St. Mary's Canossian College

Innovative Classroom Charing

Learning and Teaching Expo 2023

Project Title:

A.I. Plant Identification App

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Cross-disciplinary project on Junior Form IS and ICT.

In this presentation, we will explore the implementation, assessment methods, and learning outcomes of our school-based STEM project.

Challenges in Lesson Implementation

1 Time Constraint ⏰

Need to cover the entire curriculum within limited classroom hours

2 Diverse Learners 👥

Different individual needs, learning styles, and abilities of each student

3 Engagement ✋

Maintaining students' engagement throughout the lesson and dealing with distractions can be difficult

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Implementation

1

Enrichment (IS)

Enrich the current IS syllabus with elements of design thinking and innovation.

設計思維及創新

2

Engagement (IS)

Students can apply what they have learnt in IS lessons through the Treasure Hunt. Students also learn about the history, culture, and the people in the school through interviews and Class presentation.

尋寶活動及口頭報告

3

Collaboration (ICT)

Concepts learnt in IS lessons are further extended and linked to ICT lessons. Students are encouraged to create a simple A.I. Plant Identification Model with Teachable Machine.

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4

Innovation (IS + ICT)

Students learn through formative assessments, allowing them to showcase their abilities under the framework and the guidance of teachers. At the same time, self-directed learning is promoted

推廣自主學習

5

Extension

Applying the concepts learnt in other aspects.

Integrated Science

Part 1: Basic Knowledge (during IS lessons)

To identify suitable external features of a living thing for constructing a classification key.

To recognize the use of a classification key.

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Part 2: Treasure Hunt

Make use of the school's environment to engage students in a treasure hunt activity. Students are required find out the names of different trees in the school with the knowledge learnt in IS lessons.

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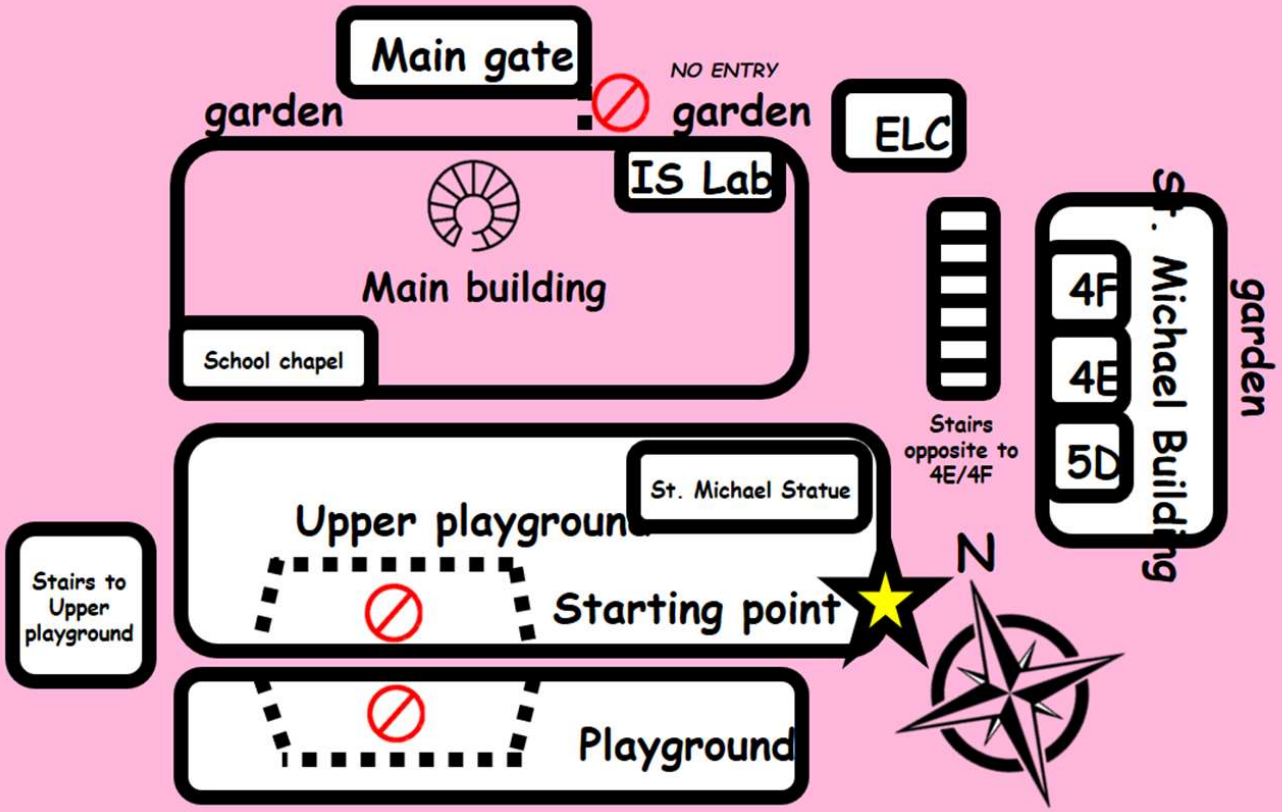
Treasure Map



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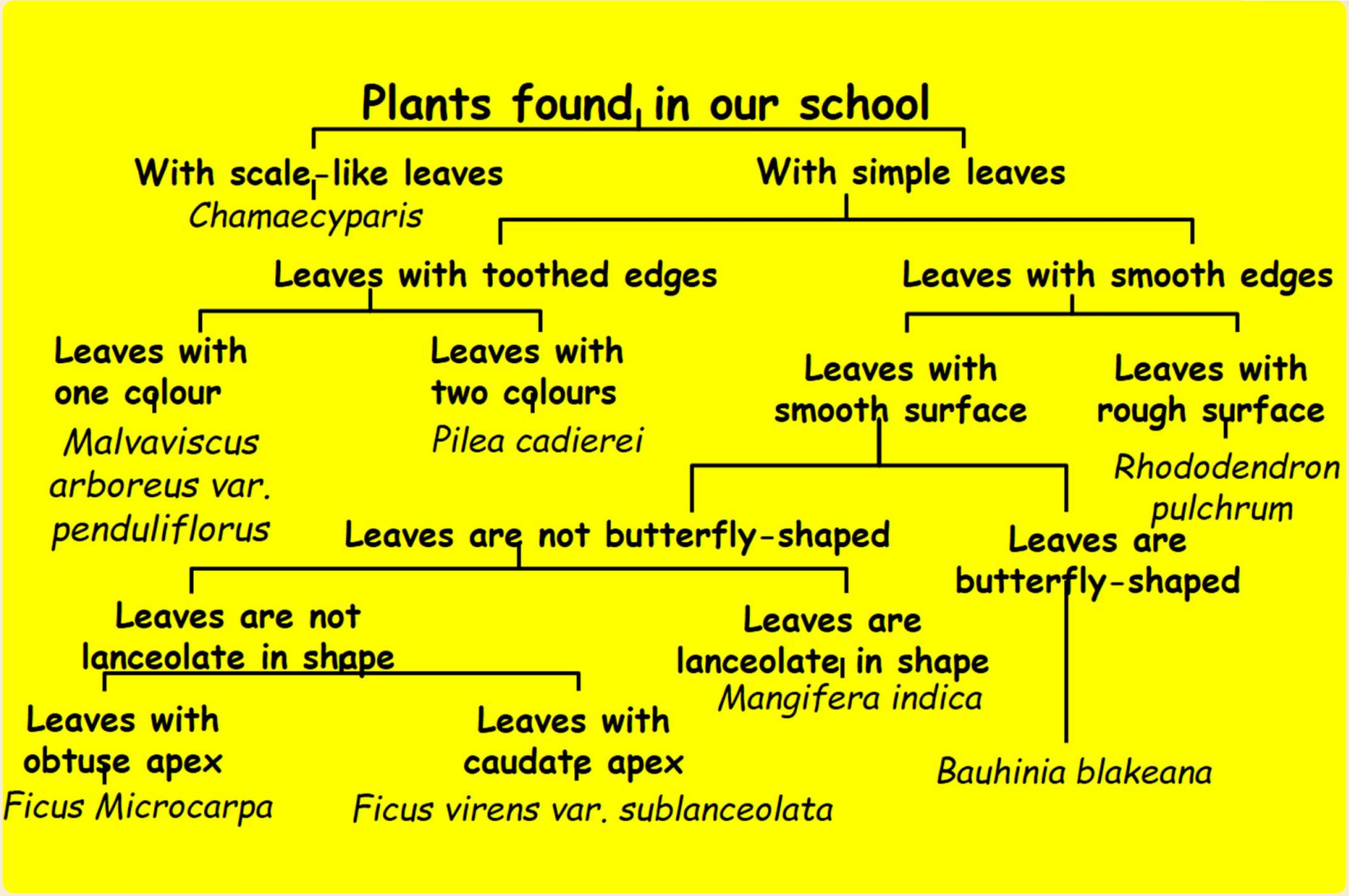

Students were asked to solve the puzzle in the worksheet by observing the external features of the leaves carefully.

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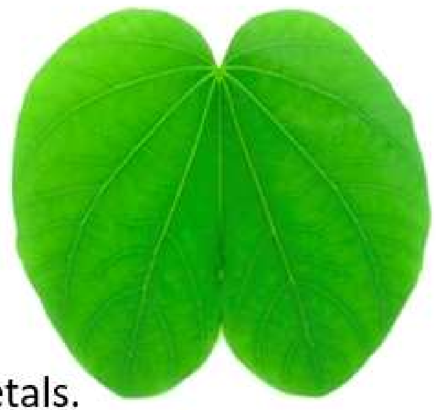
Task – Checkpoint 2:

Observe the flowers and the leaves carefully.
Complete the questions below:



1. This plant is used as the floral e_blem of HKS_R.
2. Count the number of petal. Each flower has _ _ _ _ petals.
3. Its common name is _ _ _ _ _ _ _ _ _ _ _ _ _ _.
4. The leaves has a _ _ _ _ _ _ _ of veins.
5. The flowers are _ _ _ _ _ _ in colour.

Where is Checkpoint 3?

☐☐☐☐ ☐☐☐☐

Part 3: Presentation

Some interesting facts are being discovered and presented by students.

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Interesting facts

On the night before wedding the bride wears a red string and cypress on her hair. It symbolizes longevity in Chinese culture.

Information and Communication Technology

Part 1: Basic Knowledge

To understand the basic development of A.I.

To recognize the difference between Supervised-learning and Unsupervised-learning.

Part 2: Class Activities

Supervised learning: Quick Draw

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Unsupervised learning: Sorting Emojis

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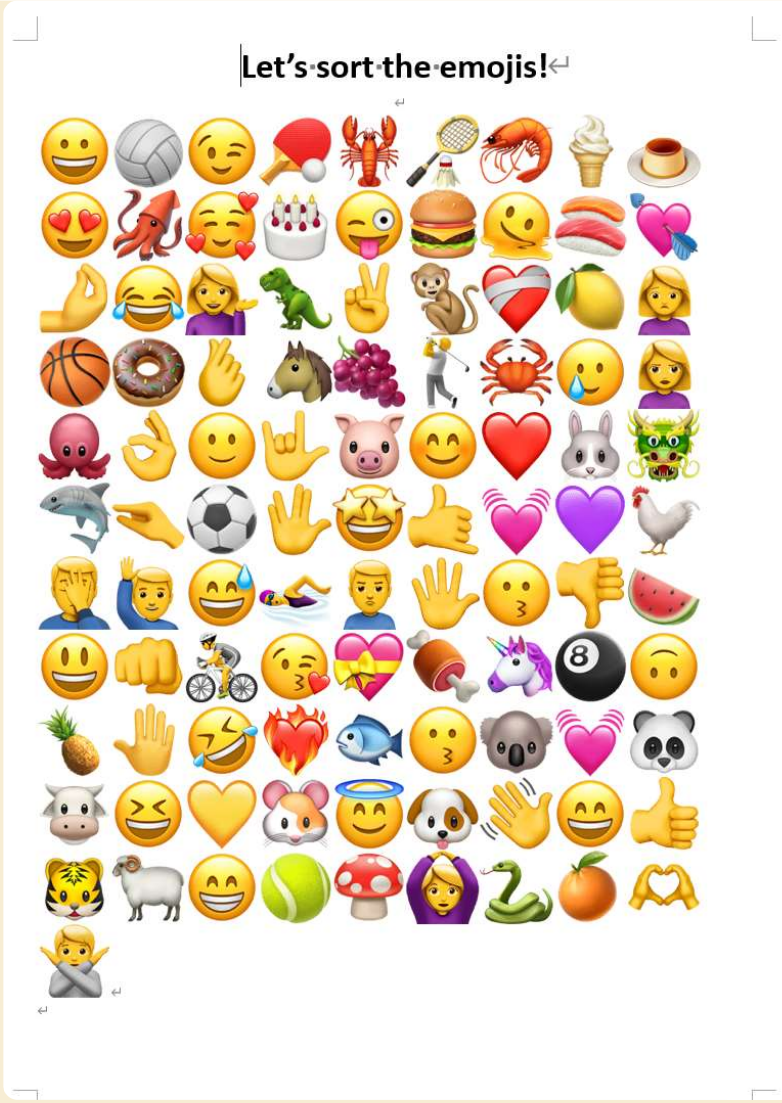

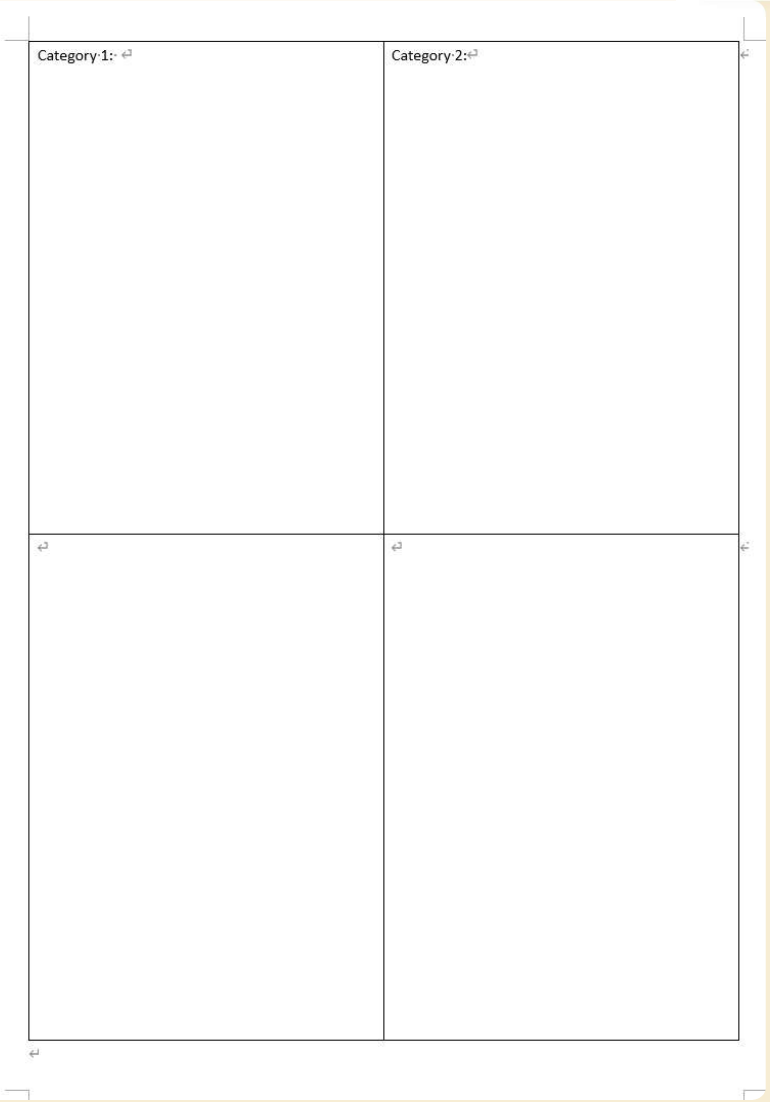

Part 3: Teachable Machine

Create their own plant identification model under certain constraints.

Students try to choose their training data.

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Students recording their choices with their own way.

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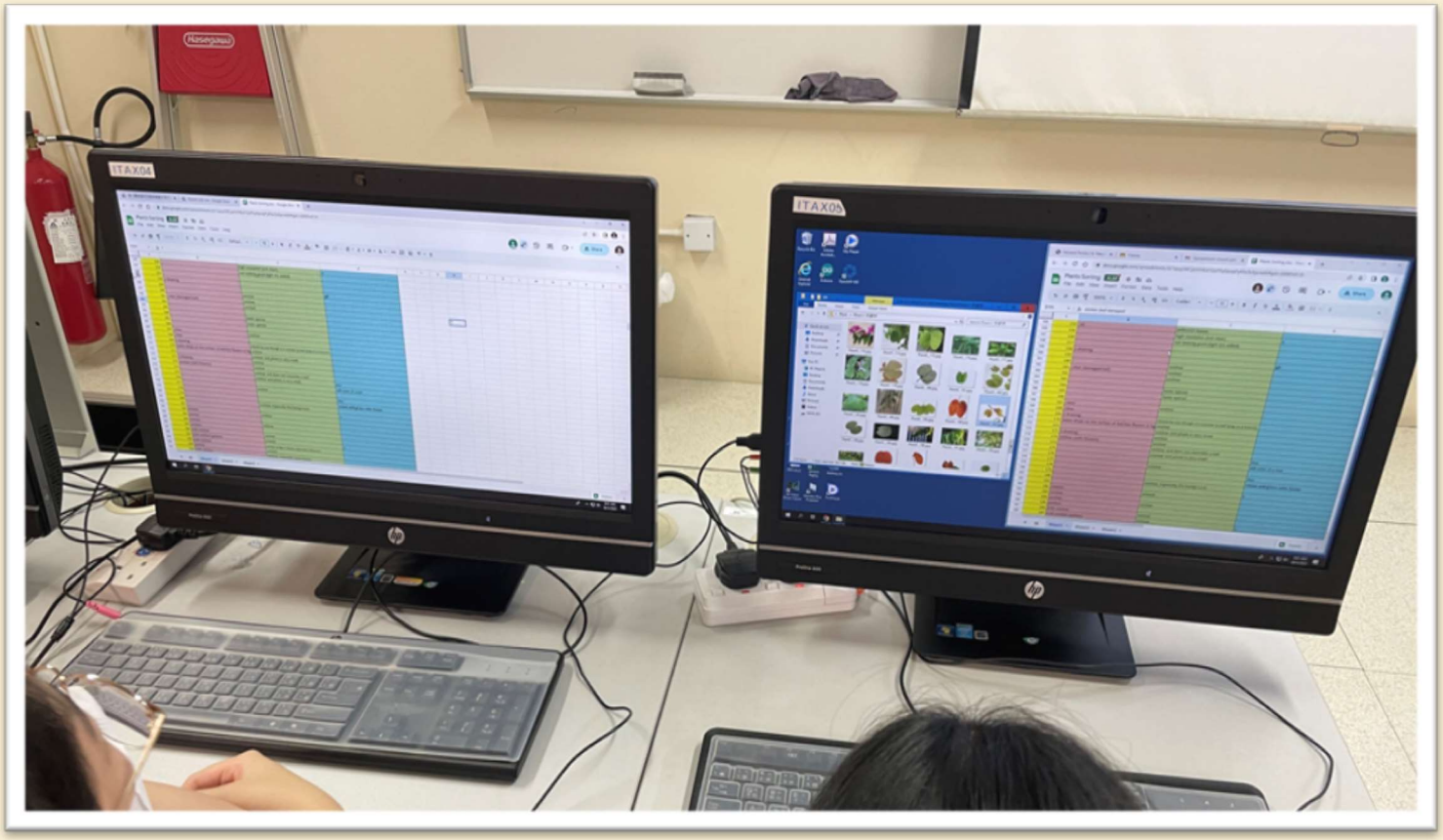

Final model for testing:

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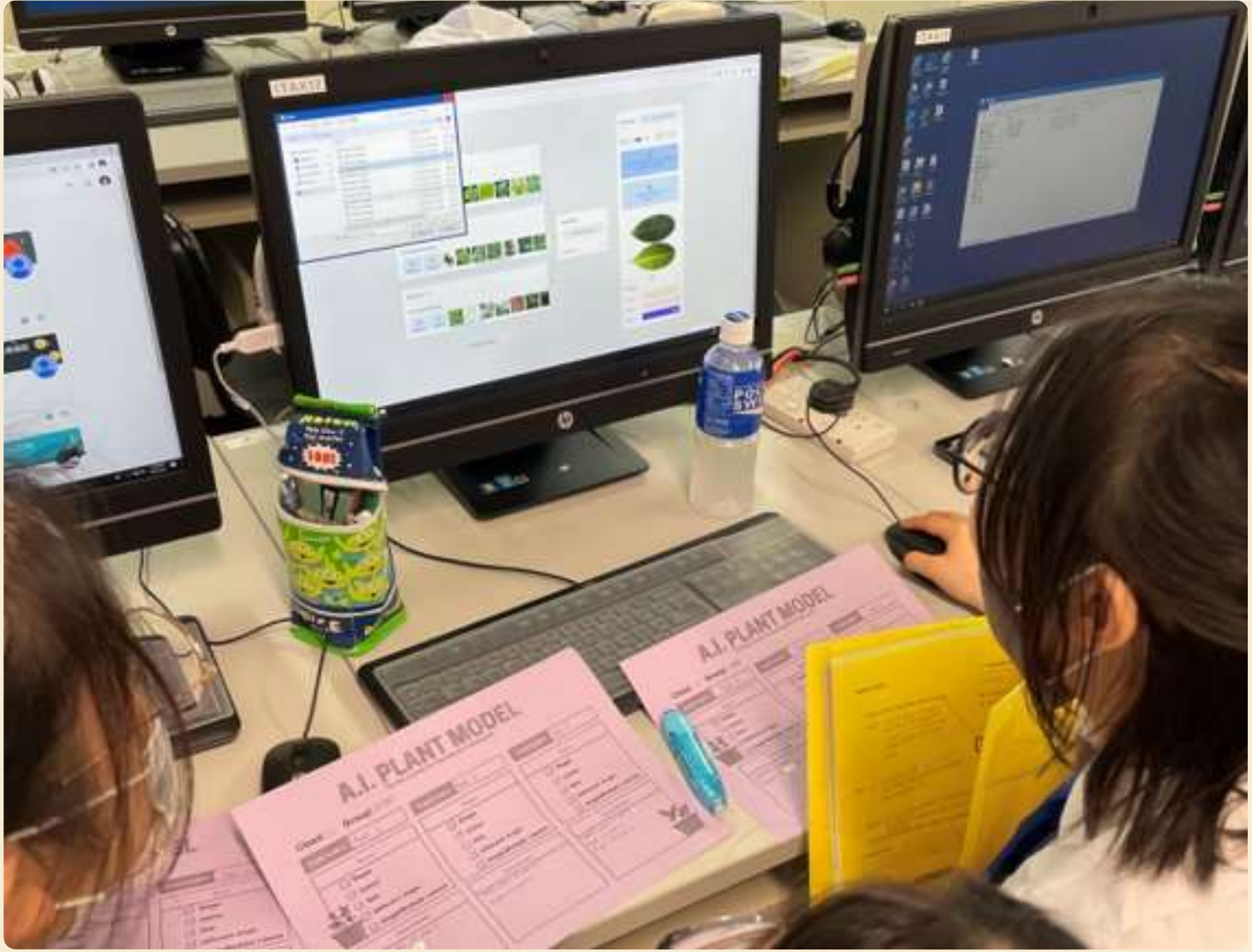

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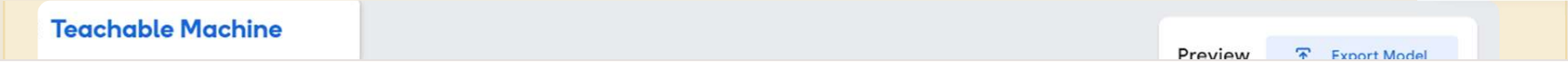

Extension

Students are encouraged to participate in external competitions applying similar concept and expressing their own ideas.

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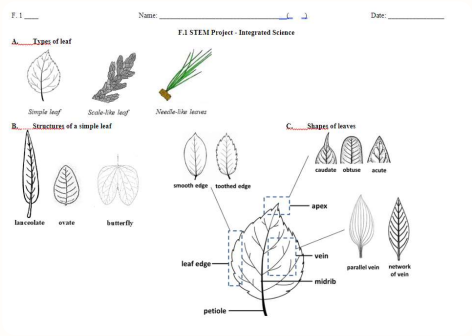
Measuring and Assessing Learning Outcomes

Qualitative Assessment

Gather feedback on students' learning outcomes through open-ended questions, reflections, and presentations.



Formative Assessment

Guide students' to build up their knowledge by engagement in different activities with guidance.

Self-Evaluation

Encourage students to reflect on their own learning processes and outcomes.

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Measuring and Assessing Learning Outcomes

Presentations

Gather feedback on students' learning outcomes through open-ended questions, reflections, and presentations.

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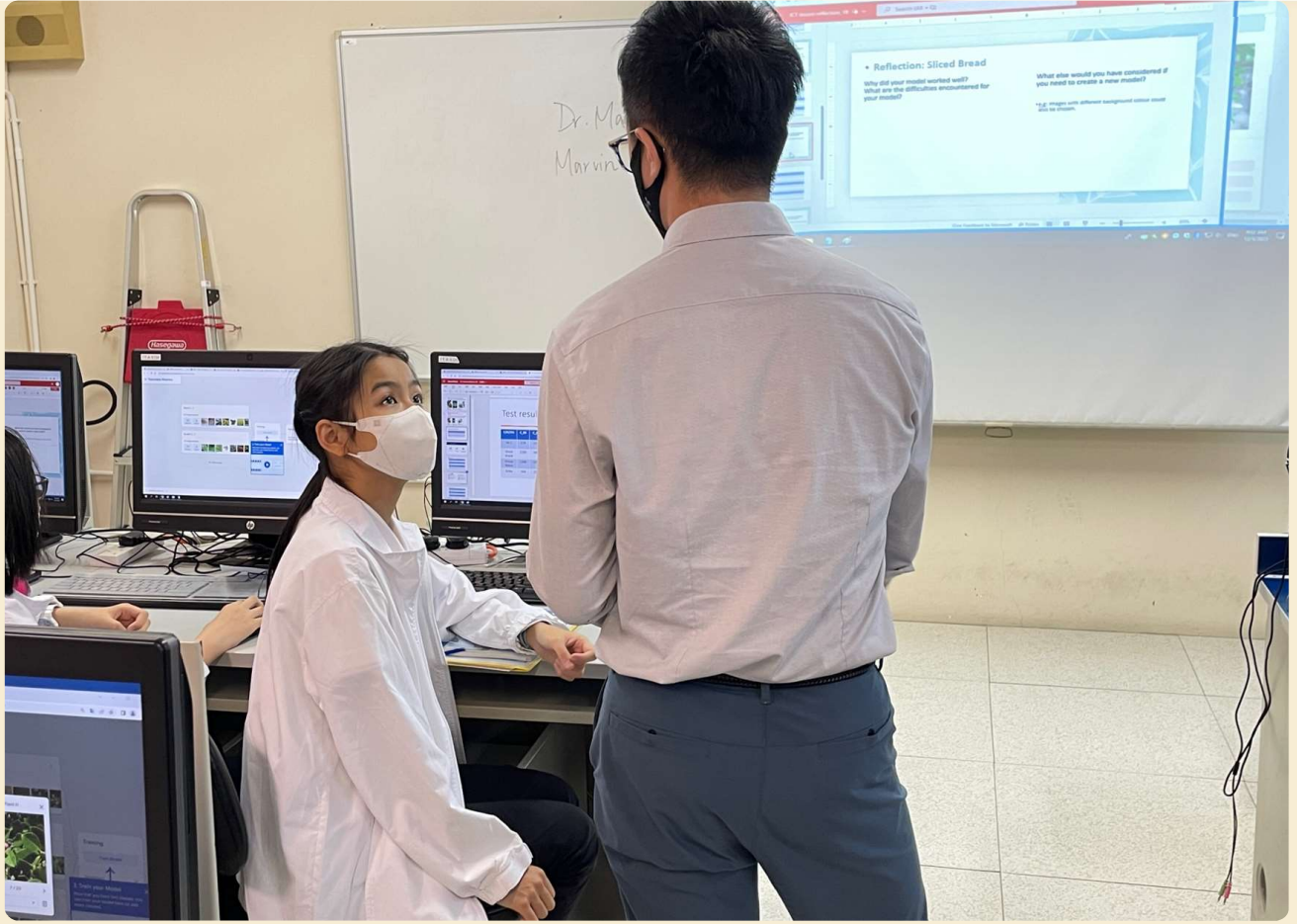

Guiding Worksheets 📝

Utilize activity and project worksheets to measure students' comprehension and knowledge retention.

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Starting point: Upper playground (near St. Michael Statue)

Plant A

Scientific Name: _____

Common Name: _____

Interesting fact(s) about the plant:

Take a photo of the leaf:
(Label some observable features of the leaf)

Write down other observable features of the plant.
(Take a photo of these features.)

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A.I. PLANT MODEL

Tick the criterias for choosing your training data

Class: **Group:**

PLANT CLASS 1	PLANT CLASS 2	PLANT CLASS 3
Basics	**Basics**	**Basics**
☐ Shape	☐ Shape	☐ Shape
☐ Colour	☐ Colour	☐ Colour
☐ Size	☐ Size	☐ Size
☐ Different Angle	☐ Different Angle	☐ Different Angle
☐ Single/Multiple Leaves	☐ Single/Multiple Leaves	☐ Single/Multiple Leaves
Extra Criteria	**Extra Criteria**	**Extra Criteria**

Students' work

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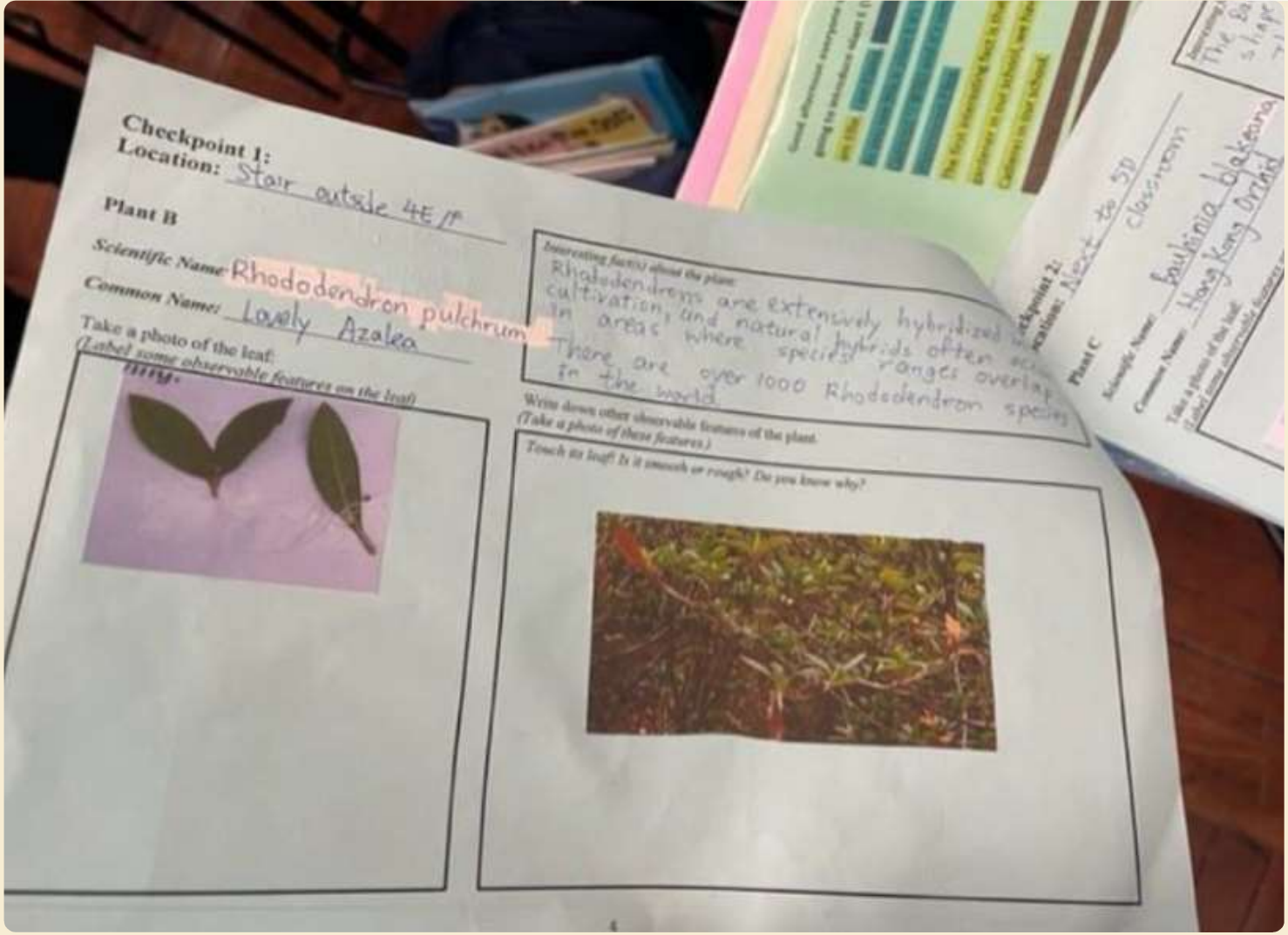

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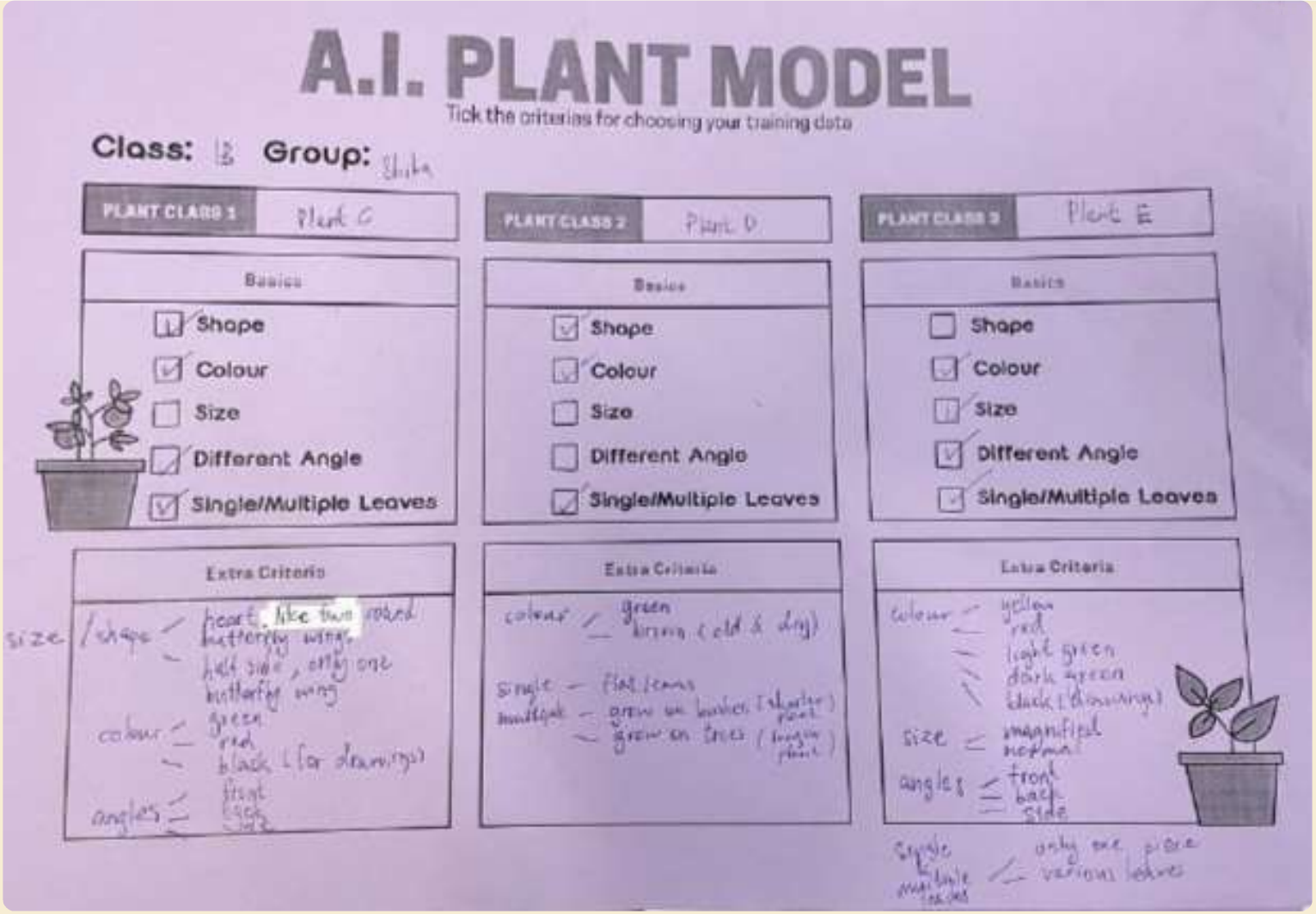

Group/ Self Reflections

Reflections with both guided and open-ended questions to foster self-directed learning.

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What are the difficulties most groups encountered?

We couldn't identify whether the leaves were **smooth or rough** since the veins affected the smoothness of the leaf.

We struggled to complete the tasks **within the time limit. Our teammates may have different idea or thoughts about structure of the plants.**

We cannot identify the plant precisely because **most of the features of the plants are similar.**

On the way, we realised that some plants **looked very similar** and thus, it was a bit difficult to distinguish between them.

We encounter difficulty in distinguishing between the plants since **some of them have very similar features, like the shape and the vein.**

Setting Learning Outcome Goals

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Specific

Create clear, concise, and measurable learning outcome goals that specify what students should be able to accomplish.

Realistic

Set goals that are achievable and realistic based on students' abilities and the given timeframe.

Generalized

Develop students' generic skills and make sure that all are involved in the process.

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Summary and Recommendations

Reflection 🔍

Encourage students to reflect on their learning outcomes and provide feedback for improvement.

Continuous Professional Development 📚

Teachers should engage in regular professional development to enhance their lesson implementation skills.

Collaboration and Support 🤝

Establish a supportive environment where teachers collaborate and share effective lesson implementation strategies.

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