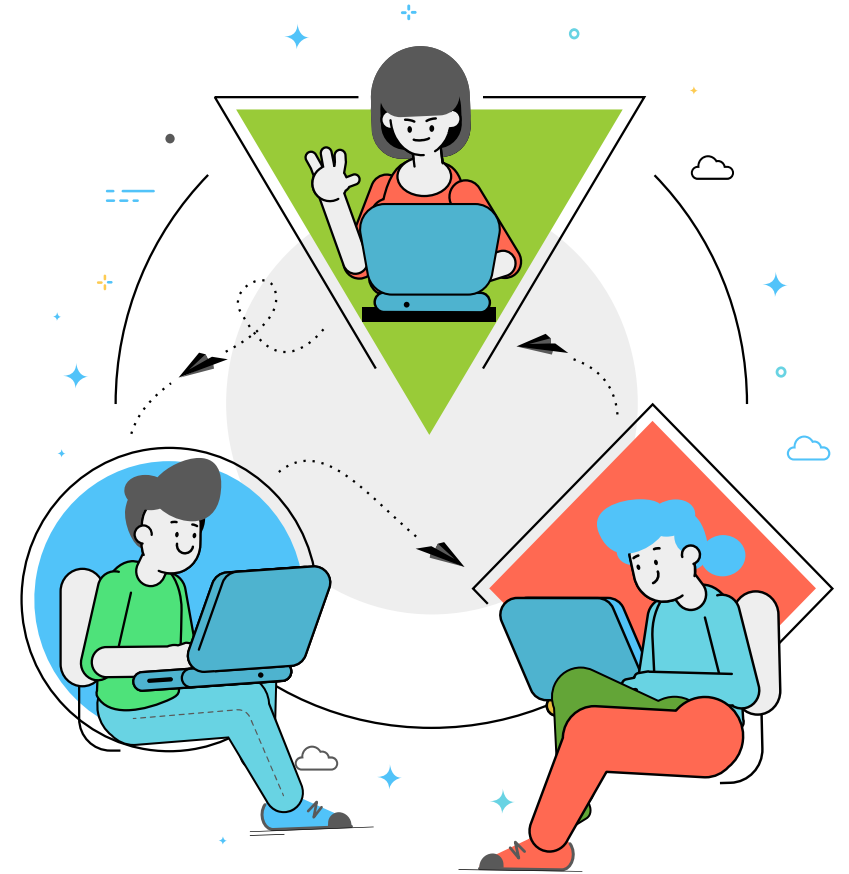# Making use of Assessment Data to Facilitate Self-directed Learning of Students

Kwok Tak Seng Catholic Secondary School
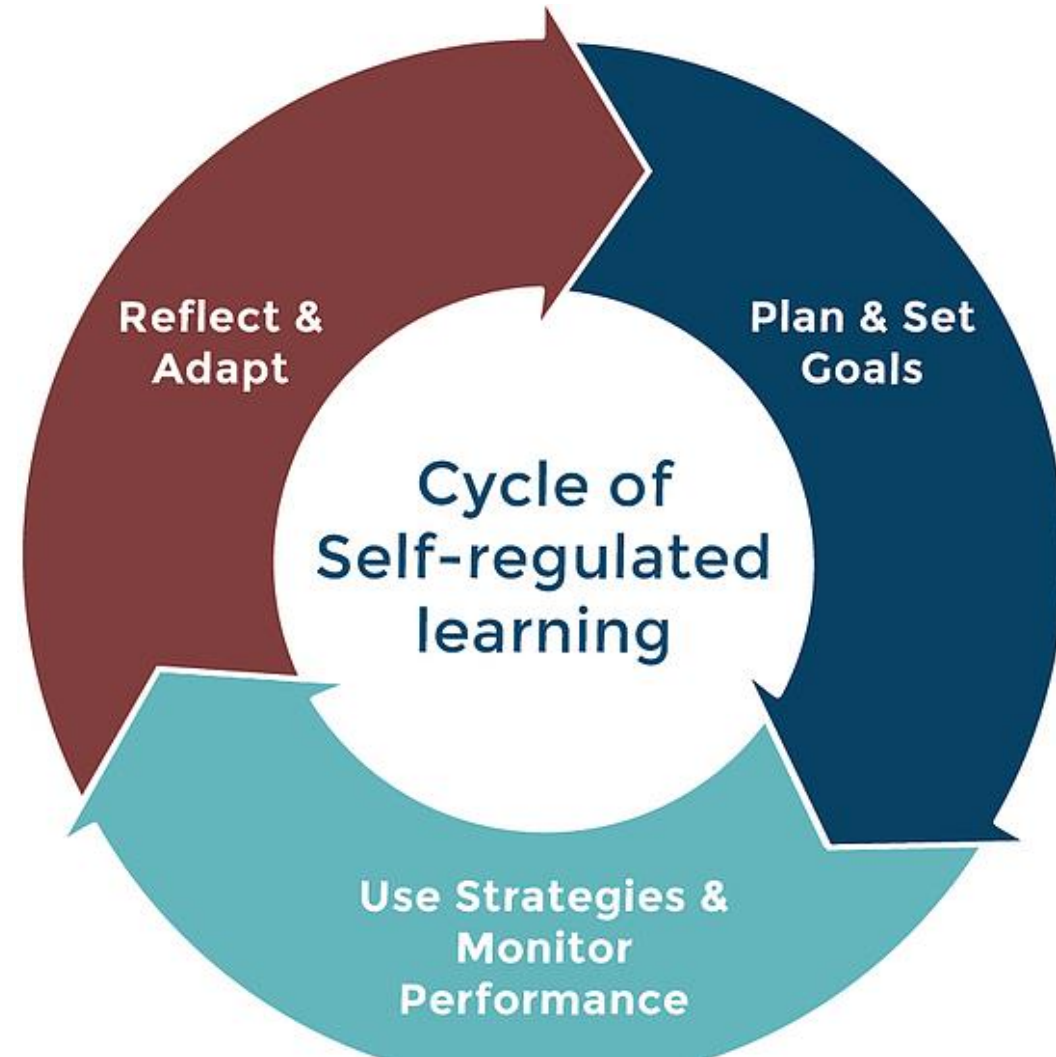
Mr. Tsang Wai Kong

School info

District
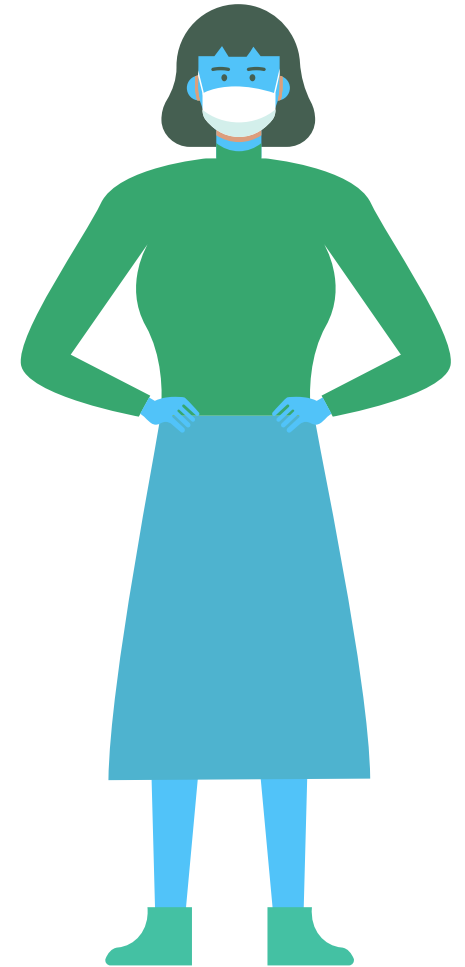
ShaTin

MOI

EMI

Education Goals

Nuturing World-Vision leaders of the future

Support and develop active and independent learning.

Major Concern

Cycle of Self-regulated learning

- Reflect & Adapt
- Plan & Set Goals
- Use Strategies & Monitor Performance

Context: Covid-19 & New Normal

Time	Mode	Resources	Skill
Class time Vs Learning time	Face-to-face Online Blended	School Teachers Students	Teachers Students

1 2 3 4
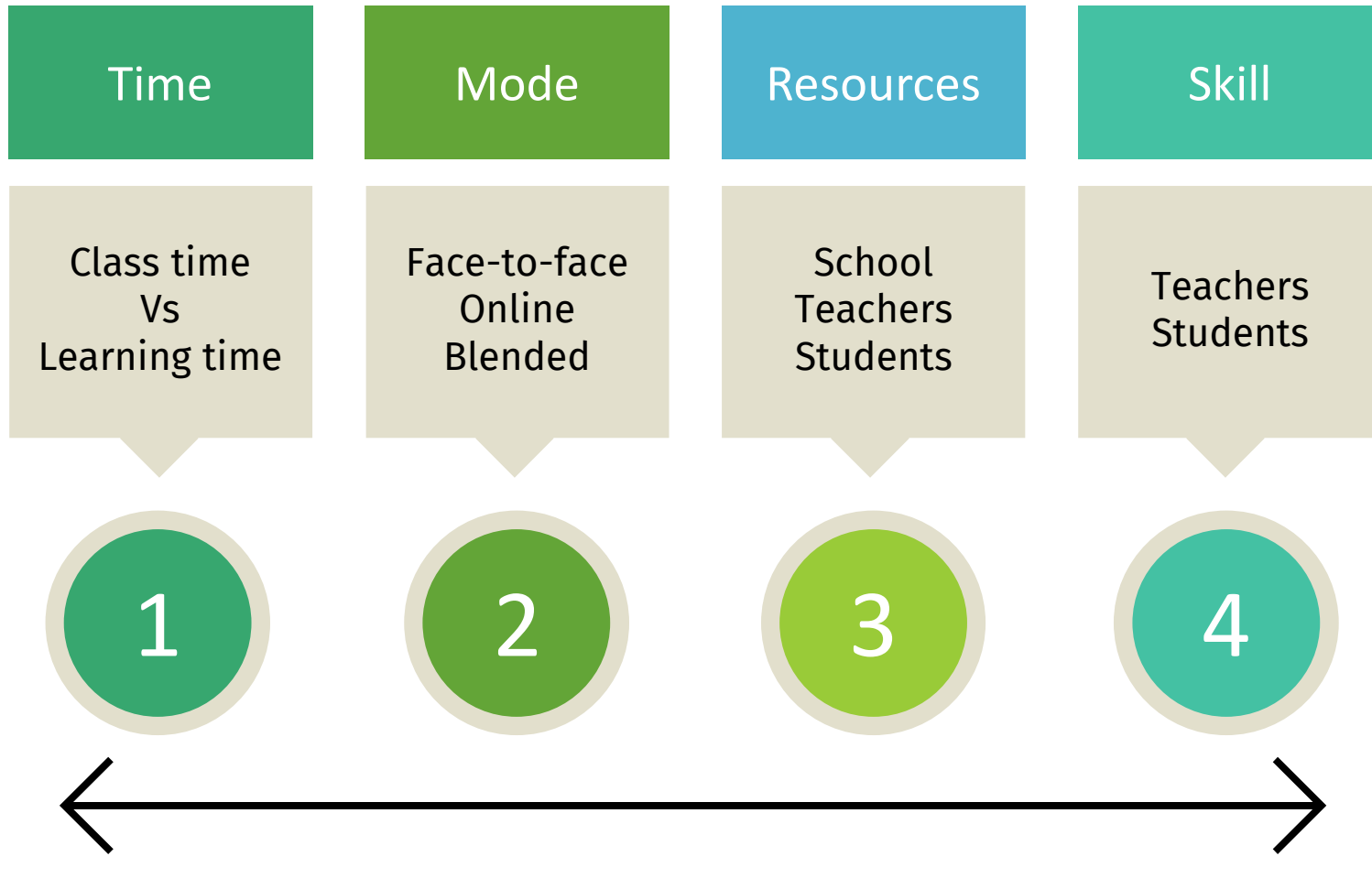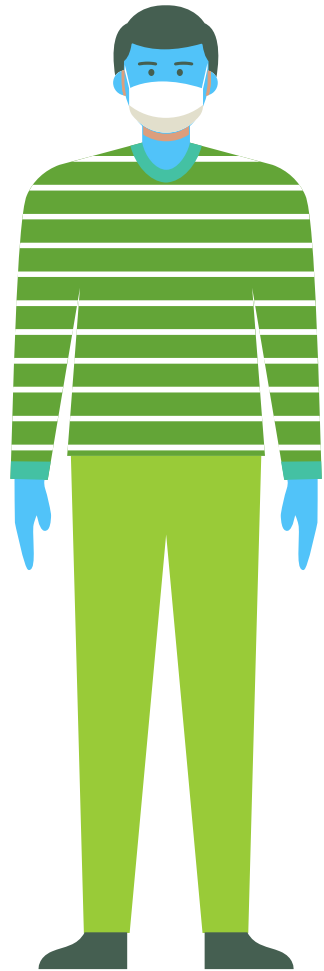
Di Pietro, G. et al. (2020). The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets. European Union.

Socio-economic learning inequality

Non-financial parental support	Financial parental resources	School attended	Students' digital skills

Cognitive skills | Non-cognitive skills | Time at home with children | Digital resources at home | Suitable home learning space | Nutrition | Affordability of extra-school learning activities | Digital resources | Teachers' digital skills

Blended learning

- The **advancement of technology** and the widespread of IT tools made self-regulated learning became possible and accessible.

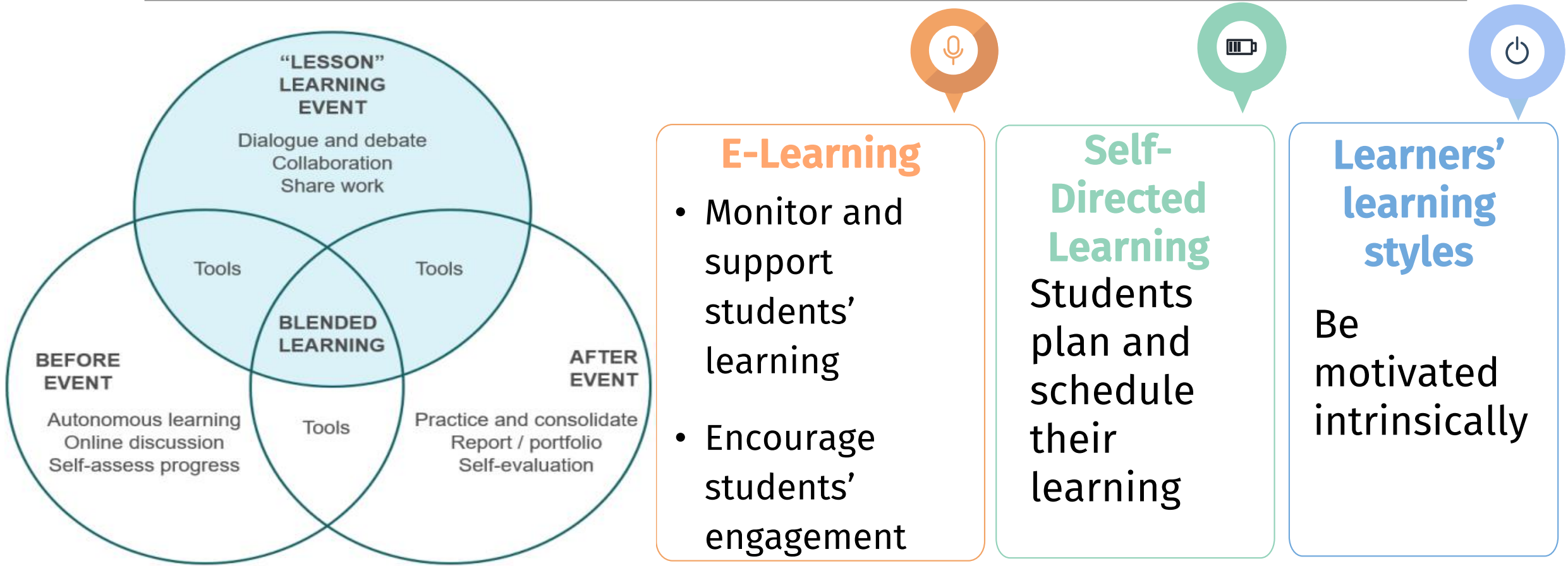- **Digital revolution** is transforming the way children and young people play, access information, communicate and learn (Fullan & Langworthy, 2014)

- The need to **link** students to the community, to the internet meta world and the school

- We need to prepare students for the **future challenges** in the 21st century

- According to EDB, **"learning time"** *refe*rs to not only classroom periods as students can gain learning experiences anywhere and anytime. It is supported by the changing modes of learning beyond the classroom and school hours, the growing diversity in student learning needs and the variations in school contexts.

- The **COVID-19 outbreak** and the practice of "suspending courses without suspending learning" highlighted the necessity of learning outside of the classroom, encouraging self-directed learning.

Blended learning

"LESSON" LEARNING EVENT
Dialogue and debate
Collaboration
Share work

Tools

Tools

BLENDED LEARNING

BEFORE EVENT
Autonomous learning
Online discussion
Self-assess progress

Tools

AFTER EVENT
Practice and consolidate
Report / portfolio
Self-evaluation

E-Learning
- Monitor and support students' learning
- Encourage students' engagement

Self-Directed Learning
Students plan and schedule their learning

Learners' learning styles
Be motivated intrinsically

Liu et al (2017) , Cloud-class Blended Learning Pattern Innovation and Its Applications, Proceedings of the 2017 International Symposium on Educational Technology, Hong Kong

10 Key Areas that Speak Both to Transforming Learning and to Closing Opportunity and Achievement Gaps

Darling-Hammond, L., Schachner, A. & Edgerton, A. K. (2020). Restarting and Reinventing School Learning in the Time of COVID and Beyond.

1. Close the digital divide

2. Strengthen distance and blended learning

3. Assess what students need

4. Ensure supports for social and emotional learning

5. Redesign schools for stronger relationships

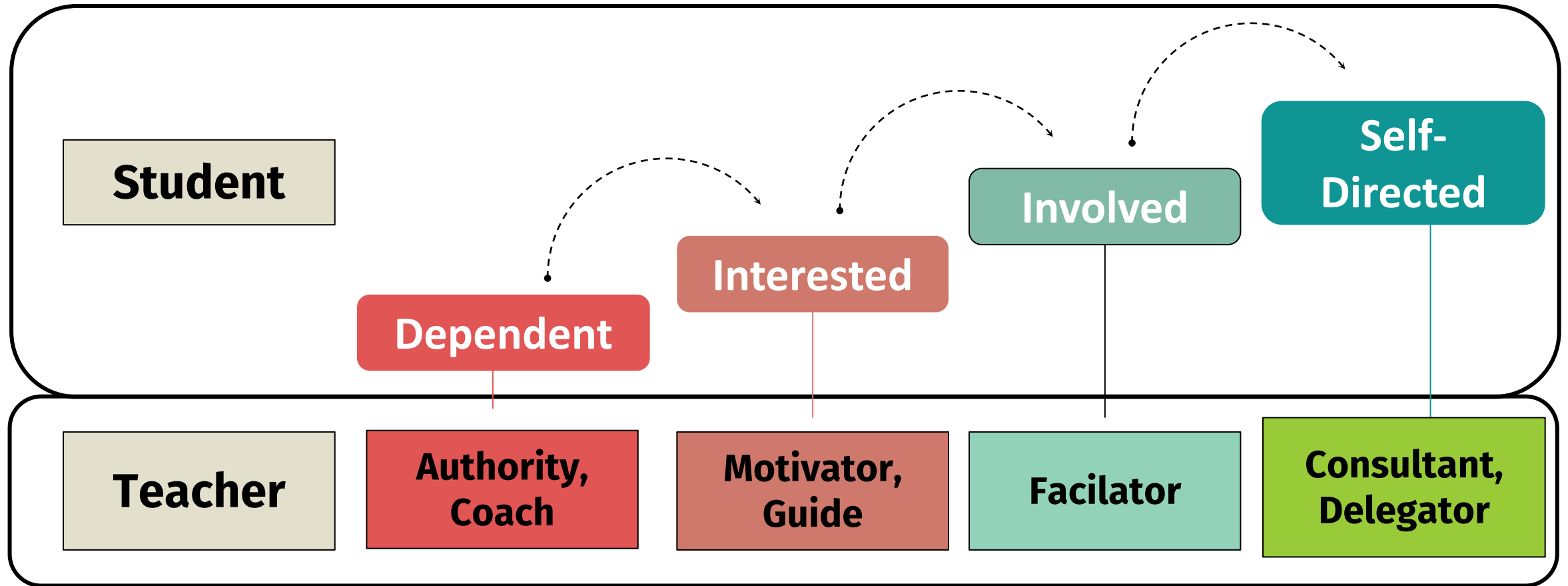6. Emphasize authentic, culturally responsive learning

7. Provide expanded learning time

8. Establish community schools and wraparound supports

9. Prepare educators for reinventing school

10. Leverage more adequate and equitable school funding

Self-Directed Learning Model, G. Grow, 2009

Role of Teachers	Action (examples)
Transmitters of knowledge	Give lectures and provide and present information.
Facilitators of learning	Discuss with students and provide guidance in the process.
Resource persons	Advise on sources of information and build networks for learning.
Counsellors	Provide advice on study methods and future study and career pathways.
Assessors	Inform students of their strengths and weaknesses to make plans for the next stage of learning.
Leaders	Take the lead in motivating student learning.
Co-learners	Learn alongside students.

Google ?

EDB Secondary Education Curriculum Guide (2017)
Booklet 3: Effective Learning and Teaching: Developing Lifelong and Self-directed Learners

教師的角色	行動（舉隅）
知識傳授者	授課、提供及講解知識
學習促進者	與學生討論，在過程中引導學生
資訊提供者	提供有關資料來源的意見，建立學習網絡
輔導者	提供有關學習方法、升學及就業的意見
評估者	讓學生了解自己的強、弱項，以訂立下一個學習階段的計劃
領導者	發揮領導作用，推動學生學習
學習夥伴	與學生一同學習

《中學教育課程指引》(2017) 分冊3：有效的學與教：培養終身學習和自主學習者

# 迷思一：自主學習等同自學
因此教師在推動自主學習上的角色並不重要

自主學習講求學生對自己的學習負責，並能管理個人的學習進度。然而，自主學習的能力和動力並非與生俱來。為了讓學生做好邁向自主學習的準備，教師應明確講解學習策略，以及協助學生訂立可行的學習目標；提供機會讓學生探索他們感興趣的課題，使他們投入參與學習過程，並指導學生評估自己的學習成效。培養學生的成就感和擁有感亦同樣重要，教師應給予學生機會展現他們的學習成果，且認識不同學習經歷之間的關聯。

Self-regulated Learning

- Technology enables students to discover, create and use knowledge in the real world faster (deep learning goals), **beyond the boundaries of their schools**

- Learning needs to be **technologically ubiquitous**, individuals become **"learning nomads"**, using fragmented time to learn through fragmented resources (Barnett, 2010)

- The change highlighted the need to prepare students for learning and **engaging irresistibly in and outside of formal educational settings**

- A successful learner has to be proactive to decide the learning content and the process, **self-regulated learning (SRL)** is viewed as a fishing skill in a digital environment.

- SRL refers to the learning process which learners **participate actively** metacognitively, motivationally and behaviorally

- SRL is the process involving defining tasks, setting goals and planning enacting strategies, monitoring and reflecting

Self-regulated Learning
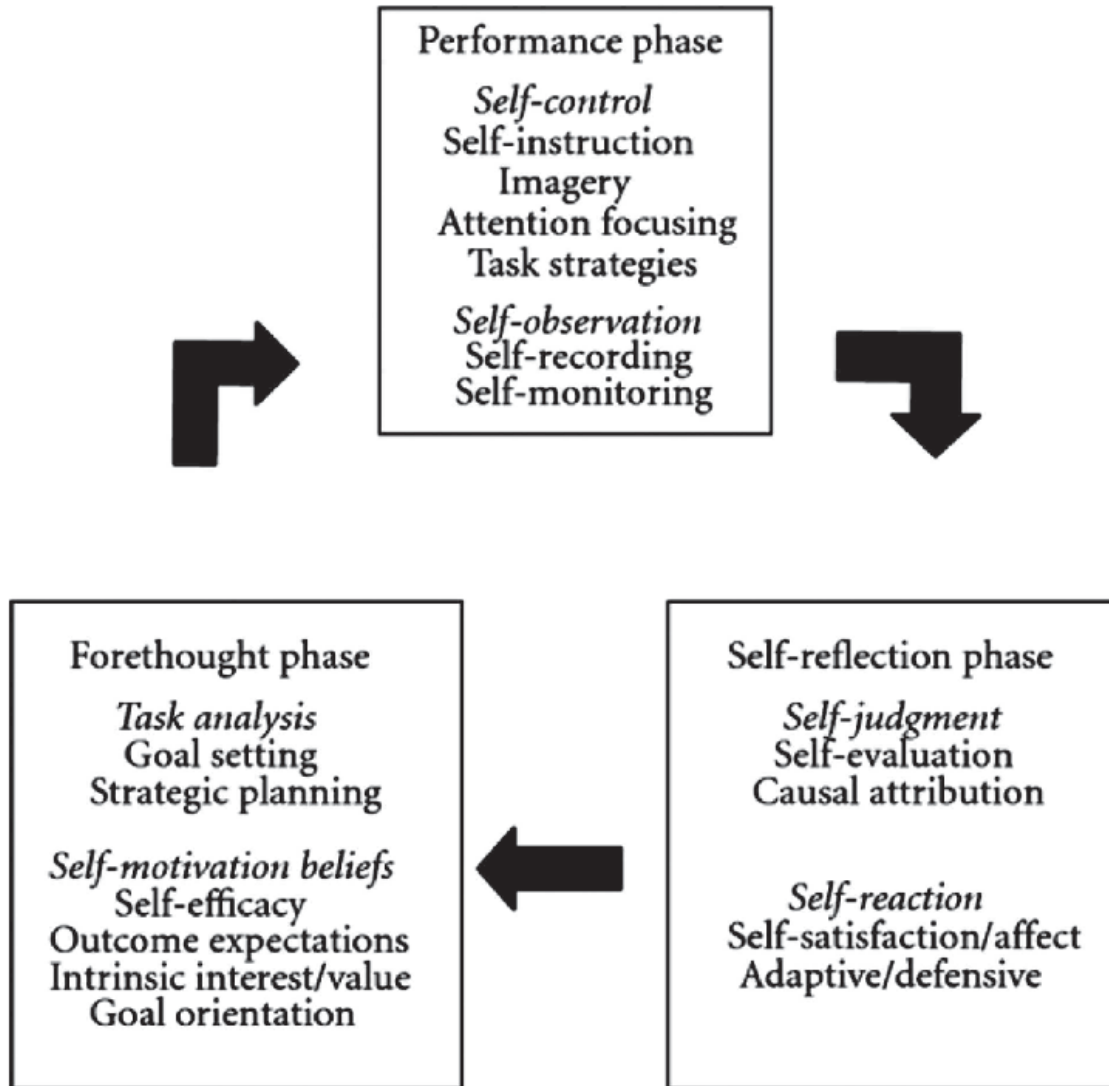
Cyclical phases and sub-processes of SRL
(Zimmerman, 2003)

OECD (Published on September 15, 2020)

Educational Research and Innovation

Back to the Future of Education

FOUR OECD SCENARIOS FOR SCHOOLING

OECD (2020), *Back to the Future of Education: Four OECD Scenarios for Schooling*, Educational Research and Innovation, OECD Publishing, Paris, https://doi.org/10.1787/178ef527-en.

The four OECD Scenarios for the Future of Schooling

OECD scenarios for the future of schooling

1 SCHOOLING EXTENDED

Participation in formal education continues to expand. International collaboration and technological advances support more individualised learning. The structures and processes of schooling remain.

2 EDUCATION OUTSOURCED

Traditional schooling systems break down as society becomes more directly involved in educating its citizens. Learning takes place through more diverse, privatised and flexible arrangements, with digital technology a key driver.

3 SCHOOLS AS LEARNING HUBS

Schools remain, but diversity and experimentation have become the norm. Opening the "school walls" connects schools to their communities, favouring ever-changing forms of learning, civic engagement and social innovation.

4 LEARN-AS-YOU-GO

Education takes place everywhere, anytime. Distinctions between formal and informal learning are no longer valid as society turns itself entirely to the power of the machine.

Individualized Learning

- Student-centered, ==*the opposite of the "one size fits all" approach*==

- Personalized learning refers to instruction in which the pace of learning and the instructional approach are optimized the needs for each learner." (2017 United States National Education Technology Plan)

- Learning objectives, instructional approaches, and instructional content (and its sequencing) may all vary ==*based on learner needs*==.

- Learning activities are meaningful and relevant to learners, driven by their interests, and often ==*self-initiated*==.

- Teacher tailors the learning, and "personalization by the learner", in which the ==*learner develops skills to tailor his own learning*== (Buckley, 2006)

- Technology is used to try to facilitate personalized learning environments (Pogorskiy, 2015)

- Student develop agency and responsibility for their own learning

e-Assessment Platform - Why

PROS
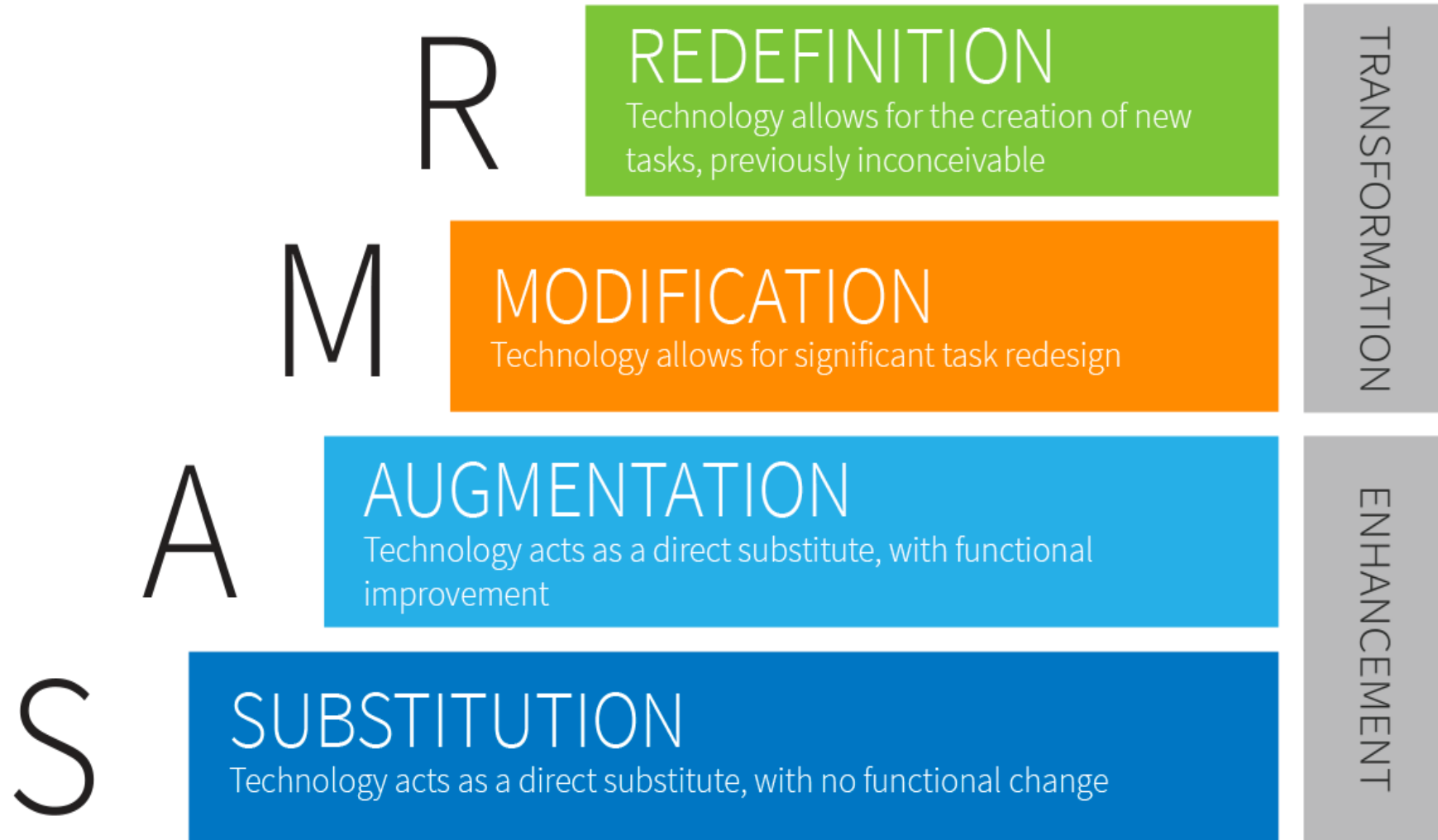
- By Topic
- By Level
- Anytime, anywhere
- Save paper

CONS (STUDENTS' FEEDBACK)

- Cannot highlight
- Cannot write
- PC/iPad = distractor

Paper? OQB?

4.3.4　電子評估

- 廣義而言，電子評估即利用資訊科技評估學生的學習成果，包括推行評估測驗及進行評分。

- 電子評估是有用的工具，因為：
  - 有助「促進學習的評估」。
  - 學生做課業時可獲取即時回饋，而教師亦在教學施行中已可得悉學生表現。
  - 教師可更有效地利用評估資料審核學生表現，並與個別學生及其家長分享有關學習進度的資訊。
  - 電子評估容許教師為個別學生設定評估及教學。教師可追蹤個別學生的表現，識別出他們的強、弱項，盡早介入，為學生提供適合的學習支援。

4.3.4 e-Assessment

- e-Assessment, in its broadest sense, is the use of information technology to assess student achievement in learning. It may involve both administering the assessment test and grading it.

- e-Assessment is a useful tool for the following reasons:

  - It facilitates **Assessment for Learning**.

  - Students can receive **instant feedback** when they are working on their tasks. Similarly, teachers can access information from students while instruction is still in progress.

  - Teachers can use assessment data more **efficiently** to examine student performance and to share information about learning progress with individual students and their parents.

  - It enables teachers to **personalise assessments and instructions**. Teachers can track individual students' performance, identify their strengths and weaknesses, provide early intervention and facilitate better learning support.

Sun Tzu - The Art of War 孫子兵法

知彼知己，百戰不殆；

If you know your enemies and know yourself, you will not be imperiled in a hundred battles;

不知彼而知己，一勝一負；

If you do not know your enemies but do know yourself, you will win one and lose one;

不知彼，不知己，每戰必殆。

If you do not know your enemies nor yourself, you will be imperiled in every single battle.

STUDENT SHARING

Student's feedback

- Understand DSE/ public exam

- Self-assignment (By topic, by level)

- Free

Explore OQB

化學

> ✓ 所有課題 (682) **15 / 15**

> ✓ 所有作者 **1 / 1**

> ✓ 所有程度 **3 / 3**

> 語言

∨ 更多選擇

☐ 剔除已作答試題

✓ 新高中　✓ 非新高中

∨ ➖ 所有年份 **1 / 17**

☐ 2021

✓ 2020

☐ 2019

☐ 2018

☐ 2017

新評估 / 自己

提交人數：0/1

`練習` `進行中`

開始時間：2022-06-19 15:25
結束時間：2022-08-17 00:00

📅 更改結束時間　↩ 回收　📊 報告　⌇ 分享 ▾

新評估 / 自己

提交人數：0/1

`練習` `進行中`

開始時間：2022-06-19 15:29
結束時間：2022-06-29 00:00

📅 更改結束時間　↩ 回收　📊 報告　⌇ 分享 ▾

綜合分析　　課題分析　　程度分析　　**試題分析**

列表選項 ⌄　　🗎 下載

評估題號	學生答對率	考評局合格率	作者	試題套件	年份	題號	課題	程度	類型
15		86	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2021	3	地球	容易	選擇題
29		86	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2021	25	反應速率	容易	選擇題
30		83	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2021	17	化石燃料和碳化合物	容易	選擇題
14		81	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2021	21	微觀世界I	容易	選擇題
33		78	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2021	7	氧化還原反應、化學電池和電解	容易	選擇題
4		77	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2021	6	酸和鹽基	容易	選擇題
3		75	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2021	11	化石燃料和碳化合物	容易	選擇題
6		75	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2021	28	化學世界中的規律	容易	選擇題
28		75	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2021	5	酸和鹽基	容易	選擇題
8		73	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2021	12	化學反應和能量	容易	選擇題

OQB	Easy (>66-70%)	Normal	Hard (<55%)
2021	13	15	8
2020	14	14	8

	Easy (>66.6%)	Normal	Hard (<33.3%)
2021	16	19	1
2020	18	17	1
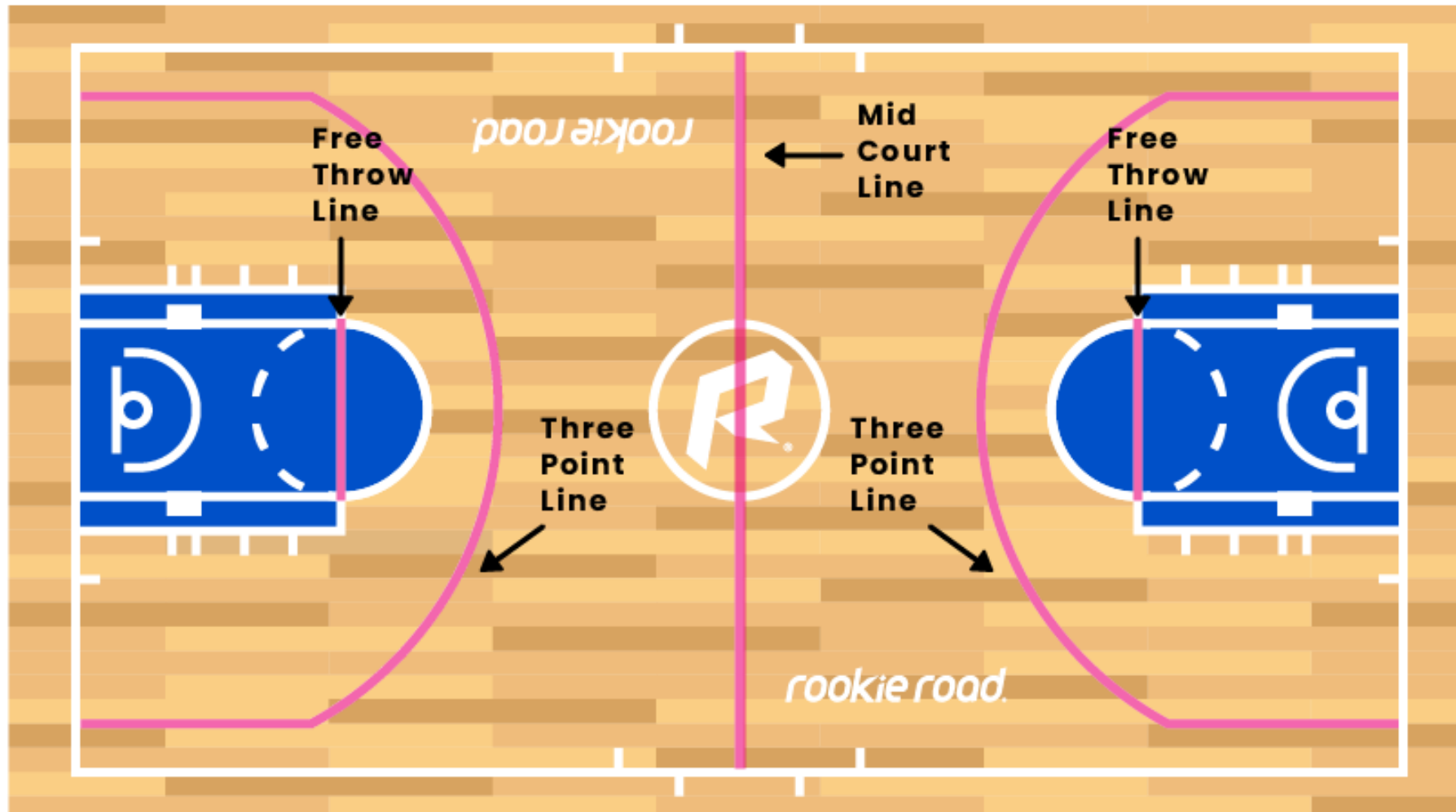
Basketball Scoring

OQB	Easy (>66%)	Normal	Hard (<55%)	Total
2021 MC	13	15	8	36
Student A	80% (10)	50% (7)	10% (1)	18
Student B	60% (8)	30% (5)	0%	13
Student C	90% (12)	85% (13)	63% (5)	30

Utilize OQB

1. By Topic
2. By Level
3. Assignment/ Quiz
4. Test (Online lesson)

Assignment/ Quiz/ Test

化學 ∧

> ✓ 所有課題 (0) 15/15
> ✓ 所有作者 1/1
∨ 所有程度 0/3
   容易
   普通
   困難

∨ 語言
   ⦿ 英文 ○ 中文
   雙語

∨ 更多選擇
   剔除已作答試題
   ✓ 新高中 ✓ 非新高中
   > ✓ 所有年份 17/17

試題數目 30 ▼ 開始製作 返回

內容 30 ⚠0 ❓0　派發設定 0　　　　　　　　　💾 儲存　💾 另存　❗ 未能分派

選擇對象 ^

輸入姓名或群組名稱

> 　自訂群組 0/1 管理群組
> 　級別 / 班級 / 學生 0/719

類型 ⇕	名稱 ⇕
沒有項目	

開放時間 ^

分派時間：　🔵 即時　⚪ 自訂

開始時間：　📅　　　　　　　　　🕐

結束時間：　📅　　　　　　　⚠　🕐　　　　　　⚠
　　　　　　須輸入結束時間

作答設定

作答時間（分鐘）： 37　　□ 無限制　　建議：37 分鐘

必須作答： ● 是　　○ 否

隨機： □ 試題次序　　☑ 答案次序

評估設定

評估模式： ❓　　● 測驗　　○ 練習

學生可檢閱報告時間： ● 評估結束時間後　　○ 遞交後
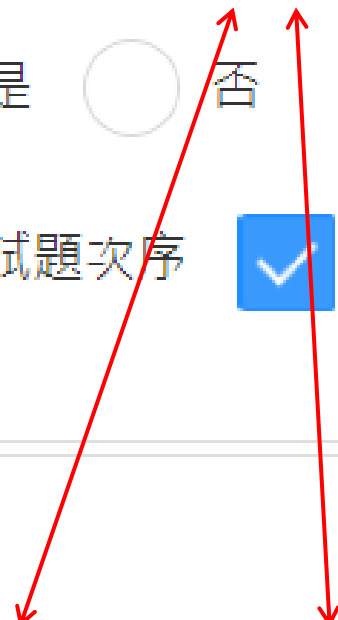
Report

提交人數：21 / 21

↺ 回收　　📊 報告　　< 分享 ▾

Group	No. of Students 20
Not yet submitted 2	Send Reminder ⌄
Submitted 18	Review ⌄
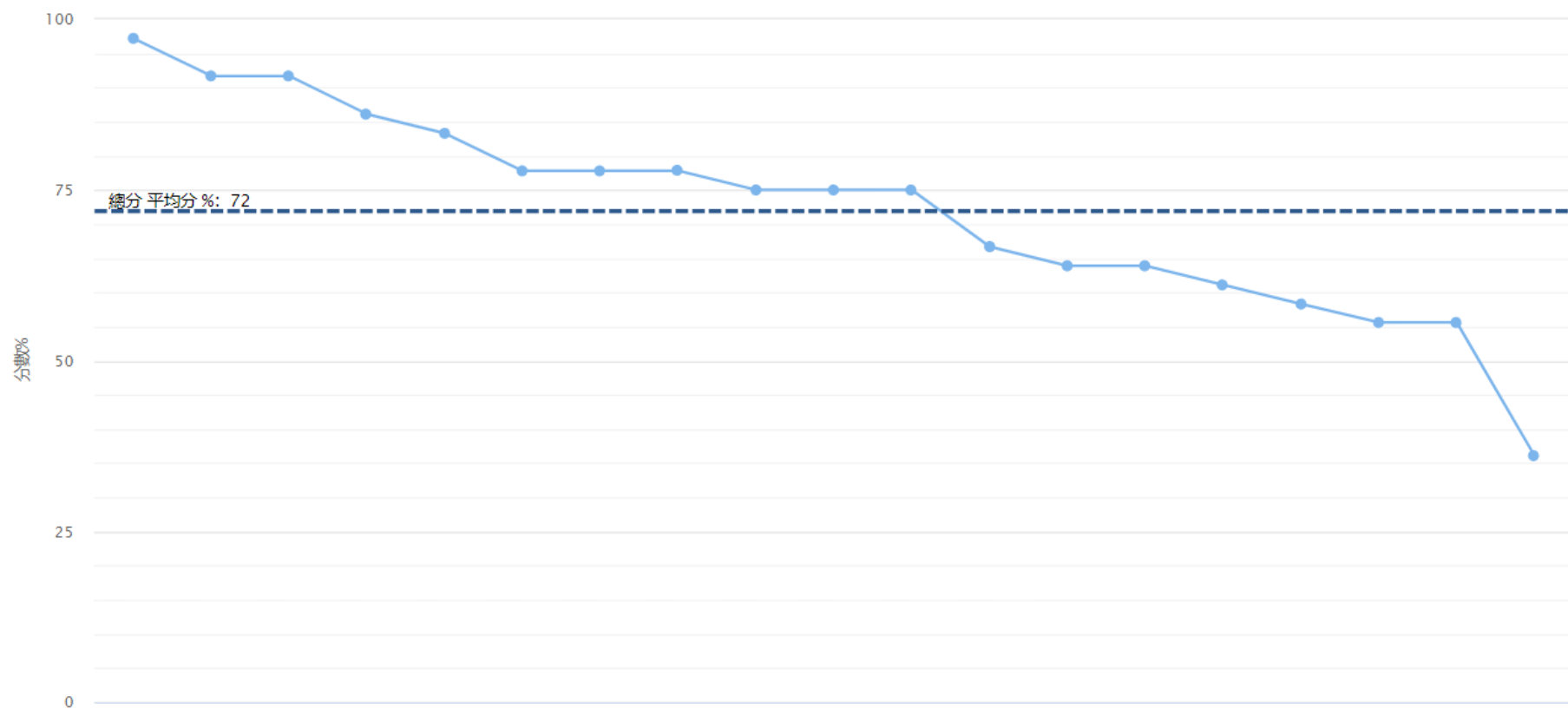
Score Analysis

排名	作答時間	答對題數	總分(%)
1	00:34:56	35/36	97.2
2	01:16:57	33/36	91.7
3	01:41:43	33/36	91.7
4	02:31:44	31/36	86.1
5	01:37:19	30/36	83.3
6	00:31:49	28/36	77.8
7	01:22:51	28/36	77.8
8	02:54:31	28/36	77.8

排名	作答時間	答對題數	總分(%)
19	02:36:32	13/36	36.1
18	00:56:44	20/36	55.6
17	00:36:48	20/36	55.6
16	00:27:09	21/36	58.3
15	01:07:44	22/36	61.1
14	00:56:30	23/36	63.9
13	00:15:53	23/36	63.9
12	01:03:11	24/36	66.7
11	01:15:02	27/36	75
10	00:59:12	27/36	75

Teacher's Role

• Guided practice	• Observe student learning and provide instant feedback. If some students cannot master the knowledge or skills required for the task, the teacher can immediately offer hints, scaffolding, clarification or further explanation.

Question Analysis

綜合分析　課題分析　程度分析　**試題分析**

列表選項 ∨　　　📄 下載

評估題號	學生答對率	考評局合格率	作者	試題套件	年份	題號	課題	程度	類型
19	42	80	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2010	26	金屬	容易	選擇題
23	42	62	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2007	35	金屬	容易	選擇題
20	47	78	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2018	3	金屬	容易	選擇題
7	52	72	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2017	9	金屬	容易	選擇題
11	52	81	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2019	17	金屬	容易	選擇題
28	52	80	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2005	48	金屬	容易	選擇題
31	52	73	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2009	41	金屬	容易	選擇題
2	57	67	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2007	34	金屬	容易	選擇題
12	57	71	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2008	16	金屬	容易	選擇題
16	63	58	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2007	48	金屬	容易	選擇題
29	63	74	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2008	20	金屬	容易	選擇題
4	68	79	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2015	14	金屬	容易	選擇題
5	68	74	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2013	13	金屬	容易	選擇題

Question Analysis

評估題號	學生答對率	考評局合格率
8	94	86
1	89	93
14	89	72
32	89	83
33	89	81
34	89	76
9	84	78
18	84	58

評估題號	學生答對率	考評局合格率
1	91	19
7	83	41
6	66	34
11	66	40
14	58	36
3	50	51
5	50	23
15	50	55
2	41	39
10	41	49

Celebrate small wins

評估題號	學生答對率	考評局合格率
19	42	80
23	42	62
20	47	78
7	52	72
11	52	81
28	52	80
31	52	73
2	57	67
12	57	71
16	63	58
29	63	74
4	68	79
5	68	74
21	68	72

This question consists of two separate statements. Decide whether each of the two statements is true or false; if both are true, then decide whether or not the second statement is a *correct* explanation of the first statement. Then select one option from A to D :

1st statement	2nd statement
Galvanised iron is used for making food cans.	Zinc can prevent iron from rusting by sacrificial protection.

A Both statements are true and the 2nd statement is a correct explanation of the 1st statement.

B Both statements are true but the 2nd statement is NOT a correct explanation of the 1st statement.

C The 1st statement is false but the 2nd statement is true.

D Both statements are false.

Clarify misconceptions

LEVEL			
Easy / Normal	Student Correctness	<	HKEAA Correctness
Hard	Student Correctness	<	HKEAA Correctness
	Student Correctness	=	HKEAA Correctness
Easy / Normal	Student Correctness	>	HKEAA Correctness
Hard	Student Correctness	>	HKEAA Correctness

Student Mode

篩選 ∧

科目： 化學 ⬍　年份： 選擇可分類的 ▾　評估標題　　　　　　　　　　　　　　　　　排序： 派發日期 ⬍

提交時間：2020-12-16 14:42

📊 報告　📋 查閱

Topic 2 Microscopic World 1 (Ch5-8) (Easy) / 曾偉江 📄

化學　教師派發

成績: 8 %

提交時間：2021-10-18 22:50

📊 報告　📋 查閱

## Topic 4 Acids and bases (Normal) (15) / 曾偉江 📄

化學　教師派發

成績: 46 %

提交時間：2022-07-02 09:26

📊 報告　📋 查閱

| 綜合分析 | 課題分析 | 程度分析 | 試題分析 |

| 評估題號	學生答對率	考評局合格率	作者	試題套件	年份	題號	課題	程度	類型
1	100	81	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2019	33	化學世界中的規律	容易	選擇題
2	0	77	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2014	30	化學世界中的規律	容易	選擇題
11	100	76	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2020	28	化學世界中的規律	容易	選擇題
10	0	75	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2017	25	化學世界中的規律	容易	選擇題
15	100	73	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2020	30	化學世界中的規律	容易	選擇題
5	0	72	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2013	26	化學世界中的規律	容易	選擇題
8	0	71	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2012	30	化學世界中的規律	普通	選擇題
3	0	69	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2015	35	化學世界中的規律	普通	選擇題
4	0	69	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2018	28	化學世界中的規律	容易	選擇題
9	0	68	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2016	30	化學世界中的規律	普通	選擇題
6	0	66	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2014	36	化學世界中的規律	普通	選擇題
14	0	62	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2013	36	化學世界中的規律	普通	選擇題
12	0	49	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2015	25	化學世界中的規律	困難	選擇題
7	0	45	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2018	32	化學世界中的規律	困難	選擇題
13	0	37	考評局	考評局化學歷屆公開試試題 (會考及文憑試)	2017	30	化學世界中的規律	困難	選擇題

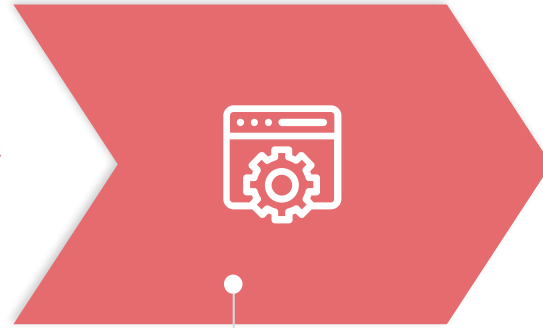# The 4 Stages in online lesson (afternoon)
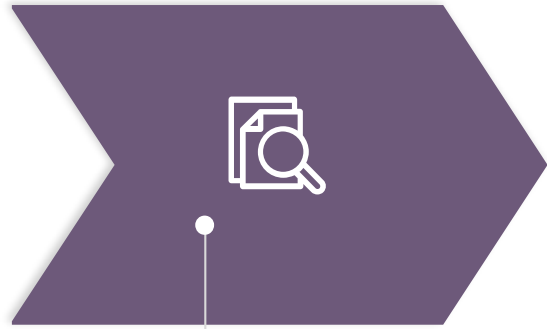
01
Before the Lesson
- Equip students with related knowledge and skills
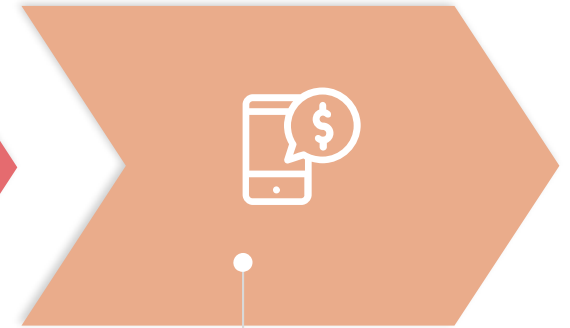- Assign classwork
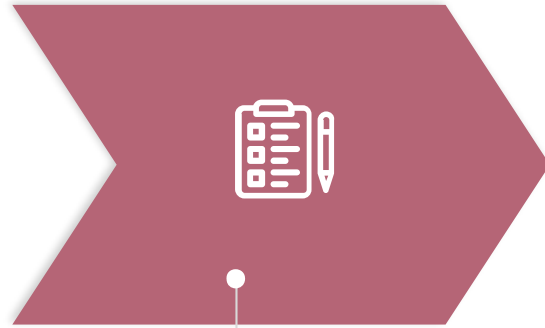
02
During the Lesson
- OQB
- Data analysis
- Clarify misconceptions

03
After The Lesson
- Video
- Assignment

04
Next lesson
- Assessment

Student Comparison Report

個人　班級

學生比較報告

平均分%

100

75

50

25

0

酸和鹽基 總平均分%: 60
地球 總平均分%: 54
微觀世界I 總平均分%: 50

20　14　13　17　6　9　4　7　10　3　18　19　16　12　1　11　8　15　2　5

評估

●— 平均分%　◆— 地球　■— 微觀世界I　▲— 金屬　▼— 分析化學　●— 酸和鹽基
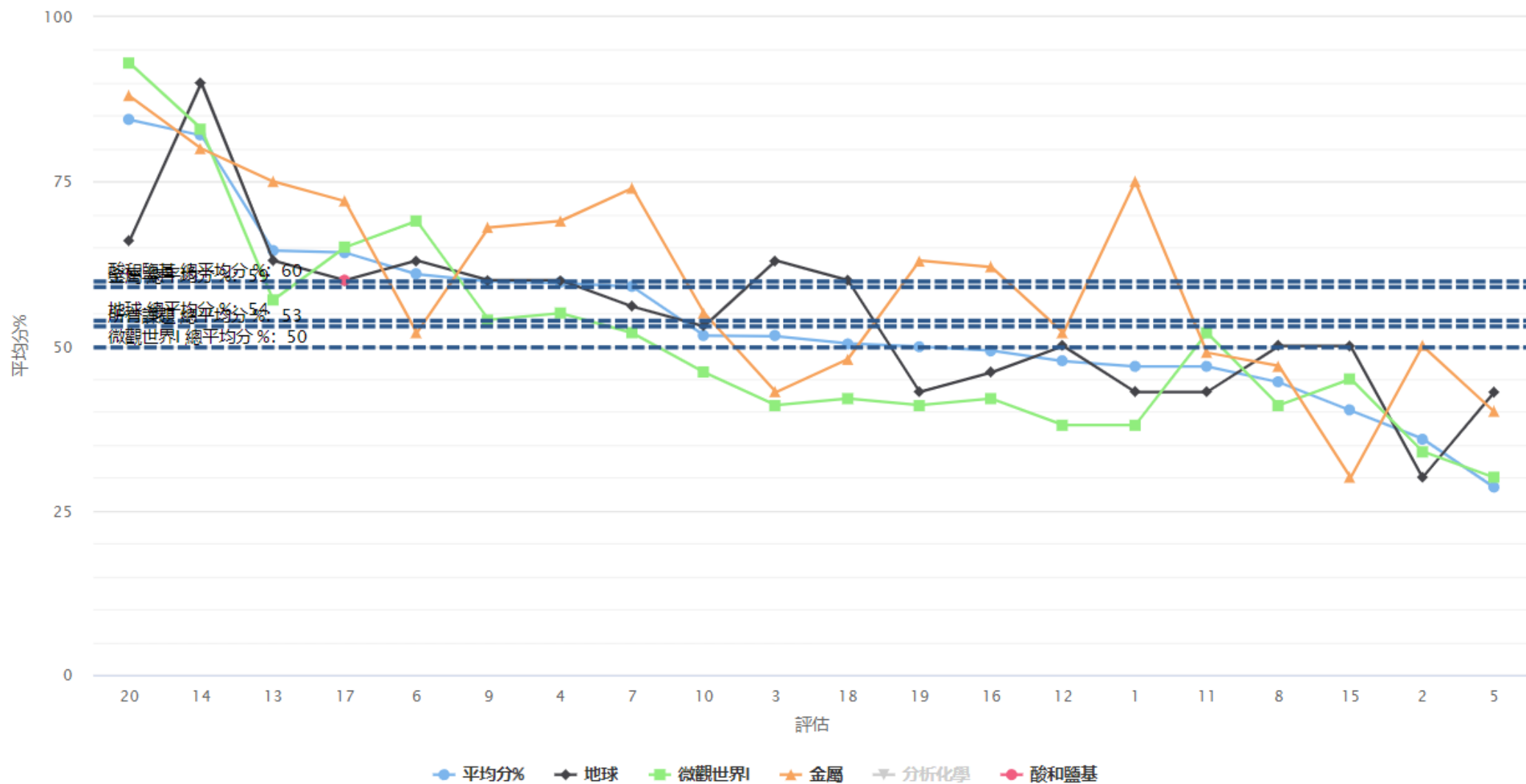
Average Score%	No. of Papers	Planet earth	Microsco...	Metals
84.4	9	66	93	88
82	10	90	83	80
64.5	9	63	57	75
64.2	12	60	65	72
60.9	9	63	69	52
59.8	10	60	54	68
59.6	10	60	55	69
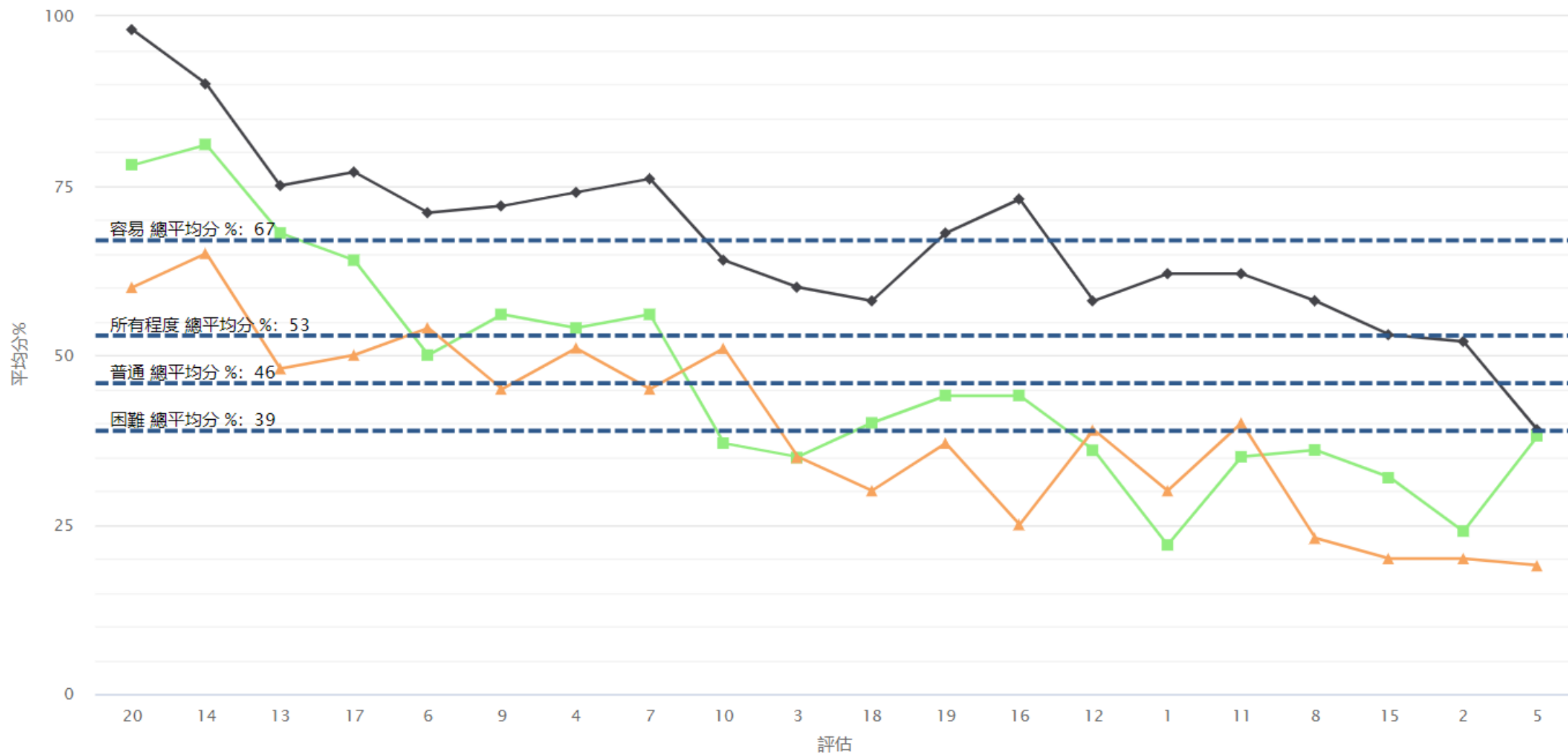
平均分%	評估數量	容易	普通	困難
84.4	9	98	78	60
82	10	90	81	65
64.5	9	75	68	48
64.2	12	77	64	50
60.9	9	71	50	54
59.8	10	72	56	45
59.6	10	74	54	51
59	8	76	56	45

OQB	Easy (>66%) ~14	Normal ~14	Hard (<55%) ~8	Total
Student A	73%	44%	25%	49.3%
Student B	58%	36%	39%	47.7%
Student C	62%	22%	30%	46.9%

OQB	Easy (>66%) ~14	Normal ~14	Hard (<55%) ~8	Total
Student A	73%	44%	25%	49.3%
Student B	58% ↑	36% ↑	39%	47.7%
Student C	62%	22% ↑	30%	46.9%

OQB	Easy (>66%) ~14	Normal ~14	Hard (<55%) ~8	Total
Student D	98%	78%	60%	84.4%
Student E	64% ⬆	37% ⬆	51%	51.6%
Student F	75% ⬆	68%	48%	64.5%

Student Progress Report

Student Mode

100

75

地球 總平均分 %: 53
金屬 總平均分 %: 51
50
所有課題 總平均分 %: 47

微觀世界I 總平均分 %: 39

25

0

1　　2　　3　　4　　5　　6　　7　　8

評估

分數% 　微觀世界I 　地球 　金屬
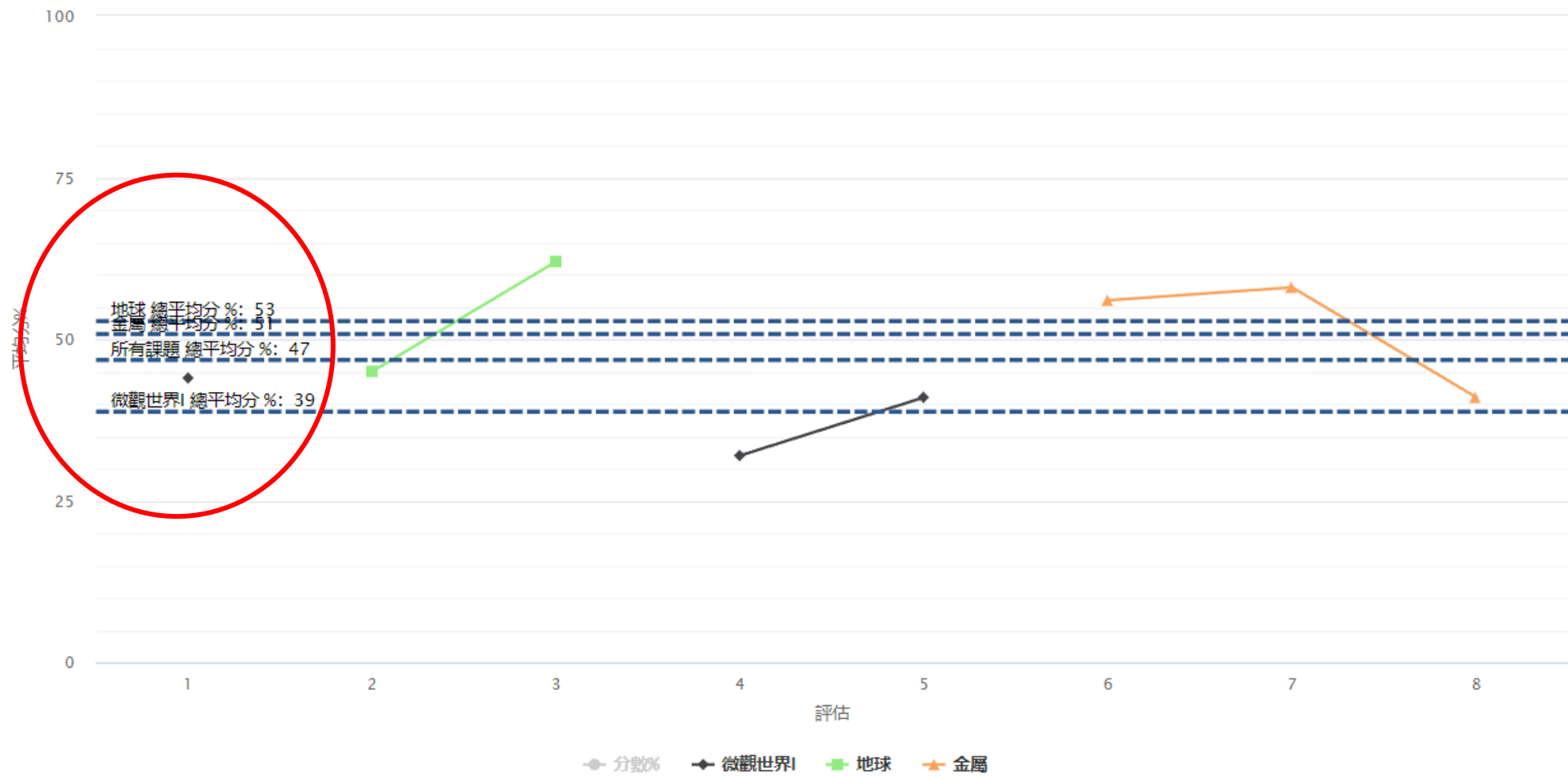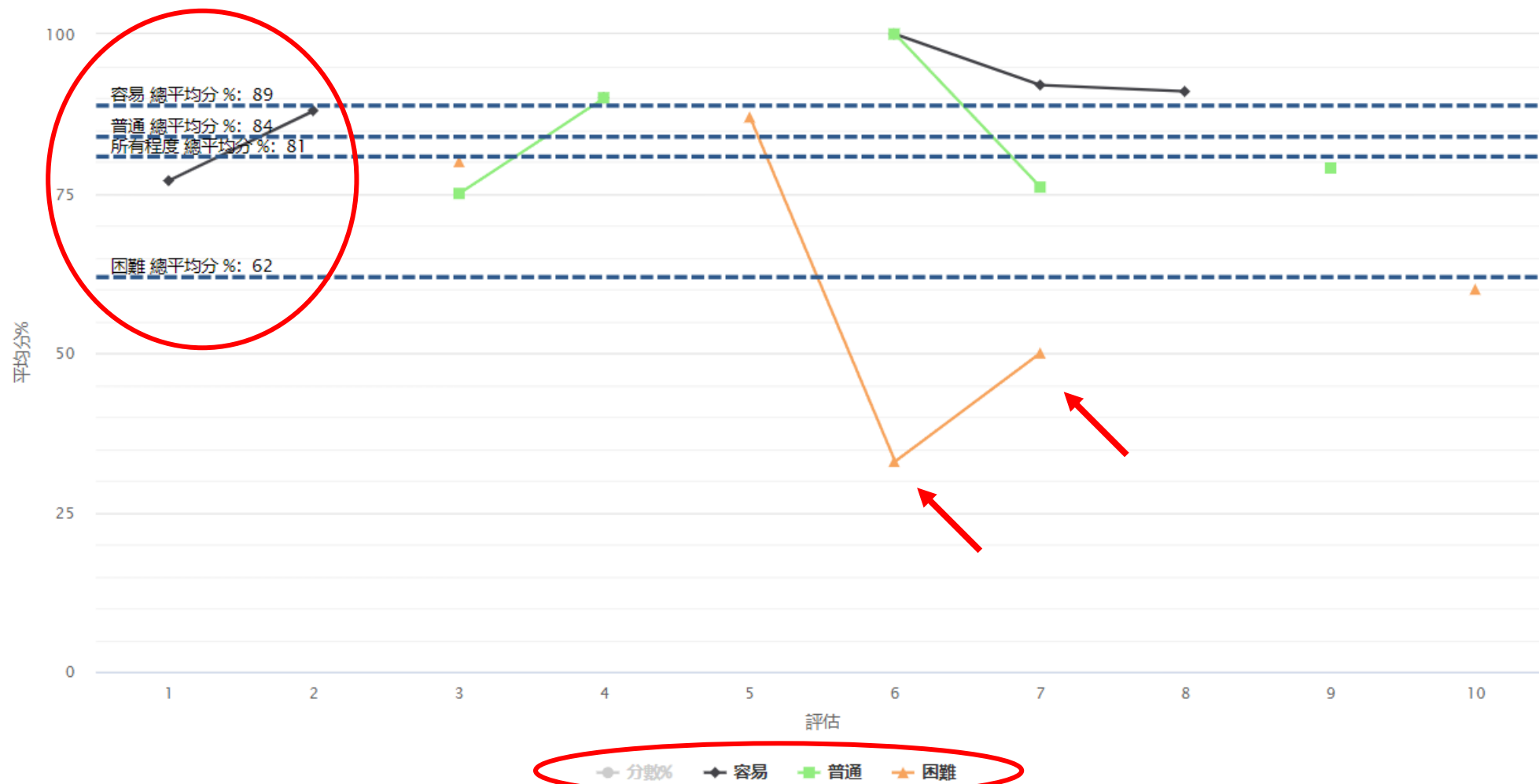
📝 My Paper   ⊞ Create Paper   📄 View Paper / Report

📕 Test   📘 Exercise   📙 Revision
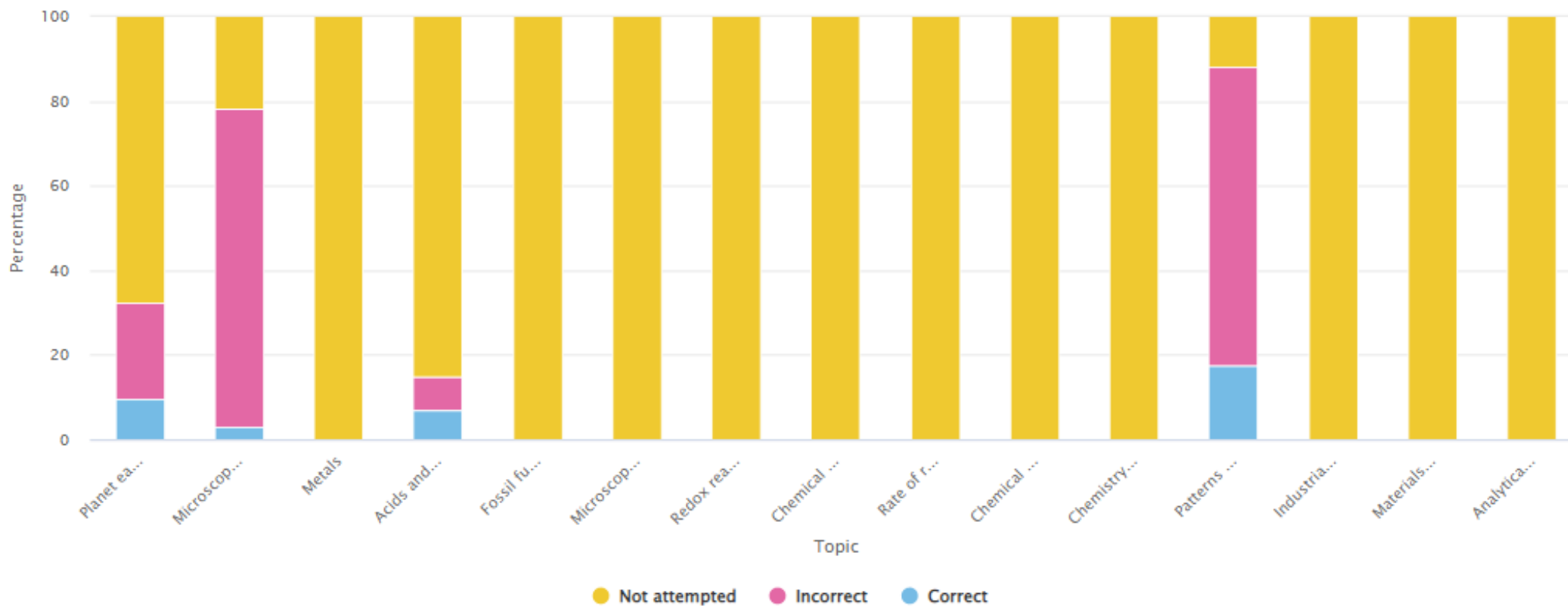
Subject: Chemistry ▾

Hide My Performance

My Performance

☰

Click the columns to view level of difficulty analysis.

Percentage

100

80

60

40

20

0

Planet ea... | Microscop... | Metals | Acids and... | Fossil fu... | Microscop... | Redox rea... | Chemical ... | Rate of r... | Chemical ... | Chemistry... | Patterns ... | Industria... | Materials... | Analytica...

Topic

🟡 Not attempted   🔴 Incorrect   🔵 Correct

OQB Cycle

Teacher

Assign by topic/ by level paper

01

02

Lesson / Video
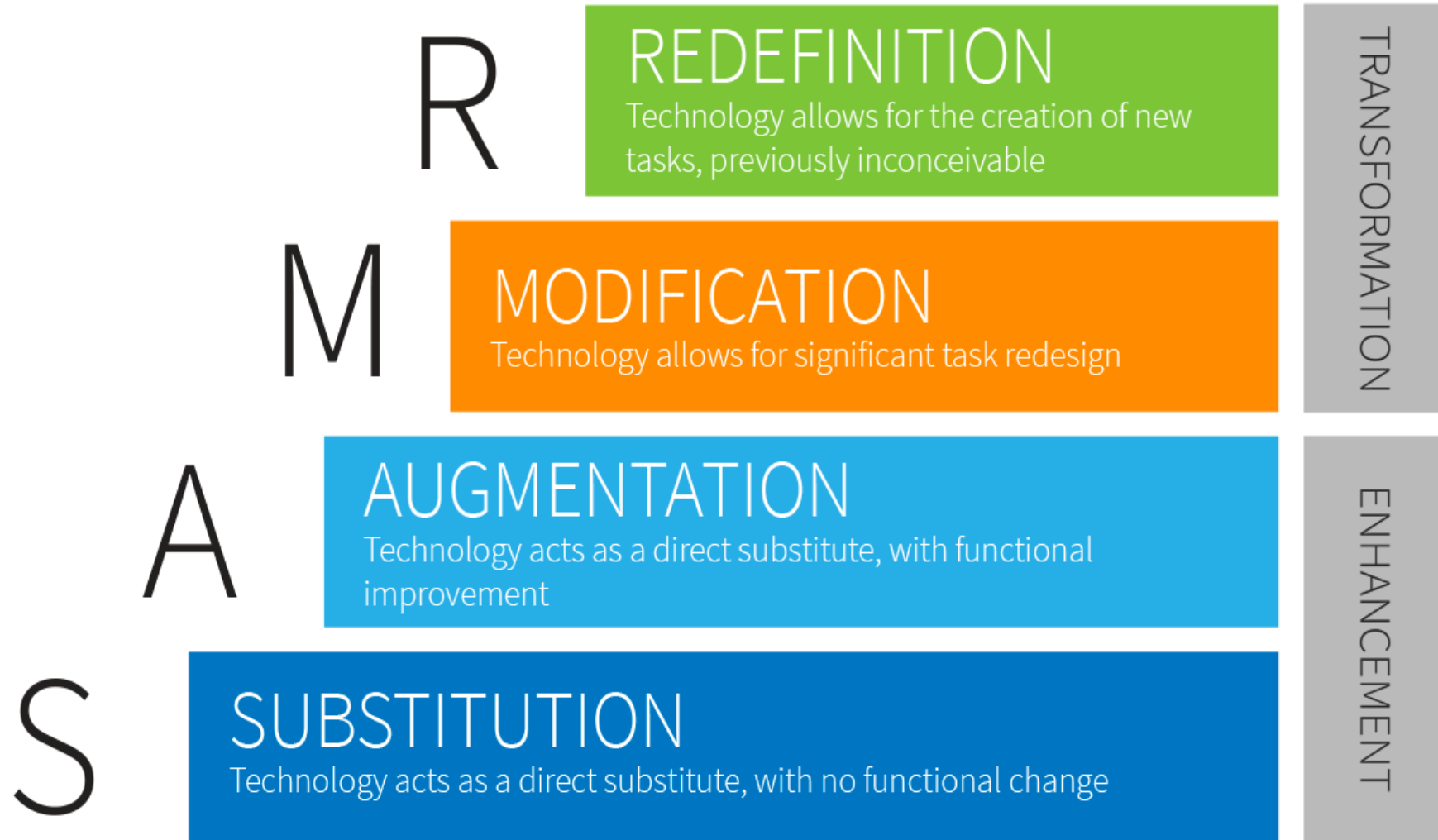
Clarify misconceptions

Teacher

Assign Mixed level paper

04

03

Student

Retake failed questions

Paper? OQB?

Why OQB?

1. Receive instant feedback

2. Examine student performance

3. Personalize assessments

Summary

- The success of any e-assessment tool is dependent upon the usability of the ==data obtained to support and enhance student learning==. The quality of data is far more important than the quantity.

- Technology should not be used just for the sake of using technology. It needs to be ==purposeful== and should aim at ==enhancing student learning==.

Suggestions

1. Offers Adaptive mode task types, hints and timely feedback

2. Emphasis on learners' thinking process in solving questions.

3. Adaptive Task - feed questions to a learner according to the result of each question.