# Report

## Of the AC2022 Project Round Committee

## Together with

## The Practical Observation Judges

## On Participant Performance

## In the Project Round

## And

## The Night Sky Tour Question.

The Project Round Setting and Marking Committee sat on two whole days on the 2nd June 2022 and the 5th June 2022 to review all Project Round submissions. Together with the Practical Observation Judges, the committee had also reviewed all the Night Sky Tour submissions. The scores were also graded such that a fixed bench of graders would give scores for videos for each category. Thereafter, the scores were averaged out. There were 15 Graders for each Senior Section video, 17 for each Junior Section video and 18 for each Night Sky Tour Video.

## General Comments:

It would be good if all teams can indicate the question number they attempted somewhere. For most teams, identifying the question answered is not a problem. However, for some confusing ones, it would be.

1. **On-Time Rate**

The On Time rate for the project round this year was significantly better than last year. There were only a minority of teams who submitted late and most of them were submitted on the same day.

2. **Deduction Rate**

Generally, the deduction rate for this year is also significantly improved. Other than a few cases of plagiarism, there were only 3 teams who submitted the project without subtitles. Furthermore, one team submitted a video which was 5 minutes over the time limit, late and did not have subtitles.

3. **Non-submission rate**

Generally, 6 teams did not submit the project round from the senior section and 2 from the junior section. This is a drastic improvement from last year. 2 Schools have also refused to submit their Night Sky Tours.

4. **Video Quality**

The video quality did improve over last year. The committee saw significant improvement in creativity in making the video.

5. **Exemplary Videos**

The committee would like to commend the Best Project Videos (NYGH/3 and EJC/1), as well as the QM's pick (NYGH/2 from Junior).

In addition to the above, the videos by VJC/3 (stop-motion), VJC/1 (for humorous acting to illustrate the constellation stories) from the Senior Category were commendable. From the Junior Category, RI/2 stood out for their animation and accurate content. The committee would like to encourage these teams to keep up the good work.

## Question-by-Question

**Question 1**

**Advertise your astronomy/science club to your schoolmates**

This question was not attempted.

**Question 2**

**A member of the public asks what is astronomy about. Give an introductory talk on the topic**

1 Senior and 1 Junior team did this. The Junior team managed to get best project. Generally, the committee felt that this is a good question to attempt and there's a lot to talk about. However, a lecture format would not be good for a member of the public.

**Question 3**

**Describe how an ancient civilization understood the sky and celestial objects. What are some of their key constellations/asterisms and their cultural significance?**

This was an extremely popular question. 4 Senior and 3 Juniors tried this. We expected slightly more content for this topic sadly for most teams. Furthermore, it was strange that most people ended up choosing Babylon and Egypt when there were, in our opinion, slightly easier alternatives. Only one other civilization was chosen: Greece.

**Question 4**

**Discuss some of the methods of generating power in space.**

There was only one attempt at this question and in the committee's opinion, this is one of the easier questions. There is plenty to talk about. In fact, the team who did this got the best project.

**Question 5**

**Explain some of the key methods of detecting exoplanets**

2 Junior and 2 Senior Teams tried this question. There were a few with content errors such as the error in the depiction of orbits. Other videos generally suffered from a lack of content. Other than that, this question was not that bad.

**Question 6**

**Find and explain a piece of space technology that is developed in Singapore.**

No one tried this question. This question was meant for teams to research on how Singapore has contributed to astronomy and by extension, find out if your future in astronomy is viable in Singapore.

**Question 7**

**Give an introduction to an upcoming or existing space telescope.**

3 Senior Teams and 1 Junior Team attempted this question. It was not surprising that the JWST was the most popular telescope of choice. However, many teams who did JWST generally did not do particularly well due to a lack in depth of content about the telescope itself. Furthermore, teams tried to give a blanket coverage of more than one space telescope. This was not what the question wanted. The other scope chosen was Xuntian (the upcoming Chinese Space Telescope).

**Question 8**

**How do astronomers accurately measure long distances in space?**

Only one senior team tried this. The Committee hoped for a slightly better presentation for the video. For that, because the graders could not catch certain parts, the content scores suffered as well.

**Question 9**

**How do you know the identity of a moving but unidentified light in the night sky?**

Only one senior team tried this. The animations were nice and the content was not too bad. For some reason however, irrelevant content such as objects which do not move in the night sky was added. There was also

a lack of evaluation of objects which do move in the night sky, such as planes. Despite the summary given at the end, the content suffered.

**Question 10**

**How were the elements we know created?**

One Senior team and 3 Junior teams tried this. It was generally done alright. However, some teams made the mistake of trying to cram everything into a short amount of time. This would not be conducive for the general public. Furthermore, there appears to be a misconception in the mechanisms of the Proton-Proton chain.

**Question 11**

**How would one learn astrophotography from scratch and what could he expect to take?**

Only one Senior team tried this. Apart from the irrelevant bits at the front, it was alright.

**Question 12**

**In your opinion, what is the most interesting place in the Milky Way that we know of? Explain your answer.**

Only one Senior team tried this. The point of the question was to ask what is the most interesting place and to justify it. Implicitly, this question requires a justification that is unique for this location (or at least, a justification that is not broadly applicable to many other places in the Milky Way). Unfortunately, the team that attempted this question failed to provide such a justification.

**Question 13**

**Introduce one potential future mission to search for extra-terrestrial life in our Solar System.**

2 Junior teams tried this question. It is important to note that teams should avoid making edit errors in their videos, such as overlaying images on top of speakers. Other than that, the committee expected more content generally for this question.

**Question 14**

**Show how you would use only the stars to find your way around.**

Only one Senior team attempted this question. This question was supposed to be easy. However, the team who attempted this question did not understand it fully. The Committee expected something along the lines of a mini-night sky tour but slightly more open-ended.

**Question 15**

**What are neutron stars and what do we know about them?**

This was a popular question. 4 Senior and 2 Junior teams attempted this. A common problem for teams who attempted this question is the lack of content and/or explanation into what goes on within the neutron star.

**Question 16**

**What are some common features of galaxies that we can identify in the cosmos?**

Only one Senior team attempted this question. The committee found that a lot of the content was touch and go.

**Question 17**

**What are stars and how do they work? What happens to them in the far future?**

4 Senior and 3 Junior teams attempted this question. It was extremely popular. Teams generally did alright. Similar to Question 10, many schools displayed a misunderstanding of the Proton-Proton chain for some reason.

**Question 18**

**What are Trojan asteroids and what is their significance?**

Only one Junior Team did this question. Teams are reminded not to make the background music too loud. This might prevent certain content from being heard clearly.

**Question 19**

**What is the cosmic microwave background and what can we infer from it?**

1 Senior and 1 Junior team attempted this. Teams generally did alright.

**Question 20**

**What roles did astronomy play in the history of science? How do advances in science and technology benefit astronomy?**

2 Senior and 2 Junior teams attempted this. Some teams suffered a problem of having their content haphazardly organized. Other than that, there was nothing of note.

**Night Sky Tour**

**(Refer to the Question Paper)**

Generally, the committee felt that better use of the scopes and stuff were needed. Some teams resorted to just zooming-in as though the person simply zoomed in using eye-power. As mentioned in the post mortem, reading off catalogue numbers, confusing instructions to "turn clockwise" and speaking at breakneck speed would not help in your content. On the other hand, taking it slowly and making it actually seem like a tour helps immensely.

One other major bugbear that the committee had was teams failing to adhere to instructions. In particular, no one noticed the instructions for the ground setting. Many also did not turn off star names or constellation lines.

The committee would like to remind all that this Night Sky Tour was meant to be made as realistic as possible. For instance, some teams left permanent lines on the screen. While the question paper did not explicitly forbid that and you are provided with a laser, lasers do not "leave permanent lines" in the night sky. The committee suggests that teams use the mouse pointer as a substitute for a laser pointer for future

such cases. Additionally, a few of you paused the time and one of you did time-hopping instead. The committee does not believe that to be realistic in an actual Night Sky Tour either.

The committee would like to applaud NJC's Night Sky Tour. In addition, the committee would like to recognize EJC's Night Sky Tour despite it having lines drawn on the screen. While the above named are not perfect, the committee believes it to be a model which all of us can learn and improve from.

--AC2022 Project Round Committee and Practical Observation Judges

| Full Members | Additional Members |
|---|---|
| Sim Yu Yang (Chairman)<br>Nicholas Phung<br>Lim Kia Yee<br>Nicholas Tan<br>Khoh Yek How<br>Chia Zonglin<br>Julia Han<br>Brendan Lim<br>Fong Ken Rui | Chen Jiaqi<br>Jessica Wu<br>Lim Yining<br>Joycelyn Kwok<br>Ivy Teo<br>Lee Tze Han<br>Sidharth Chambocheri Veetil<br>Deng Fei Fan<br>Arnav Aggarwal<br>Ng An Tong<br>Tham Kai Wen<br>Glen Goh |

Post Scripts:

The Best Projects, QM's pick and Best NST has been uploaded onto YouTube.

AC2022: https://www.youtube.com/playlist?list=PL4D1vlGOY45tOwKr4RIaqG8Ow3N-trFzg

If you would like to have your video featured as well, do write to us for consideration.

For a complete Namelist of committee members, please refer to the website under Past Committees.