been a big problem.

4 Changelog

2018-10-14:

- updated client feedback data
- added visualisation into the graph
- removed extraneous html which was causing conversion problems

2018-10-13:

- initial upload