



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

by

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Date 31 AUGUST 2019

TABLE OF CONTENTS

	Page
Title Page	1
Table of contents	2
List of Appendices	3
INTRODUCTION	4
INTRODUCTION.....	4
RATIONALE	5
STACKHOLDERS	6
RESEARCH QUESTIONS	6
METHODOLOGY	7
DATA COLLECTION	7
STACKHOLDER.....	9
DATA, RESULTS AND FINDING.....	10
DATA ANALYSIS.....	10
FINDINGS.....	13
EVIDENCE OF IMPACT ON SELF, ORGANISATION & STUDENTS.....	13
WAYS FORWARD, CHALLENGES & LIMITATION	16
APPENDICES.....	16
REFERENCES.....	33

LIST OF APPENDICES

Title	Page
Appendix 1 - Student's Reflection Survey	16
Appendix 2 - Online Survey of Reflective Journal Writing for Combined Science Teacher using Google Form	18
Appendix 3 - Respond from teacher who is teaching Year 10 G and 10 R	19
Appendix 4 - Respond from teacher who has not try RJW	21
Appendix 5 - End of year Examination results of 10 G and 10 R Combined Science students	22
Appendix 6 - Comparison of Topical Test 1, 2 and 3 (2019) results of 10 G and 10 R Combined Science students with EOY Examination 2018	23
Appendix 7 - Comparison of First and Second Assessments 2019 results of 10 G and 10 R Combined Science students with EOY Examination 2018	27
Appendix 8 - Images of Students' Feedback session and Sharing Session (PD) for Combined Science Teachers with Researcher	28
Appendix 9 - Sample of few students' Reflective Journal Writing during Scrutiny of Reflective Journal stage	29
Appendix 10 - List of Lexile score for 10 G and 10 R students	31

“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.

Introduction:

Combined Science is a General Program subject which most of the students find challenging to get credit in any assessment test and examination. This is due to many factors which is shown in the Figure 1, according to Sekolah Menengah Lambak Kiri's Science Department during the contact time with researcher.

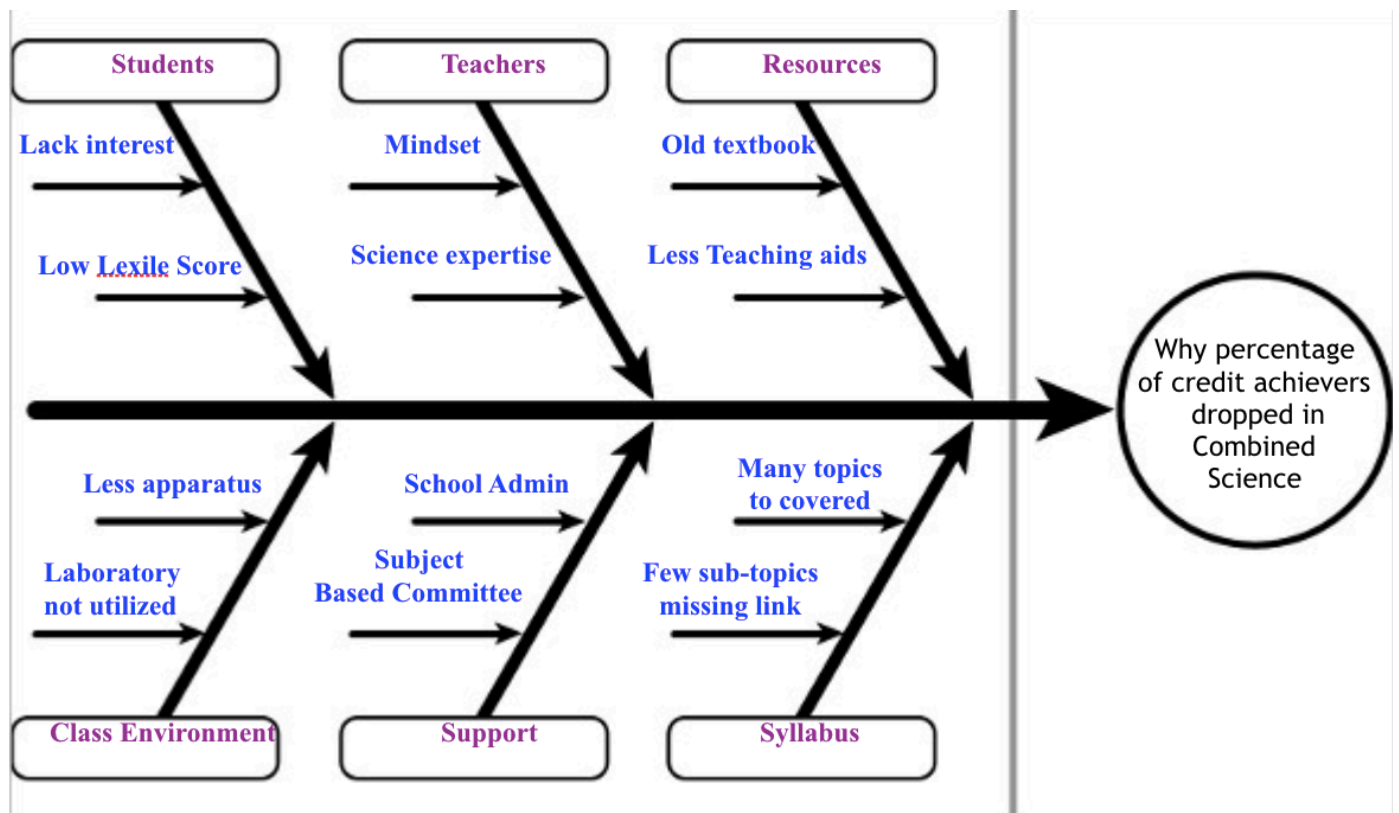


Figure 1 - Possible factors that could affect the dropped in the percentage number of credit achievers in Combined Science

The percentage of Combined Science's credit achievers in Brunei Cambridge General Certificate Examination (BC GCE) 'O' Level Examination has dropped from **14.3 % (2017)** to **5.9 % (2018)** for Sekolah Menengah Lambak Kiri. Here the Researcher will introduce and implement the Reflective Journal Writing to the Combined Science Students with the help of their teacher.

What is Reflective journal writing?

Reflective journal is a notebook that 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 to 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 skill.

(<https://www.teachervision.com/reflective-journals> Why Reflective Journal Writing?)

Rationale:

Why Reflective Journal Writing?

The Researcher has implemented **Inquiry Reflective Journal writing (IRJW)** in Physics as part of self-evaluation and reflection on his teachings in Sekolah Menengah Sufri Bolkiah. When the percentage of the Credits achievers in BC GCE O level examination for Physics in 2009 suddenly dropped from 97.67% to 92.50 % in 2010, the researcher implemented IRJW. The following year the credit achievers in BC GCE O Level for Physics has increased to 100 % and this result has maintained and sustained for the next 5 consecutive years.

This is strongly support by John Dewey (1938) as he mentioned that 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. Most successful learners know how 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.

The second main reason is that according to 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 is very important and can be influencing to the students' learning.

So at the end of every week, all the journals will be collected, checked and given comments by teacher to any misconceptions and inquiries asked by the students. Apart from that, the teacher will know whether his / her lesson was well understood by students or vice versa through reflection by them. Apart from that, teacher can paste a sticker to give positive feedback or highlight any good ideas or thinking.

The third main reason, it can also be use as 'Exit Ticket'. By using 10 minutes at the end of the class, allowing the students to write about what they have learned. The students would prepare for tomorrow's lesson, whereas teacher will be able see who is grasping the content.

Who are my stakeholders?

I will only focus on 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?**

Methodology

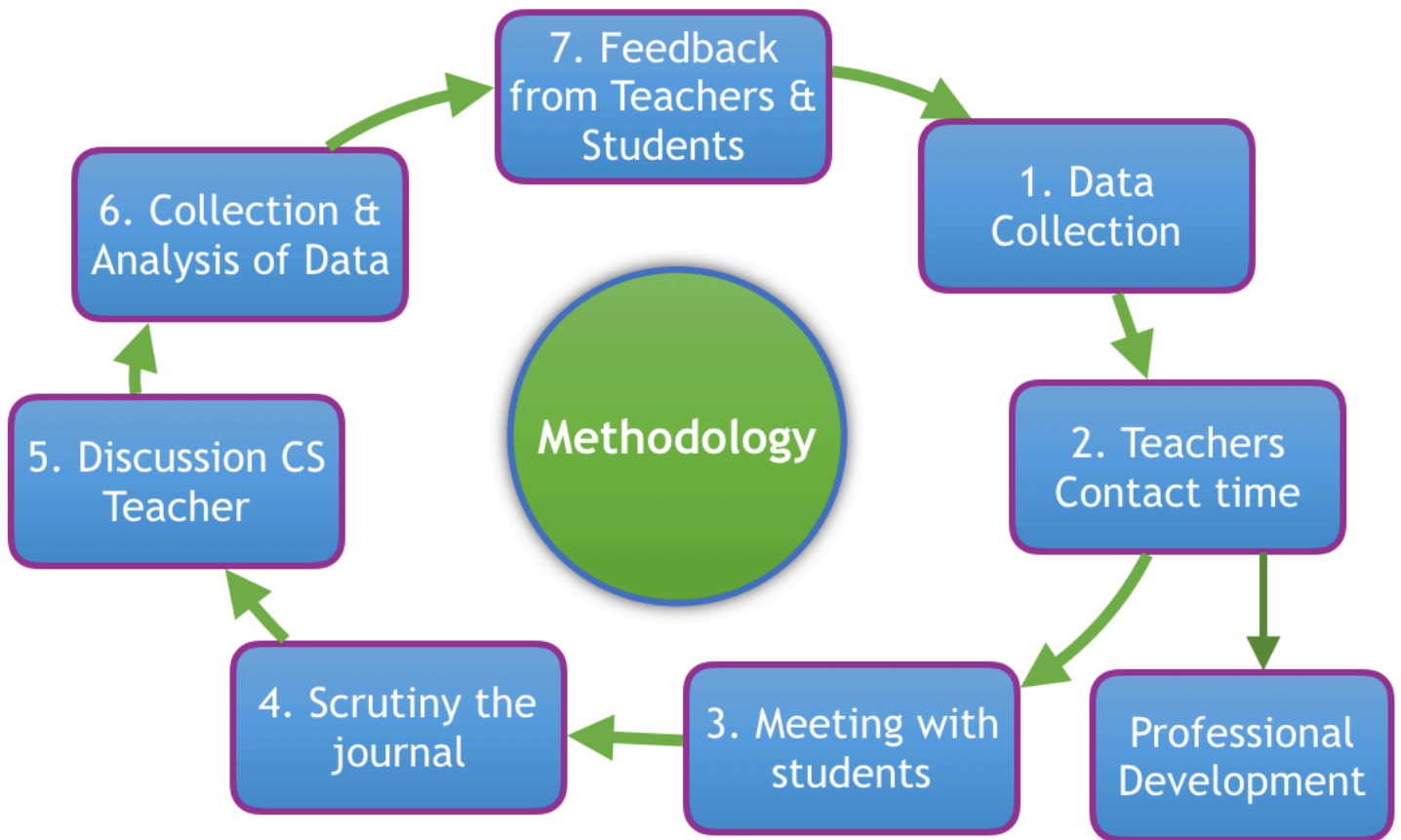


Figure 2 - Summarised Stages of Procedures for Project Methodology

1. Data collection

Baseline data is collected from the targeted Combined Science students' End of year Examination 2018, for comparison in the Credit achievers for Combined Science.

2. Teachers' Contact time

During contact time with the Head of Science Department and combined science teachers, they have identified the factors causing the drop in percentage of credit achiever in their subject and figured out their initiatives to help those students.

The introduction and implementation process of Reflective Journal Writing to all Combined Science teacher is done through the Professional Development facilitated by Researcher himself.

These teachers are instructed to give a proper guidelines for the students so that the contents of the journal should be easier for the students to write and focus more on the concepts learnt, either in either bullet point or concept mapping, formula, lesson's main learning objective, steps to success and comment if necessary.

Only one teacher is teaching both Year 10 G and Year 10 R, it will be a much easier for discussion session on her role and task in helping to run the project. Beside that, guidance is also given to her during the implementation.

3. Meeting with students:

Before the implementation of the Reflective Journal Writing, a meeting was held with these students to seek their respond about learning Combined Science and then the initiatives are introduced.

A second meeting was held to encourage them of how to write down lesson evaluation especially on teacher's delivery of lesson and explain what is the rational behind it.

On third meeting the students are given the survey and for them to write feedback.

4. Scrutiny the journal.

Once in a term, all the students' journals are collected for scrutiny process. What to check? Students' written content and feedbacks from the teacher. Then having a discussion session with the teacher on sustaining the initiatives.

5. Discussion with Combined Science teachers.

Discussion on problem arises and improvement during the process with Year 10 G and 10 R CS teacher after scrutiny of journal has been done. Another one teacher who has implemented the Reflective Journal Writing for his Year 9 classes. Once a month, the researcher asked for feedback and discussed on his problem and ways of tackling it.

6. Collection and analysis of data.

To see the progress in the implementation of the Reflective Journal Writing, the result of the Topical test 1, 2 and 3 will be taken from their Combined Science teacher.

The impact of the Reflective Journal Writing should be seen if there is an increase or decrease in the credit achiever in First and Second Assessment. Those marks are also requested from their teacher.

7. Feedback from teachers and students

At the end of the implementation process, there is an online feedback for the teachers to fill in and interview session with Year 10 G and Year 10 R Combined Science teacher for her personal feeling on using Reflective Journal Writing.

Stackholder:

Focus Group:

Year 10 G = 22 students and Year 10 R = 14 students.

For students in other classes and other levels, reseacher have introduced Reflective Journal Writing to all combined Science teachers through Professional Development (P.D.) and hoping that they could implement it to their classes.

Why are these two classes chosen?

When they are in Year 9, their End of year examination result for Combined Science credit achievers dropped from **9.3 %** to **5.3 %**. 10 G has only **3 credit achievers** and 10 R has **1**.

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. In other words, students might not be able to understand what they have read in the textbook especially some of the questions in the GCE O level examination.

According to Mr Ivan Christopher Moore, the principal of Sekolah Menengah Masin, who had done analysis on the previous years GCE 'O' Level's Combined Science for which the Lexile score is more than 1000 L .

Data, Results and Findings

1. Survey Data:

Survey given to the students					
	Number of students				
	SD	D	A	SA	TOTAL
It helps me to improve my learning in Combined Science.	1	0	27	4	32
It helps me to understand the science concept.	0	0	29	3	32
It can help me to communicate with my teacher confidently.	0	8	21	3	32
My teacher has improved her teaching techniques.	0	0	21	11	32
It helps me to reflect my learning in class.	0	2	24	6	32
My teacher helps me in my understanding by replying my comment.	0	4	18	10	32
The information written down in my journal helps me in my revision.	0	0	17	15	32
I can improve my marks in my test or examination.	1	1	3	27	32
I can share my thought with my teacher in my journal.	0	2	26	4	32
My teacher motivates me in my journal.	0	2	21	9	32
Percentage of the number of students	0.63	5.94	64.69	28.82	100

Figure 3 - Survey given to the students

Majority of the students agreed that the Reflective Journal Writing has given them a positive impact in learning of Combined Science especially understanding the science concept. Beside that, it can also help them for their revision. All of them agreed on seeing improvements in their teacher's teaching technique.

Feedback from the students as in general:

1. Most of the students commented it really helps them to improve their understanding, doing revision with it and easy to refer any time, any where.

2. Students are highly motivated to write down the Reflective Journal when teacher reply their comment and giving stickers. Mostly like to do summary of the lesson or writing notes in their own words because their teacher can checked the summary or brief notes.

3. 94% of the students agreed to use Reflective Journal Writing in other subjects such as English or mathematics as it is easy to apply and the other 6% doesn't agree because he or she is find difficulty in writing down summary.

2. Data analysis based on Topical Tests and Assessment 1 & 2

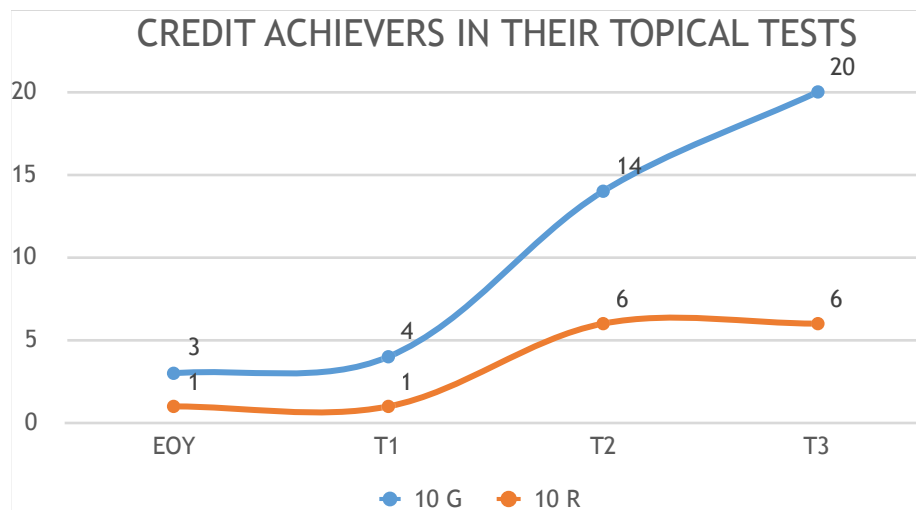


Figure 4 - Number of credit achievers in tropical tests, T1, T2 & T3 compare to End of Year Examination 2018

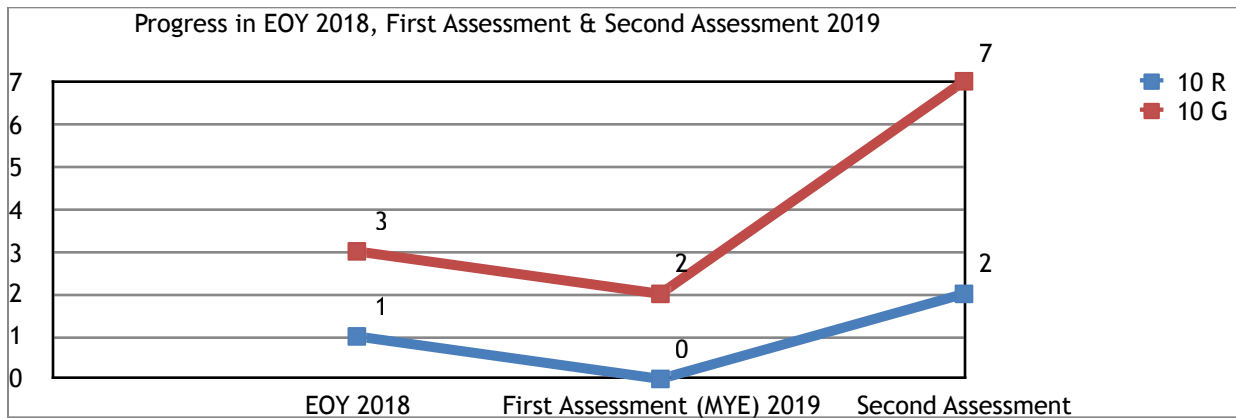


Figure 5 - Number of credit achievers in First and Second Assessments 2019 compare to End Of Year Examination 2018

From Figure 4, there is a progress in the number of the credit achievers in the 3 topical tests for both the two classes. As mentioned in the previous point, Reflective Journal Writing really helps them to understand and revise easily.

This is also proven in Figure 5, which shows an increase number of credit achievers in the Second assessment 2019 comparing to their End of Year Examination 2018 and First Assessment 2019.

There is a drop in the First Assessment because 85% of the questions in the paper are taken from the Year 9 topics which they haven't try out in the Reflective Journal Writing yet.

On top of that, there are more Yellow Zone students compare to number of Red Zone students in comparison between Assessment 1 and Assessment 2.

Teacher's Feedback on using Reflective Journal Writing (Appendices 2 - 4)

Three out of four teachers who have tried Reflective Journal Writing in their lesson gave positive feedbacks. All of teachers agree when students were 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:

From Figure 3, 100% of the students agreed that with Reflective Journal writing can really help them to understand the Science Concept. So therefore, the students need not have to memorised the Science concepts if they could write down what they can understand from the lesson and checked by subject teacher.

In Figure 4 and Figure 5, the increase number of credit achievers in all the three Topical tests and Assessment 2 has proven that Reflective Journal Writing can help the students to achieve credits in Combined Science.

In other words, if Reflective Journal is to be done constantly especially on continuous feedback by the teacher, the students can master the Science concepts and hence there would be more students who can get credit in Combined Science.

Evidence of impact on self, organisation & students

Impact on self:-

Able to apply a tool learnt, Johari Window (Joseph Luft and Harry Ingham 1955) by open discussion with few teachers during 'makan-makan' function in school. Discovering Blind zone Quadrant for being so quiet for most of the time, they think. With that feedback, applying SARAH acronym (Julie 2018), got to try to be more talkative and interactive with teachers. This would help to increase the size of open quadrant area and thus making the hidden and unknown quadrant areas smaller.

Apart from that, I am able to use the analysed data to evaluate the progress of any Academic program run in school and use it to find the solutions for any issue arise. From this project, I'm more confident in running the Academic Programs in school and cluster level which I'm currently involve together with other Cluster 3 Deputies Principal of Academic to run the initiatives program to improve the number of 5 and above credits achievers in GCE O Level Examination 2019.

Impact on the organization:

Able to work with some parents through program such as Homelink homework, Sharing session for parents from School Administration, and Academic Forum for parents and Year 11 and 10 Sc1 students, which I have invited forum panels from other school's Chairperson of PIBG (Parent teachers association) and other ministry's officer, Ministry of Sport, Youth and Culture (JAPEM). Alhamdulillah, the Academic Forum runs very smoothly.

Impact on the students:**How does it help the Combined Science students?**

Students are able to reflect on their understanding of the lesson taught by the teacher by writing down in points form or concept-mapping and drawing and label scientific diagrams. They can communicate their inquiry or comment to their teacher that need attention or feedback. Some teachers might get motivated to entertain students' inquiries during lesson. This journal can be used as last minute revision for students rather than going through thick textbook or notes.

Beside that, Reflective Journal Writing can also develop the students' 21st Century skill as they are encourage to comprehend their learning and understand of the lesson. From here, the students can be a more independent learners once they are confident in using it without any guide or support from their teacher.

Ways Forward, Challenges & Limitations

Challenges:

1. The students are not sure of what to write at first and they are too dependent on the teachers.
2. Not all Combined Science teachers are enthusiastic about this project as they are not able to give spare time for students to write the journal especially during the plenary of the lesson. Every teacher must completely covers the topics in the syllabus according to the date stated in their scheme of work.

Limitation:

1. Can only focus on two groups of students. I could add more groups provided that the teachers were provide with evidence that Reflective Journal can really help their students to improve their learning and become an independent learner. This can be support by Bohlen, Beal and Rogers (1957) in The Roger Adoption Curve, the other 68% of the Combined Science teachers who are the early and late majority will adapt to Reflective Journal after seeing the evidence which number of students' understanding of science concepts and results performance has increase.

Ways Forward:

1. To encourage other teachers of different subjects 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. For the next meeting with the students, there will be discussion session on how to improve their journals so that they will feel the sense of ownership of doing it and maximize the full use of the journal.
4. Hopefully, with the success of this project, I shall be able to share with the Head of Cluster 3 and Principals of the Cluster 3 Secondary schools.

Appendices:

Appendix 1 - Student's Reflection Survey



Student's Reflection Survey

[Reflective Journal Writing in Combined Science]

Name: _____

Teacher ' Name: _____ Class: _____

Please rate the following information on a scale of 1 to 4 by circle it.

1 = "strongly disagree" , 2 = "disagree" , 3 = "agree" , 4 = "strongly agree"

It helps me to improve my learning in Combined Science.

1	2	3	4
---	---	---	---

It helps me to understand the science concept.

1	2	3	4
---	---	---	---

It can help me to communicate with my teacher confidently.

1	2	3	4
---	---	---	---

My teacher has improved her teaching techniques.

1	2	3	4
---	---	---	---

It helps me to reflect my learning in class.

1	2	3	4
---	---	---	---

My teacher helps me in my understanding by replying my comment.

1	2	3	4
---	---	---	---

The information written down in my journal helps me in my revision.

1	2	3	4
---	---	---	---

I can improve my marks in my test or examination.

1	2	3	4
---	---	---	---

I can share my thought with my teacher in my journal.

1	2	3	4
---	---	---	---

My teacher motivates me in my journal.

1	2	3	4
---	---	---	---

What went well in using Reflective Journal Writing in your Combined Science?

What part of the Reflective Journal Writing did you enjoy the most? Why?

Would you like to use Reflective Journal Writing in other subject? Why?

Appendix 2 - Online Survey of Reflective Journal Writing for Combined Science Teacher using Google Form

What went well in using the Reflective Journal Writing from your opinion.

3 responses

Students updated their journal after finish the topic/after lesson.

Students can make their own notes.

Students gave feedback on the lessons

Which part of the Reflective Journal Writing content did you like the most? why?

3 responses

Summary of the lesson. I know how much they understand of the topic taught

Note making, because students can become independent learner.

Writing their own notes & reflections as we can see if the students could understand the lessons and we also can spot any misconceptions.

If you want your students to improve the content of the journal, which part will you focus on? Why?

3 responses

Summary. I want my students to get used of using mind mapping, bullet point after every lesson.

The questioning part. The curiosity to know more, ask as many questions related to the topic. This will make them love the subject.

Writing their own notes, as some of the students still have difficulty in summarizing the notes. Some of them just leave it blank.

What other ways would you suggest to improve the understanding of your combined science's students beside using Reflective Journal Writing.

3 responses

Revision cards.

Study past year paper.

Different teaching approaches should be used during the lesson.

For those who have done the Reflective Journal Writing in Combined Science.

Please rate the following information on the scale of 1 to 4 and answer few questions.

Reflective Journal Writing helps me to identify the misconception and weakness of my students.

	1	2	3	4	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly agree

Reflective Journal Writing helps me to reflect my delivery of lesson *

	1	2	3	4	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly agree

I can see improvement in my students' assessment when using Reflective Journal Writing. *

	1	2	3	4	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly agree

I can communicate with my students through this Reflective Journal Writing *

	1	2	3	4	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly agree

Students are sharing their thought with me in their journal. *

	1	2	3	4	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly agree

I can motivate my students in their learning through their journal. *

	1	2	3	4	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly agree

I would recommend the use of Reflective Journal Writing to other teachers. *

	1	2	3	4	
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Strongly agree

Appendix 4 - Respond from teacher who have not try RJW yet.

I cannot fit the Reflective Journal Writing session in the planery of my lesson. *

1 2 3 4

Strongly disagree Strongly agree

I have no confident to introduce the Reflective journal writing to my students. *

1 2 3 4

Strongly disagree Strongly agree

I am sure that my student will not write anything in his or her journal. *

1 2 3 4

Strongly disagree Strongly agree

The Reflective Journal Writing will condemn the delivery of my lesson because of student's comment on my teaching. *

1 2 3 4

Strongly disagree Strongly agree

I will try to use Reflective Journal Writing in the near future if other class that has used it successfully. *

1 2 3 4

Strongly disagree Strongly agree

Any other reason why you do not use the Reflective Journal Writing?

1 response

time constraint, students lack of interest in other forms of written feedback

Appendix 5 - End of year Examination results of 10 G and 10 R Combined Science students

End of year Examination results (2018)

9G	NO OF STUDENTS	9R	NO OF STUDENTS
A*	0	A*	0
A2 / A	0	A2 / A	0
B3 / B	0	B3 / B	0
B4 / C	0	B4 / C	0
C5 / D	0	C5 / D	0
C6 / E	3	C6 / E	1
D7 / F	6	D7 / F	1
E8 / G	9	E8 / G	6
U	4	U	8
X	0	X	1
TOTAL	22	TOTAL	17

Appendix 6 - Comparison of Topical Test 1, 2 and 3 results of 10 G and 10 R Combined Science students with EOY Examination 2018

SAMPLE IN TOPICAL TEST 1. 2 & 3

10 GENIUS	TOPICAL TEST			
	E0Y	T1	T2	T3
AWG MUHAMMAD KHAIRIEN AIMAN BIN AWG MUHD SALAZNI	37	48	38	61
HASBUL WAFI BIN MOHAMAD HARDI	51	48	67	68
MOHAMMAD DANIAL WA'IEZZUDDIN BIN KAHAR	36	20	71	82
MOHAMMAD KHAIREL HAKIM BIN MOHAMMAD NOOR ARIFFIN	37	40	58	46
MOHAMMAD NUR ROMAIZIE BIN ROSLAN	46	44	67	X
MOHAMMAD SYAHRIZAN @ABDUL HAKIM BIN SUFRI	49	24	46	64
MUHAMMAD IZZAT RIDAUDDIN BIN ALI HARDI	34	36	46	50
MUHAMMAD ZULFADHLI WA'IE BIN MUHAMMAD JEMIN	49	48	92	61
DAYANGKU AKMAL ZAINATUL NIKMAH BINTI PENGIRAN KUSMA WADY	48	44	67	89
DK AMELIA SYASYA BINTI PENGIRAN SAMSUL RIJAL (SM PAP MASNA)		40	79	93
ERMA DINA WAHEEDA BINTI HAJI JAFREY	64	64	75	93
ERMA DINA WARDINA BINTI HAJI JAFREY	48	44	54	64
ERNA SYAZWANEE YUSRAINIE BTE YUSDI RIDUWAN (SMSAB)	65	68	67	82
NUR ILYANA RASYIDAH BINTI HADI MULYANI	56	52	54	89
NUR RABIATULAIN BINTI MOHAMAD REDZUAN	51	44	58	82
NURAMALINA HANA BINTI ISMAIL	47	32	58	93
NURAZALINA BINTI JOAN	61	60	66	93
NURIZZATI SAHIRANEY BINTI JASNEY	52	36	42	71

NURRABI'ATUL ADAWIAH BINTI ZAKARIA	57	68	71	64
NURUL FITRI SAJIDAH BINTI SAHROOL	41	36	67	89
SITI NOOR AZIATUL NAFISAH BINTI MOHAMMAD AZIYAN	52	56	83	82
SITI NUR SYAHIRAH BINTI SOFIAN	48	40	75	61
NURUL AZIMAHWATI BINTI MD ASMEY SHUKRYZAM (SM SULTAN HASSAN)		16	63	75
Total credit achievers	3	4	14	20

10 REMARKABLE	TOPICAL TEST			
	EOY	T1	T2	T3
AMIR HAQEEMI BIN MUHD MORSHIDDI	30	12	54	X
AMIRUL RASHID BIN ZULKIFLI (SM HASHIM)	32	32	67	35
AWANGKU MUHAMMAD FAUZI SALIHIN BIN PENGIRAN MUSTAPA	52	36	63	50
MOHAMMAD AFIQ HAZIQ BIN MOHAMMAD ERWAN	37	32	38	43
MOHAMMAD FARHAN BIN IBRAHIM	48	52	67	68
MOHAMMAD KHAIRULAZMIN BIN HAJI A. IBRAHIM	26	28	63	14
MUHAMMAD AFI BIN HAJI MOHAMED ALI	60	72	71	93
MUHAMMAD RIFAIE BIN REZAL	42	20	46	79
MUHAMMAD FAKHIRI SUWANDI BIN HAJI SAWALY (SM RIPAS 13 FEB 2019)	X	X	25	30
HAZIRAH BINTI RANI	33	8	38	36
NOORHAZIRAH BINTI ROSLAN	46	28	58	50

NUR FATIN BINTI KHANAFIAH	44	20	50	61
NURUL FADZILAH REDZATUL BINTI MOHAMMAD REDZUAN	37	44	54	64
SITI NURUL AQILAH BINTI HAJI PUDIN	41	14	63	50
SITI RANAA RAYHAANAH BINTI MOHD REDUAN	29	8	50	68
Total credit achievers	1	1	6	6

Appendix 7 - Comparison of First and Second Assessments 2019 results of 10 G and 10 R
Combined Science students with EOY Examination 2018

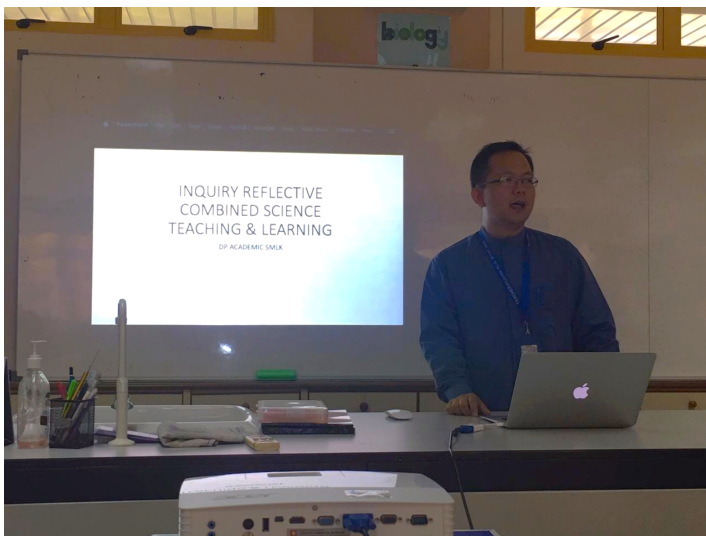
Combined Science Examination marks -			
TEST & ASSESSMENT (10R)	EOY	First Assessment	Second Assessment
AMIR HAQEEMI BIN MUHD MORSHIDDI	30	25	35
AMIRUL RASHID BIN ZULKIFLI (SM HASHIM)	32	30	35
AWANGKU MUHAMMAD FAUZI SALIHIN BIN PENGIRAN MUSTAFA	52	42	48
MOHAMMAD AFIQ HAZIQ BIN MOHAMMAD ERWAN	37	29	52
MOHAMMAD FARHAN BIN IBRAHIM	48	45	52
MOHAMMAD KHAIRULAZMIN BIN HAJI A. IBRAHIM	26	23	48
MUHAMMAD AFI BIN HAJI MOHAMED ALI	60	58	57
MUHAMMAD RIFAIE BIN REZAL	42	40	43
MUHAMMAD FAKHIRI SUWANDI BIN HAJI SAWALY (SM RIPAS)	X	27	26
HAZIRAH BINTI RANI	33	34	39
NOORHAZIRAH BINTI ROSLAN	46	39	35
NUR FATIN BINTI KHANAFIAH	44	45	43
NURUL FADZILAH REDZATUL BINTI MOHAMMAD REDZUAN	37	35	74
SITI NURUL AQILAH BINTI HAJI PUDIN	41	36	39
SITI RANAA RAYHAANAH BINTI MOHD REDUAN	29	27	74
	100	100	100
NO. OF CREDITS ACHIEVERS	1	0	2
TEST & ASSESSMENT (10G)	EOY	First Assessment	Second Assessment
AWG MUHAMMAD KHAIRIEN AIMAN BIN AWANG MUHAMMAD	37	33	35
HASBUL WAFI BIN MOHAMAD HARDI	51	43	70
MOHAMMAD DANIAL WA'IEIZZUDDIN BIN KAHAR	36	45	43
MOHAMMAD KHAIREL HAKIM BIN MOHAMMAD NOOR ARIFFI	37	40	43
MOHAMMAD NUR ROMAIZIE BIN ROSLAN	46	59	52
MOHAMMAD SYAHRIZAN @ABDUL HAKIM BIN SUFRI	49	48	30
MUHAMMAD IZZAT RIDAUDDIN BIN ALI HARDI	34	43	22
MUHAMMAD ZULFADHLI WA'IE BIN MUHAMMAD JEMIN	49	60	52
DAYANGKU AKMAL ZAINATUL NIKMAH BINTI PENGIRAN KUSNATA	48	46	61
DK AMELIA SYASYA BINTI PENGIRAN SAMSUL RIJAL(PAP MASNA)		50	39
ERMA DINA WAHEEDA BINTI HAJI JAFREY	64	58	78
ERMA DINA WARDINA BINTI HAJI JAFREY	48	44	87
ERNA SYAZWANEE YUSRAINIE BTE YUSDI RIDUWAN (SMSAB)	65	66	74
NUR ILYANA RASYIDAH BINTI HADI MULYANI	56	47	48
NUR RABIATULAIN BINTI MOHAMAD REDZUAN	51	57	43

NURAMALINA HANA BINTI ISMAIL	47	51	57
NURAZALINA BINTI JOAN	61	55	74
NURIZZATI SAHIRANEY BINTI JASNEY	52	49	48
NURRABI'ATUL ADAWIAH BINTI ZAKARIA	57	41	17
NURUL FITRI SAJIDAH BINTI SAHROOL	41	34	48
SITI NOOR AZIATUL NAFISAH BINTI MOHAMMAD AZIYAN	52	46	57
SITI NUR SYAHIRAH BINTI SOFIAN	48	46	35
NURUL AZIMAHWATI BINTI MOHD ASMEY SHUKRYZAM (SM SULTAN HASSA)		45	61
	100	100	100
NO. OF CREDITS ACHIEVERS	3	2	7

Appendix 8 - Students' Feedback session and Sharing Session (PD) for Combined Science Teachers with Researcher images



Sharing session (Professional Development) – Inquiry Reflective Journal Writing by Deputy Principal Academic on 2nd February 2019



ATTENDANCE


COMBINED SCIENCE PD
Date: 2 February 2019 (SATURDAY)
TIME: 2.00 PM

NO	NAME	Classes teach	SIGNATURE
1	Hjh Rosmah Hj Mektam	9A, 9B	
2		9A, 9E	
3		10A, 10B	
4			
5	Hj Mardiana Marzuki binti Saibah	9F, 9L, 9Y 10A, 10E	
6		11Y	
7			
8			
9	Mrs. Nur Hafidha Ismail	9Y, 9Z, 10A, 10B 10C, 11Y	
10			
11			
12	Hjh Nuraziana Hj Abd. Razak	11E, 10E1 9E, 9J, 9O 9U	
13			
14			
15			
16	Roshidah Hj Abdul Samad	11C, 10C1, 11A, 11B	
17			
18	Vivian Arany	11E, 10E, 9Y, 9Z	
19			
20	Lim Jooi. Kuan.	11A, 11N	
21		11A, 11C, 11D	
22		11C1, 11C2	
23	Nancy Kang	11C, 10E2, 9C	
24	Nur Anisya Rosli - Nurin	11A, 11M, 9C, 10E	
25			
26			
27			
28			
29			
30			
31			
32			

Appendix 9 - Sample of few students' Reflective Journal Writing during Scrutiny of Reflective Journal stage

Will done!
Love to read your comments.
Keep doing it.
Never give up.

11/7/2019



WHY ALUMINIUM UNREACTIVE?

It has a layer of aluminium oxide

Calcium reacts slowly with cold water

Sodium reacts violently with cold water

It reacts vigorously with cold water

metal + water → metal hydroxide + hydrogen

metal + steam → metal oxide + hydrogen

metal + acid → metal salts + hydrogen

REACTIVITY SERIES

General Experiments

To test hydrogen

Burning splint produce pop - sound

CO - Carbon
M - Magnesium
SIL - Silver
GO - Gold

PO - Potassium
S.O - Sodium
CA - Calcium
M - Magnesium
A - Aluminium
Z - Zinc
L - Lead

comment: Alhamdulillah I can understand this topic very well. Teacher explain it to me very well

How to remember metal arrangement in order of reactivity

POSCAMAZIL
CONSILGO

Reactivity series

Potassium react violently with cold water.
Sodium react vigorously with cold water
Calcium react slowly with cold water
Magnesium react very slow with cold water but vigorous with steam

Even aluminium is ranked high, it does not react with water or steam because it has a layer of aluminium oxide

CO M SIL GO
has no reaction when react with cold water or steam


To test hydrogen:
Hydrogen: Burning splint produce 'pop' sound.

metal + water → metal hydroxide + H₂
metal + steam → metal oxide + H₂
metal + acids → metal salt + H₂

Sulphuric acid → sulphate
Hydrochloric acid → chloride
Nitric acid → nitrate

Will done. keep up the good work.

11/7/2019



Formula

- Speed = $\frac{\text{distance}}{\text{time}}$
- Workdone = Force x distance
- Moment = force x distance
- Weight = mass x gravitational force
- Density = $\frac{\text{mass}}{\text{volume}}$

Unit

- Volume = cm^3
- WD = Nm / Joules
- Energy = Joules
- Moment = Nm

Speed : m/s
Distance : m (metre)
Time : s (second)
Force : N (Newton)
Mass : Kg (kilogram)
Weight : N (Newton)
Gravity : N / Kg
Density : Kg / m³ or g
acceleration : m/s²



Wednesday, 6th Feb 2019

Objective: Explain transport in plants.

Step to success - Describe the route of water through root hair cells.

- Explain the structure of root hair cells & its function.
- Define transpiration
- Describe of what it occurs.
- State the function of xylem & phloem.

What I learn today?

- The water goes to the roots hair cell by osmosis and to the stem and leaves.
- Transpiration happen when the water leave the plant through stomata.
- Wilting occurs when the plant lose too much water and it always happens during hot and dry days.
- xylem is to transport water to the stem and leaves.
- while phloem, is to transport food to all parts of plant.

Comments:

- quite easy topic. *Alhamdulillah*

WOW

white blood cells

- @macrophages
- @lymphocytes

there are 4 components of blood

- @red blood cells
- @white blood cells
- @platelets
- @plasma

comment:
 Alhamdulillah this topic is a little bit easy for me on the other hand remember the key of the part of body. *good!*

welcome. keep on updating and any questions just write down it here. T.A.

Appendix 10 - List of Lexile score for 10 G and 10 R students

SEKOLAH MENENGAH LAMBAK KIRI

Class	Name	Lexile score
10G	SITI NUR SYAHIRAH BINTI SOFIAN	790
10G	SITI NOOR AZIATUL NAFISAH BINTI MOHAMMAD AZIYAN	726
10G	NURUL FITRI SAJIDAH BINTI SAHROOL	684
10G	NURRABI'ATUL ADAWIAH BINTI ZAKARIA	674
10G	NURAZALINA BINTI JOAN	670
10G	NURIZZATI SAHIRANEY BINTI JASNEY	670
10G	NURAMALINAHANA BINTI ISMAIL	635
10G	NUR RABIATULAIN BINTI MOHAMAD REDZUAN	625
10G	NUR ILYANA RASYIDAH BINTI HADI MULYANI	598
10G	EVY NATALLIA BINTI SALMAN	580
10G	ERNA SYAZWANEE YUSRAINIE BTE YUSDI RIDUWAN	530
10G	ERMA DINA WARDINA BINTI HAJI JAFREY	507
10G	ERMA DINA WAHEEDA BINTI HAJI JAFREY	479
10G	DAYANGKU AKMAL ZAINATUL NIKMAH BINTI PENGIRAN KUSMA WADY	456
10G	MUHAMMAD ZULFADHLI WA'IE BIN MUHAMMAD JEMIN	435
10G	MUHAMMAD IZZAT RIDAUDDIN BIN ALI HARDI	412
10G	MOHAMMAD SYAHRIZAN @ABDUL HAKIM BIN SUFRI	406
10G	MOHAMMAD NURROMAIZIE BIN ROSLAN	404
10G	MOHD KHAIREL HAKIM MOHAMMAD NOOR ARIFFIN	383
10G	MOHD DANIAL WA'IEZZUDIN KAHAR BIN ABDULLAH	364
10G	HASBUL WAFI BIN MOHAMAD HARDI	316
10G	AWG MUHD KHAIREN AIMAN BIN AWANG MUHD SALAZNI	280
10R	HAZIRAH BINTI RANI	613
10R	MOHAMMAD FARHAN BIN IBRAHIM	556
10R	AMIR HAQEEMI BIN MUHD MORSHIDDI	463
10R	NURUL NAQIBAH BINTI JOHARI	448
10R	AK MUHAMMAD FAUZI SALIHIN BIN PENGIRAN MUSTAPA	406
10R	NOORHAZIRAH BINTI ROSLAN	399
10R	NURUL FADZILAH REDZATUL MOHD REDZUAN	391
10R	NURAMAL LEA AMEERA BINTI MOHAMMAD ZAMIL	389

10R	SITI NURUL AQILAH BINTI HAJI PUDIN	384
10R	SITI RANAA RAYHAANAH BINTI MOHD REDUAN	380
10R	AMIRUL RASHID BIN ZULKIFLI (SM HASHIM)	343
10R	NUR FATIN BINTI KHANAFIAH	335
10R	MUHAMMAD AFI BIN HAJI MOHAMED ALI	316
10R	NOR AMIRAH BINTI MAT JALANI	314
10R	MOHAMMAD KHAIRULAZMIN BIN HAJI A. IBRAHIM	305
10R	MUHAMMAD RIFAIE BIN REZAL	283
10R	MOHAMMAD AFIQ HAZIQ BIN MOHAMMAD ERWAN	276

average score **467.30**

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