

Saint Andrew's Junior School

Science Department

Mission: To develop each Science pupil to be an inquirer, innovator and environmentalist

Vision: Inculcate in pupils a sense of wonder/curiosity and equip them with skills in exploring and discovering such that they aspire to make a positive impact in future



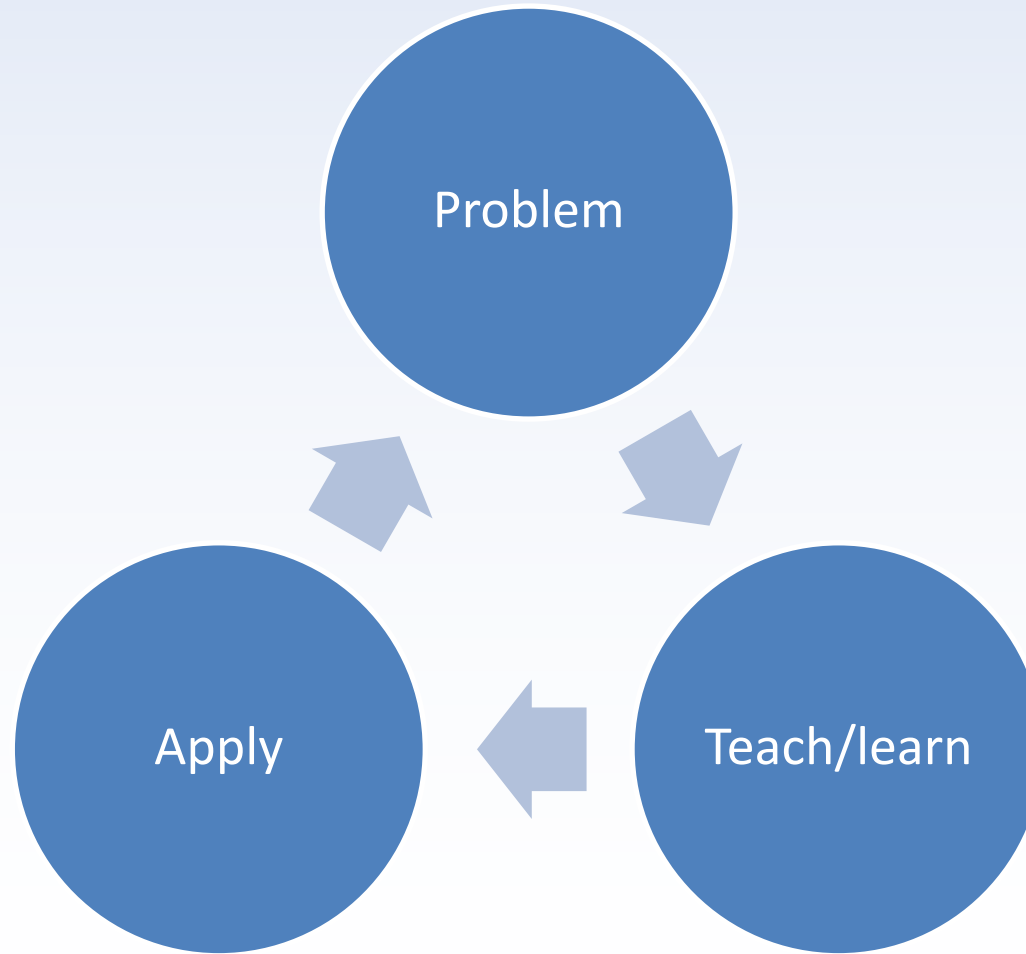
Pedagogy: What IS PTA in our school?



Dept pedagogy remains- only change is addition of "challenge" to the problem

Science Pedagogical Process Flow

Problem (P), Teach/learn (T), Apply (A)



P: Problem

Name: _____ Class: P6 _____

Date: _____

Problem (Forces)

You have been tasked by the government to create a high speed rail system that can travel at a high speed. In your initial presentation you will need to state the problems encountered in the creation of this high speed rail. Address the problems associated with:

1. Reducing or increasing friction.
2. Reducing or increasing weight.
3. Any use of elastic spring force? If yes, where/ how?
4. Any use of magnetic force? If yes, where/how?



The boys will be given a problem to solve/challenge.
The problem usually will be set in a real world context to provide authentic learning and problem solving experience.

Forces

- Interactions can be caused by **forces**.
- A force is a **push** or a **pull**.



Section 2: Effect of lubricants/ball bearings/ wheels

Aim: To find out the effect of ball bearings (marbles) on the amount of friction between two surfaces.

Materials needed: Milk tin or any similar tin with lid, some marbles and an A4 sized book.

Procedures

1. Put a milk tin with a lid on the table.
2. Place an A4-sized book on top of the tin.
3. Try to spin the book by pushing it in a clockwise direction.



4. Observe what happens.
5. Remove the book from the top of the milk tin.
6. Now put marbles all around the lid so that they are resting on the groove between the lid and the rim of the tin.
7. Gently place the book on top of the marbles.



8. Try spinning the book again by giving it a push in the clockwise direction.
9. Observe what happens this time.

Questions

1. Was it easier to spin the book when there were no marbles compared to when there were marbles on the rim of the tin? Explain.

2. What happened to the amount of force required to spin the book after the marbles were placed on the rim of the tin? Explain.

3. The marbles acted like ball bearings, or small smooth metal balls placed between the moving parts of machines.

(a) How do you think this is useful for machinery to work?

(b) State three examples of where ball bearings are used to reduce friction.

4. The following demonstrates a real life application of magnets.



maglev train

Explain how does the above reduce friction.

Pupils are required to conduct their own experiments, make observations and try to explain what they observed.



A: Application

Name: _____ Class: P6 _____

Date: _____

Apply (Forces)

You have been tasked by the government to create a high speed rail system that can travel at a high speed. In your initial presentation you will need to state the problems encountered in the creation of this high speed rail. Address the problems associated with:

5. Reducing or increasing friction.

6. Reducing or increasing weight.

7. Any use of elastic spring force? If yes, where/ how?

8. Any use of magnetic force? If yes, where/how?



Students have to apply what they have learnt from their investigation and draw a conclusion to help them create a solution to the problem posed.

5Es pedagogical approach

- Engage
- Explore
- Explain
- Elaborate
- Evaluate



Blended approach on SLS

PTA - part 1

You have been tasked by the government to create a high speed rail system that can travel at a high speed. You will need to state the problems encountered in the creation of this high speed rail. Address the problems associated with:

Address the problems associated with:
Reducing or increasing friction

Address the problems associated with:
Reducing or increasing weight

Upload a file

Upload a file

Activity List

- [Introduction](#)
- 1 PTA - part 1**
- 2 PTA - part 2
- 3 Lesson Objectives
- 4 What is a force?
- 5 Force and its effects

A force is simply a "push" or a "pull"

Q1:

For the following examples state if a "push", a "pull" or "both" are shown?



- [Introduction](#)
- 1 PTA - part 1
- 2 PTA - part 2
- 3 Lesson Objectives
- 4 What is a force?**
- 5 Force and its effects
- 6 Quick check (Force and its effects)
- 7 Extension
- 8 Completion

Extension

Choose one of the following activities to illustrate one or more of the effects of forces.

1. Create a short video clip to show one or more of the effects of forces. OR
2. Create a powerpoint slide to show one or more of the effects of forces OR
3. Create a song about the show one or more of the effects of forces. OR
4. Create a game to show one or more of the effects of forces in action. OR
5. Make a comic strip to show one or more of the effects of forces.

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Previous activity 7/7 Next activity

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Developing the Skilled Communicator

Presentations

Group work



Assessment

Term 1	Term 2	Term 3	Term 4
<p><u>Topical Review</u></p> <ul style="list-style-type: none"> Week 9 (Forces) <p><u>Practical Assessment (Formative)</u></p> <p>P3-P5 Topics P6 Topics – Forces, Type of forces</p>	<p><u>Semestral Assessment 1</u> (100%)</p> <ul style="list-style-type: none"> Booklet A, 28 MCQs (56 marks) Booklet B, 12-13 OEs (44 marks) Total: 100 marks Duration: 1h 45 min <p><u>Topics</u></p> <p>P3 – Diversity, Systems, Interactions P4 – Cycles, Energy P5 - Cycles, Systems, Energy P6 – Interactions</p>	<p><u>Preliminary Examination</u> (100%)</p> <ul style="list-style-type: none"> Booklet A, 28 MCQs (56 marks) Booklet B, 12-13 OEs (44 marks) Total: 100 marks Duration: 1h 45 min <p><u>Topics</u></p> <p>P3 – Diversity, Systems, Interactions P4 – Cycles, Energy P5 – Cycles, Systems, Energy P6 – Interactions</p>	<p><u>PSLE</u></p> <ul style="list-style-type: none"> Booklet A, 28 MCQs (56 marks) Booklet B, 12-13 OEs (44 marks) Total: 100 marks Duration: 1h 45 min <p><u>Topics</u></p> <p>P3 – Diversity, Systems, Interactions P4 – Cycles, Energy P5 – Cycles, Systems, Energy P6 – Interactions</p>



Format of PSLE Science

Booklet	Item Type	No. of Questions	Weightage	Duration
A	MCQ	28	56%	1h 45min
B	Open-ended/ Short-answer	12-13	44%	



- Science Notes
- Weekly MCQ on SLS
- Supplementary Lessons
- Answering techniques
 - P.R.I.D.E
 - C.E.R

Guide books you may consider getting

- Science PSLE Revision Guide



Home routines that can support learning of Science

- Linkage of Science to everyday activities or phenomena.
- Guide him in research – information from books / websites
- Ensure that he completes all assignments / corrections.



