# LEARNING SCIENCE THROUGH
# REFLECTIVE JOURNAL WRITING
# FOR COMBINED SCIENCE STUDENTS


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**“Our world is currently undergoing rapid technological progress, resulting in tremendous changes in all aspects of life.… Teachers are not merely there to teach or guide students for examinations but also show them how to prepare for challenges in this age of rapid globalisation and technology… teachers are required to teach 21st Century competency from the elementary to the higher levels, for the development of creative thinking and cultural sensitivity among students.” -**

*HIS Majesty Sultan Haji Hassanal Bolkiah Mu’izzaddin Waddaulah ibni Al-Marhum Sultan Haji Omar ‘Ali Saifuddien Sa’adul Khairi Waddien, Sultan and Yang Di-Pertuan of Brunei Darussalam’s titah at the 28th Teacher’s Day Celebration at the International Convention Centre, Berakas.*

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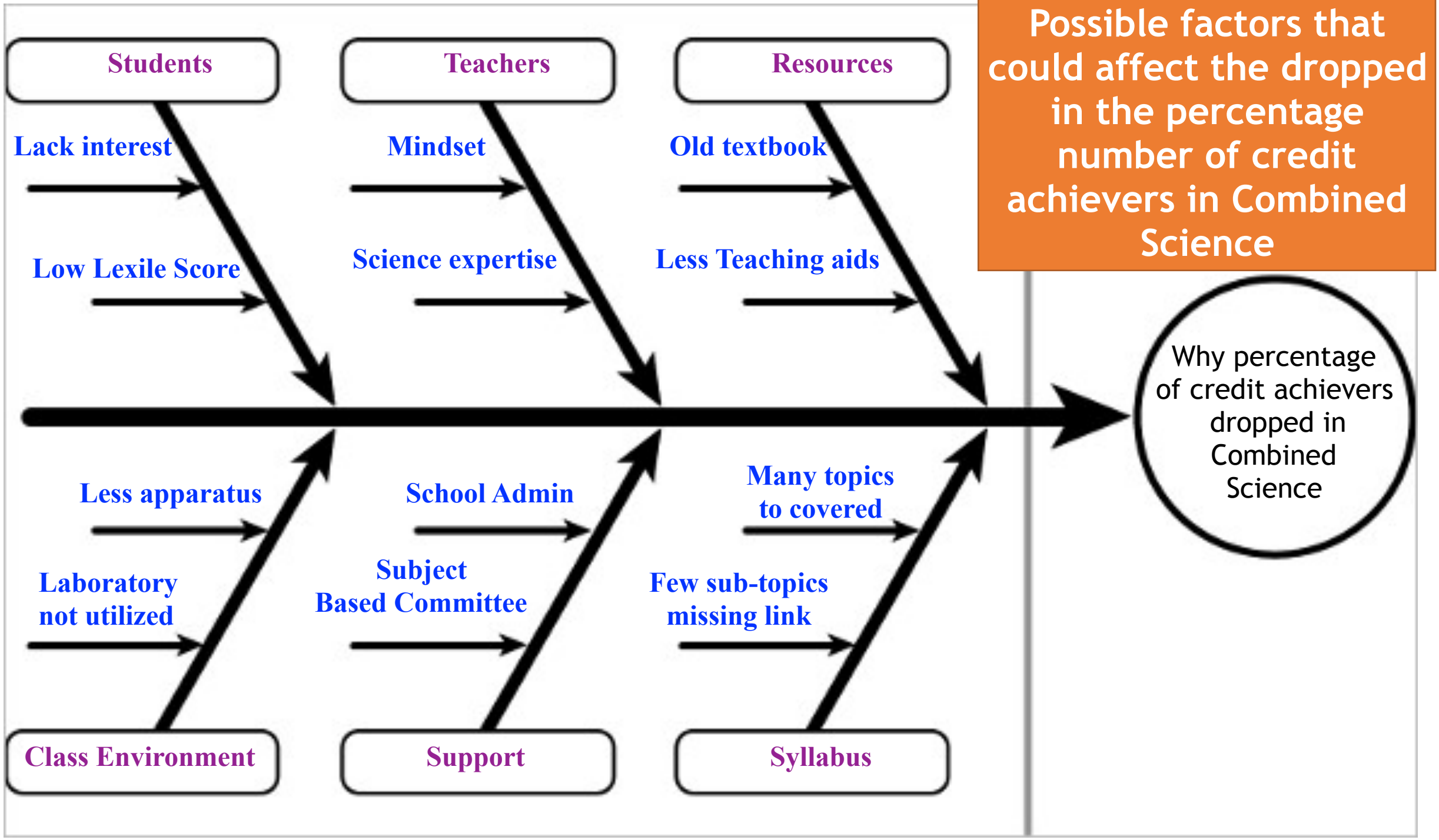
# Introduction

- Combined Science - General Program subject (Core)
  - Challenging (some students)
- The percentage of credit achievers for GCE O level Examination in Combined Science has dropped from **14.3 % (2017)** to **5.9 % (2018)**
- Introduce and implement **Reflective Journal Writing**

Notebook - students use when writing about and reflecting on their own thoughts. The act of reflecting on thoughts, ideas, feelings, and their own learning encourages the development of metacognitive skills by helping students self-evaluate and sort what they know from what they don't know. The process of examining one's own thoughts and feelings is particularly helpful for students who are learning new concepts or beginning to grapple with complex issues that go beyond right and wrong answers. That is why reflection is a critical 21st Century and social-emotional skills

# Possible factors that could affect the dropped in the percentage number of credit achievers in Combined Science



# Rationale:

# **Why Reflective Journal Writing?**

- Introduced **Inquiry Reflective Journal Writing** - Physics @ SMSB

- Results: Credit achievers Physics in GCE O level

| YEAR | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|
| % CREDIT ACHIEVERS IN PHYSICS | 92.5 | 100 | 100 | 100 | 100 | 100 | 100 |

# Why Reflective Journal Writing?

"Education should serve not only as a means of acquiring information but also as a way to bring learning to our everyday actions and behaviors" ….

John Dewey (1938)

Most successful learners are able to identify questions and problems as **they reflect on what they already know, what they want and need to know, and how they will proceed to increase their understanding.**

Less successful learners **need to develop the habits of mind that are the underlying strategies of the learning process.**

# Why Reflective Journal Writing?

**The second main reason**:

*Professor John Hattie's Table of effect size (2018) on 'What has the greatest influence on student learning?', the **Feedback by teacher** has **effect size of 1.13** which is the highest influence.

Teacher's feedback on any inquiry (comments, misconception or questions) is very important and can be influencing the students' learning.

# Why Reflective Journal Writing?

**Third main reason:**

as **‘Exit Ticket’.**

(By using 10 minutes at the end of the class, allowing the students to write about what they learned.)

Teacher will be able to see who is grasping content.

**Who are my stakeholders?**

Two classes:

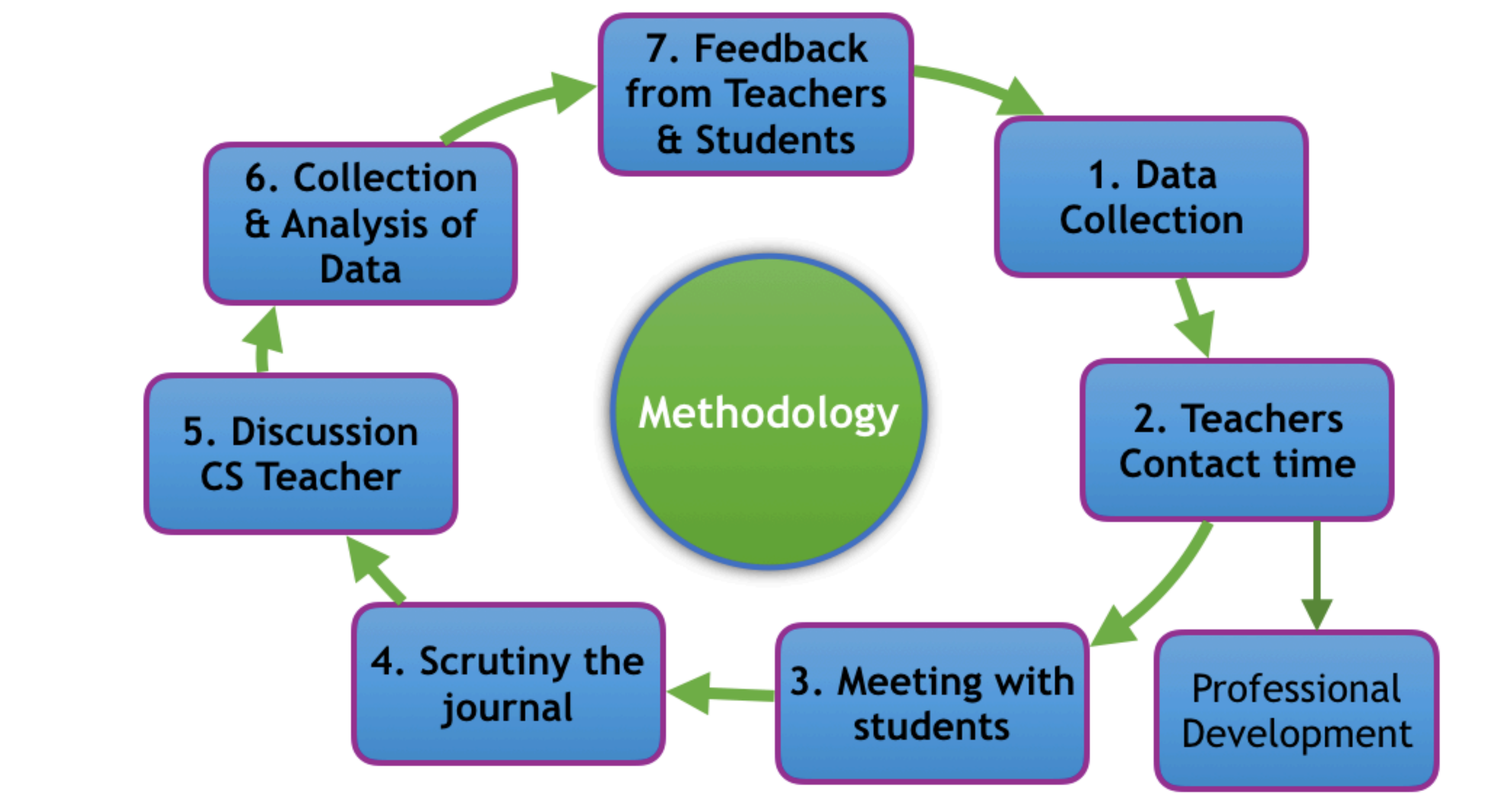
Year 10 G = **22 students** and

Year 10 R = **14 students.**

# Research Questions:

1. Can Reflective Journal Writing helps to **increase the percentage of credit achievers in Combined Science**?

2. Can it helps the students to **understand the Science's Concepts rather than memorise them?**

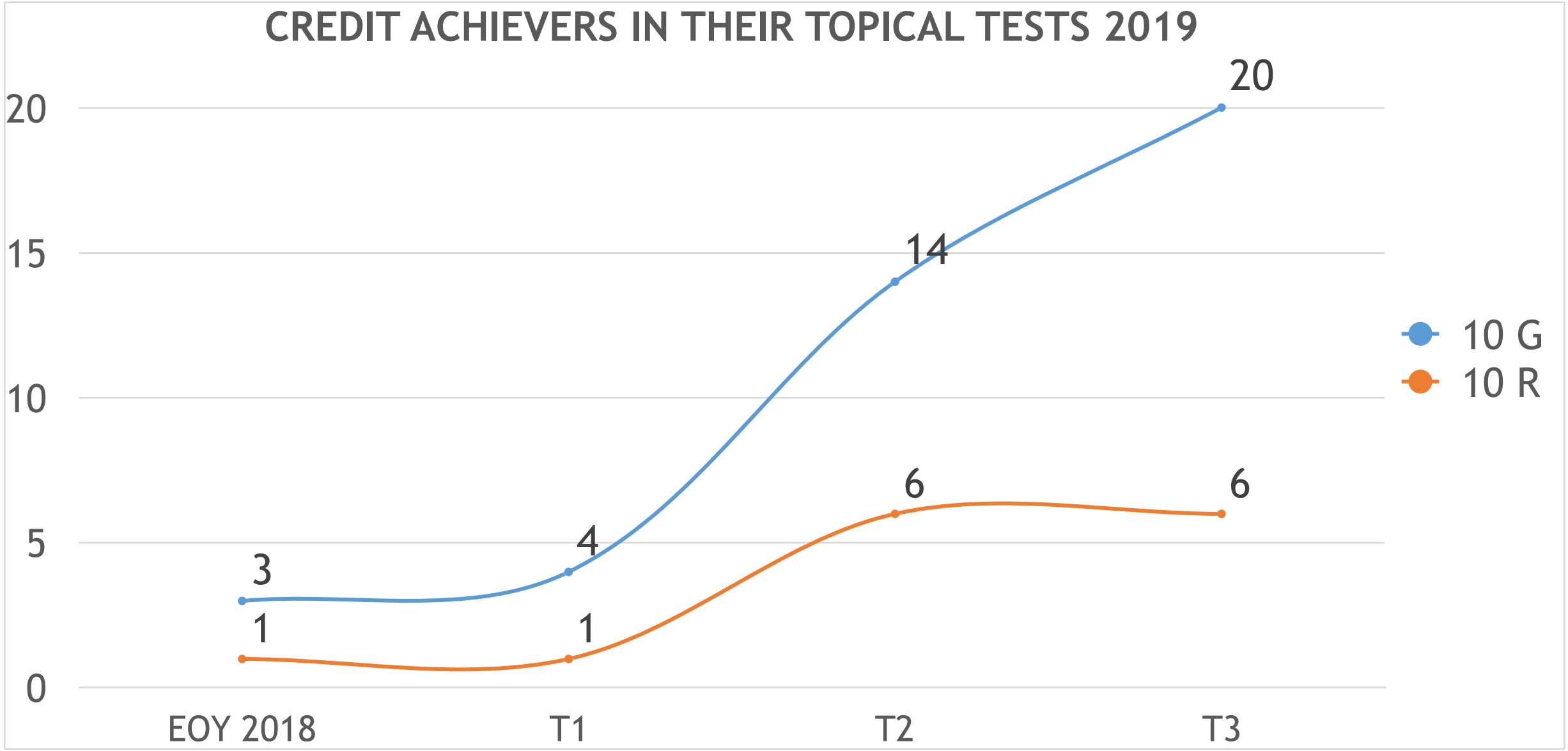


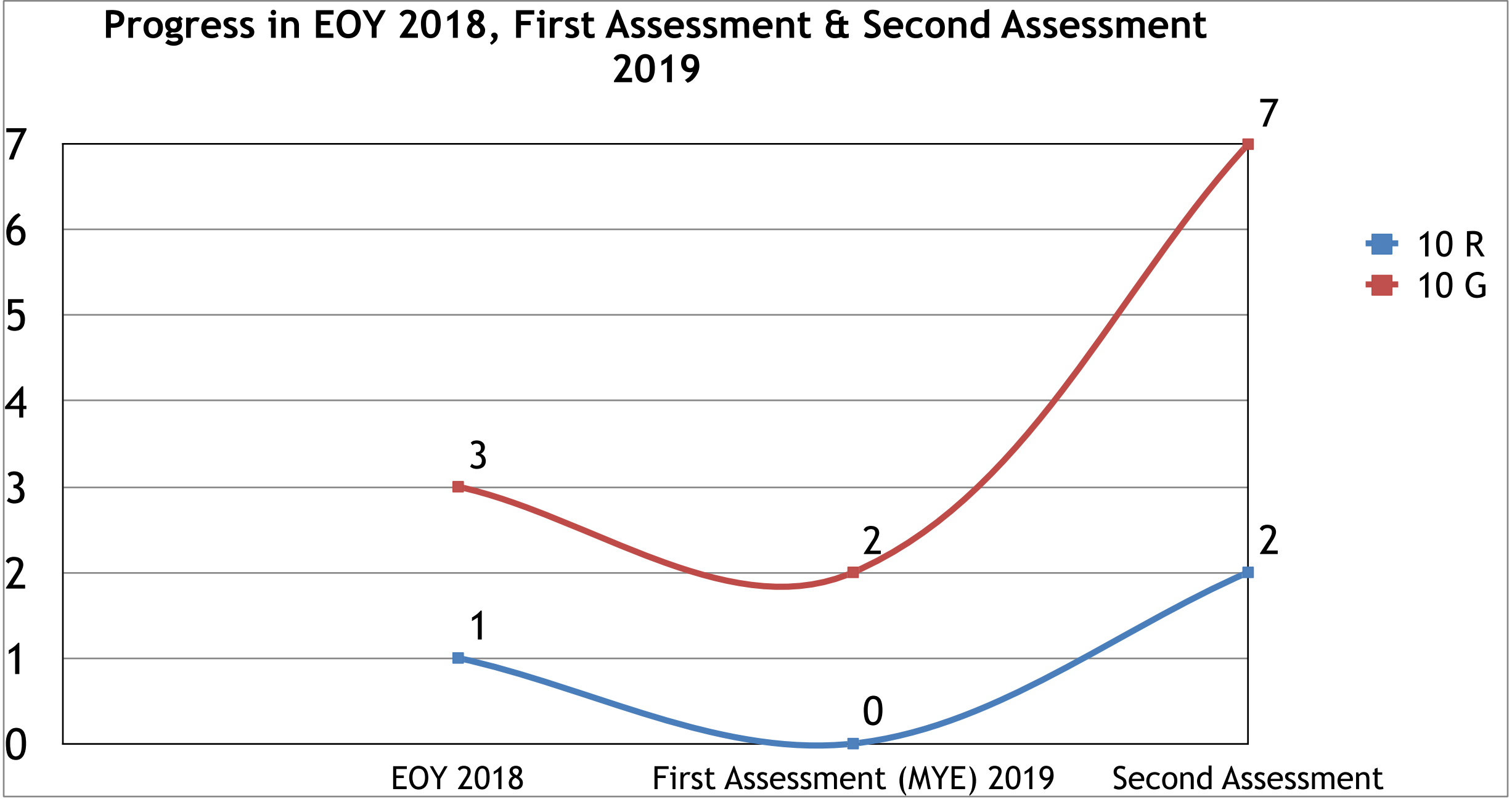

Summarised Stages of Procedures for Project Methodology

# Focus Group

- Year 9 End of year examination result: Combined Science credit achievers dropped from **9.3 %** to **5.3 %.**
- 10 G = **3 credit achievers** and 10 R = **1 credit achiever (Baselined data)**
- The average Lexile score for these two classes is **467 L** and their Lexile level is in between the range of **276 L and 790 L**.

# DATA, RESULTS & FINDING


CREDIT ACHIEVERS IN THEIR TOPICAL TESTS 2019
20
15
10
5
0
EOY 2018
T1
T2
T3
3
4
14
20
1
1
6
6
10 G
10 R


Progress in EOY 2018, First Assessment & Second Assessment 2019
7
6
5
4
3
2
1
0
3
2
7
1
0
2
10 R
10 G
EOY 2018
First Assessment (MYE) 2019
Second Assessment

# Teacher's Feedback on using Reflective Journal Writing

- Three out of four teachers who have tried Reflective Journal Writing in their lesson gave **positive feedbacks.**
- All of them agree when students writing their own summary or notes, they have **shown their understanding and misconception if any**.
- The teacher who teaches Year 10 G and 10 R is **highly supportive and committed** to use Reflective Journal Writing.
- The other teacher who hasn't try the Reflective Journal Writing needs to see the evidence of success to be proven before they could try it out.

# Findings:

1. Survey for students - **100%** of the students agreed that with Reflective Journal writing can really **help them to understand the Science Concept**.
2. Students' results - The **increase number of credit achievers** in all the **three Topical tests and Assessment 2**
3. if Reflective Journal is to be **done constantly** with **continuous feedback** by the teacher: (i) the students can **master the Science concepts** and (ii) **more number of credit achievers** in Combined Science.

# Evidence of impact on self, organisation & students

**Impact on self:-**

1. Able to apply a tool learnt, Johari Window (Joseph Luft and Harry Ingham 1955) to discovering Blind zone Quadrant. With that feedback, applying SARAH acronym (Julie 2018), to increase the size of open quadrant area and thus making the hidden and unknown quadrant areas smaller.
2. Using analysed data to evaluate for progress & find solutions for any issues arise.
3. Confidently manage Academic program in school especially collaboration with Cluster 3 Secondary Schools' Deputy Principal of Academic

**Impact on the organization:**

Able to works with **some parents** and other **ministry's officer** through program:

1. Homelink homework,
2. Sharing session for parents from School Administration, and
3. Academic Forum for parents and Year 11 and 10 Sc1 students involving forum panels from other school's Chairperson of PIBG and officer from Ministry of Sport, Youth and Culture (JAPEM).

# Impact on the students:

**How does it help the Combined Science students? Students are:**

1. able to reflect on their understanding of the lesson in points, concept-mapping and drawing scientific labelled diagrams.
2. communicate their inquiry or comment to their teacher
3. can be used as last minute revision
4. develop students' 21st Century skill to comprehend their learning and understand of the lesson.
5. encourage students to become an independent learner

# Ways Forward, Challenges & Limitations

**Challenges:**

1. The students are not sure of what to write at first and are too dependent on their teacher
2. Not all Combined Science teachers are enthusiastic about this project

**Limitation:**

1. Can only focus on two groups of students.
2. Bohlen, Beal and Rogers (1957) in The Roger Adoption Curve. 68% of the Combined Science teachers (early and late majority) will adopt to Reflective Journal after seeing an evidence.

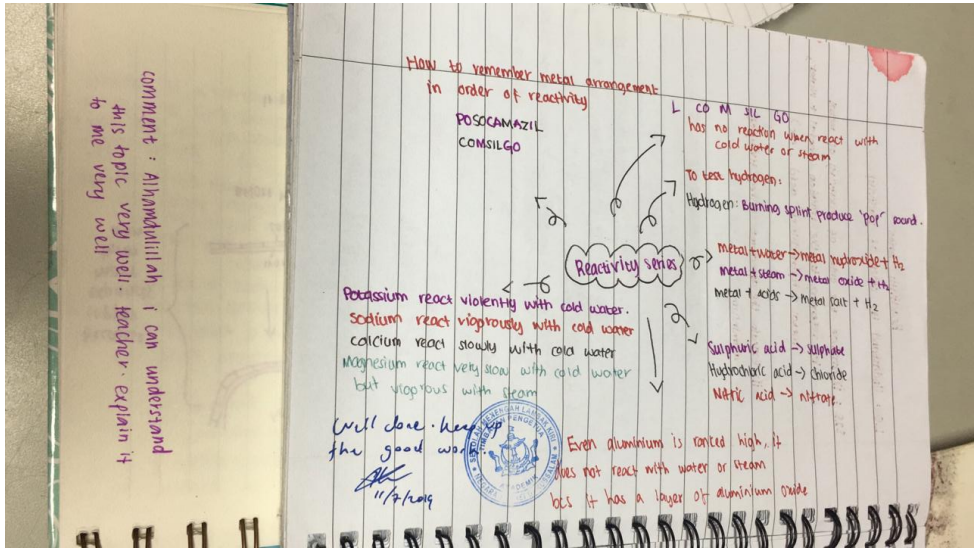
**Ways Forward:**

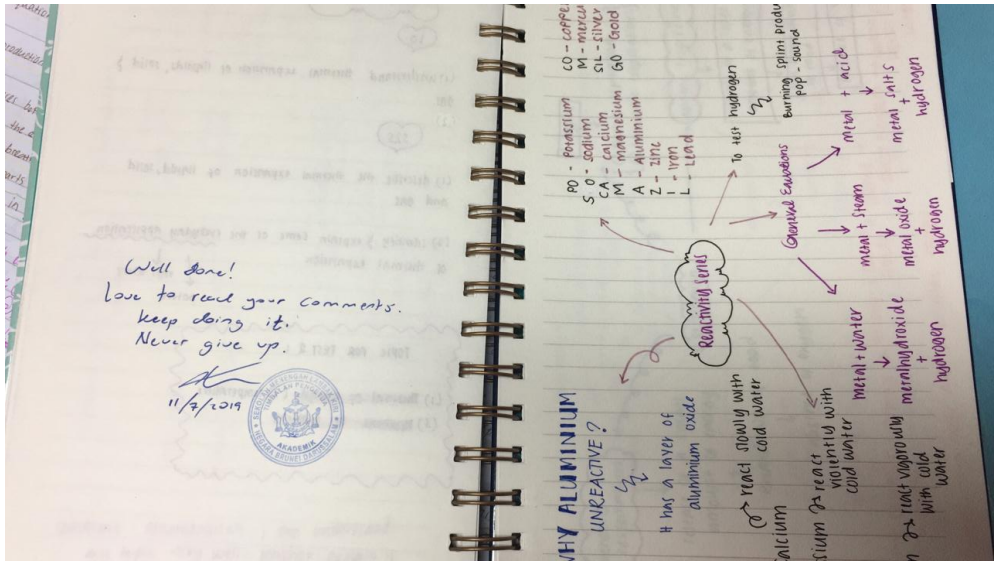
1. To encourage other teachers of different subject to use Reflective Journal writing.
2. To encourage students to write more especially for lower ability:

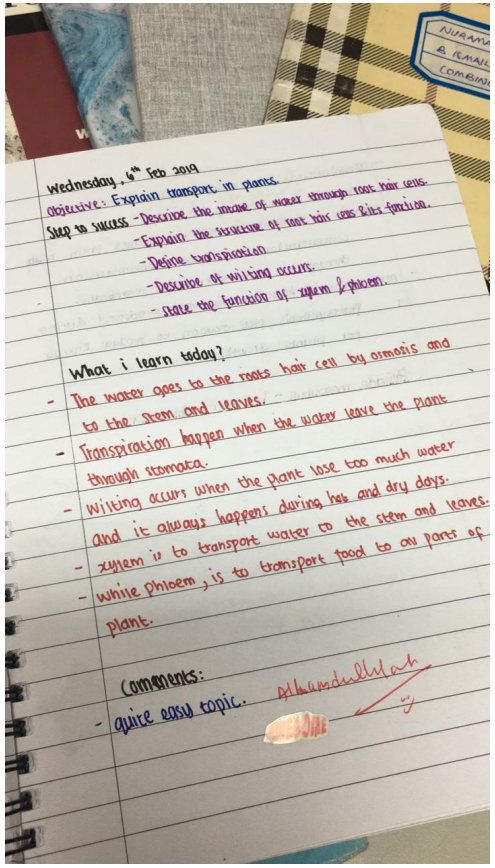
- They can do think-pair and share before writing it down in journal.
- They also need to learn on the use of mind-mapping.

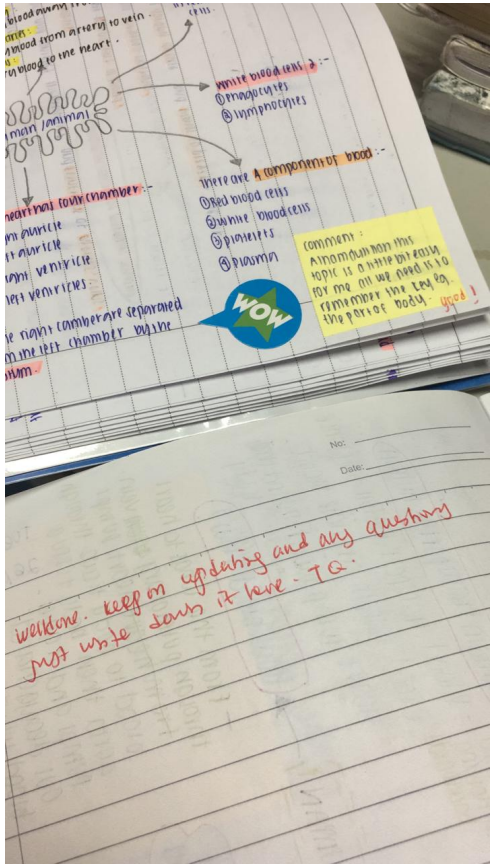
3. discussion session on how to improve their journal & maximize the full use of the journal.
4. Shared with the Head of Cluster 3 & Principals of the Cluster 3 Secondary schools.

# Samples of Reflective Journals

# For any inquiries

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