

STEM education 10

Eden

5-senses motor car

Project introduction

The vision of our project is to **encourage students to innovate and raise the student's interest towards STEM**. In order to achieve our vision, we would like students to acquire basic programming skills for 3D printing and utilize their skills to solve different problems throughout our activities, where students are required to apply their STEM knowledge on assembling a **motor car** to perform various tasks.

Design rationale

- A platform for students to create, to apply what they have learnt and to integrate ideas
- Consolidating students' learning, particularly, in integrated science as well as their experience in working with the 3D printer

WE HOPE TO ACHIEVE THE FOLLOWING OBJECTIVES IN THE WORKSHOP

Knowledge:

1. Assemble their own motor car with the given material
2. Apply the 3D technology to create the useful component for the motor car
3. Intergrate the element of a living thing into the motor car
4. Suggest the appropriate methods to **resemble the 5 sense in the motor car**

Skills:

1. Figure out multiple solutions to solve the problem (problem-solving skills)
2. Communicate and collaborate with teammates appropriately (communication and collaboration skills)
3. Formulate appropriate coding to control the strandbeest (coding skills)

Attitude:

1. Value the importance of technology in the society (e.g. making the 3D organ in the medical field)
2. Appreciate the collaboration of different stream
3. Aware of the advancement in technology (e.g. different coding system and 3D printing technology)

Limitation and difficulties

(a). Complexity

The original design of the workshop is using the strandbeest as the major tool. Yet, with the high complexity of the strandbeest, particularly with a lot of motors, it is really hard to assemble to strandbeest.

The entire plan of the workshop along with the learning objectives needs to be reconsidered. The sudden and critical change is definitely one of the significant difficulties the team encountered.

(b). Availability of material

During the process, we need to test whether different part of materials could be connected such as the wheels. It is because the wrong size and damage of the materials would lead the unfunctional car. To ensure the functioned car, we need to consider the materials used which become one of our difficulties.

(c). Time required for the activities

At first, we decided to design the strandbeest. We have spent few months for the discussion, designing, preparation of materials, producing and testing. During those process, we have spent much time and patient. However, the technical problems forced us to change the products to motor car. We need to spend the extra time for producing the car.

Individual reflections

As a beginner in the STEM education, we definitely learn a lot throughout the process, though it is a tough experience. Not only can we learn from all the hands-on experience, but we can also learn from the partner school. As the STEM development in our partner school grows rapidly, they have tried out different activities, which is brand new to me. Their STEM space is also very impressive to me. Other than learning through observation, learning through hands-on experience, organizing workshops and competition for the students, is obviously meaningful and we can learn a lot.

Conclusion and recommendations

Of course, our product and our group have some space for improvement. More consideration should be given. We should analyze the difficulties, feasibility and the related successful examples more before we started the production. We should also have better time management that finishing different targets on time. Overall, we are satisfied with our process and performance. However, if we want to make better of our products and products in the future, we can have better planning and time management to make the whole process more successful.