

***Empowering Self Regulated Learners:  
Embedding of IB ATL Skills Through Digital Literacy in Primary Students***

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**Abstract**

The Covid-19 pandemic has resulted in a turning point of creativity in the field of education with the abrupt commencement of remote learning in March 2020 via online platforms. The ongoing digital transformation was accelerated and forced students to drastically adapt and adopt new approaches to their academic learning. In order for teachers to support children's autonomy and motivation in their learning environments, the International Baccalaureate (IB) Approaches To Learning (ATL) skills through digital literacy were planned and embedded into their learning. The aim of this paper is to provide creative strategies for embedding ATL and digital literacy skills in students as they self-learn. The evidence will be a descriptive qualitative single case study, demonstrated through student work and their personal reflections throughout a semester of blended learning. Self regulation is defined as beliefs about their capability to engage in appropriate actions, thoughts, feelings, and behaviors in order to pursue valuable academic goals, while self monitoring and self-reflecting on their progress toward goal-completion (Zimmerman, 2000). The IB ATL skills are grouped into 5 categories: Communication, Research, Thinking, Self-Management, and Social Skills (King, 2013) and digital literacy is one's ability to communicate, evaluate and synthesize through a variety of digital platforms. Most students have been found to demonstrate the ability to become self regulated learners with influencing factors that included self efficacy and a strong home and school support system.

Keywords: Approaches to Learning, Self Regulation, Digital Literacy

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## Introduction

As an International Baccalaureate (IB) school, *student-centered and inquiry-based learning* is the cornerstone of the programme, where students are encouraged to ask questions, engage in discussions, and learn how to learn (International Baccalaureate Organization, 2019). When schools were closed due to the COVID-19 pandemic, teachers were challenged to rapidly adopt new methods of teaching to keep students motivated and engaged. In Indonesia, the large-scale restrictions that were enforced created particularly challenging circumstances for both teachers and students as real human engagement that is characteristic of the IB programme was replaced with sitting in front of a screen for long periods of time.

As the school moved towards blended learning where some classes were held onsite and others online, teachers created concept and skill-based flexible schedules, which were a particular challenge in carrying out online learning. Reliance was placed on digital platforms with lower primary students (Years 1-3) using *Toddle* and upper primary students (Years 4-6) using *Google Classroom*. Daily classes were conducted using Google Meet, wherein some students had adult supervision, and others fully depended on the teacher online for assistance. This blended learning situation resulted in students who were usually outspoken in class to be quiet and reserved, and vice versa. To accommodate these difficulties, the expected abilities of students in each year level and assessments were lowered down, and focus was instead directed towards each student's own efforts and commitment.

Self regulation is the ability to monitor and develop awareness of one's thoughts, feelings and behavior. Zimmerman (1986) states that "*students can be described as self regulated to a degree that they are metacognitively, motivationally, and behaviorally active participants in their own learning process*" (p.4) Teachers can empower self regulation in the classroom with creative strategies that guide students to plan, perform, and reflect. However, it is important to first understand the differences between the process of becoming a self regulated learner and strategies to optimize these processes. The process of becoming a self regulated learner entails self efficacy and motivation, whereas strategies to optimize the process are goal setting and skill acquisition. Success is reached when a student is motivated and shows a strong sense of self efficacy. This process that Zimmerman's model posits is similar to that of the IB's inquiry-based teaching and learning, in the sense that it emphasizes the cyclical process of planning, performing, and reflecting.

An integral element to the IB's inquiry-based programme is the Approaches to Learning (ATL) skills developed by Lance King in 2013, which aim to help schools cultivate a culture of learning that promotes the concept of "learning how to learn" (Kameda and Komatsu, 2022). The IB ATL skills are as follows: thinking, social, research, self-management, and communication. According to the World Economic Forum, by 2025, half of the world will require reskilling (World Economic Forum, 2020), with a majority of skills such as problem solving and critical thinking as seen in figure 1. Upon observing the familiarity of the ATL subskills and the skills needed for the future of tomorrow, the 5 ATL skills were embedded into planning with a goal to develop the student's ability to *learn how to learn*.



Figure 1 : Top 10 skills of 2022

With the accelerated pace of the digital era during COVID-19, teachers and students were pushed to quickly adopt new ways of learning. However, the difficulties that this rapid change caused also brought forth questions of the methods being used to approach and teach students. With a goal to create more teacher-student engagement through blended learning, focus was placed on making the most out of the IB ATL skills. These skills, however, that would be immensely beneficial for students to have, including nuanced critical skills and the ability to contribute by engaging and discussing, are not innate nor are they easy to acquire. Nonetheless, given the opportunities, these skills and knowledge *can* be learned. This article aims to provide creative strategies to guide teachers towards empowering self regulation through the implementation of the IB ATL skills and digital literacy.

### The Approaches to Learning Skills (ATL)

The World Economic Forum estimates that 65% of today’s primary school pupils will end up working in jobs that do not even exist yet (World Economic Forum, 2016), which underlines the need for skill-training as the future of jobs will require people with a different skill set from today (Brown, 2020). Thus, in order for learners to land a job in the future, they need to have a sense of “learnability”, that is, a desire towards learning, in order to acquire skills that help them adapt quickly and have the passion to continuously improve. Therefore, the skills that learners need to acquire to function in tomorrow’s society are compassion, empathy, and cooperation. These seemingly simple skills will support learners in the future in negotiations and persevere through changes that may occur. The IB ATL skills, which are taught implicitly throughout the unit, provide just that opportunity for students to develop.

The approaches to learning (ATL) skills integrated in IB programmes are designed to help students develop skills relevant across the curriculum. These ATL skills support purposeful inquiry and set the foundations for lifelong learning (National Education Association, 2014). Effective implementation of these ATL skill sets into the school’s IB curriculum will assist students in ‘learning how to learn’ - to develop the necessary skills in effectively managing and evaluating the process of their own learning (Kameda and Komatsu). The ATL skills are grouped into 5 categories:

- Communication skills
- Self-management skills
- Research skills
- Thinking skills
- Social skills

These skills are further placed into clusters as shown in the figure below:

Skills Categories	Skill Cluster	Definition
Communication	Communication	The skills of effectively exchanging thoughts, messages and information through interaction
		The skills of reading, writing and using language to communicate information
Social	Collaboration	The skills of working cooperatively with others
Self-management	Organization	The skills of effectively managing time and tasks
	Affective Skills	The skills of managing state of mind
	Reflection	The metacognitive skills of re-considering what has been taught and learned by reflection on content, ATL skills and learning strategy use
Research	Information Literacy	The skills of finding, interpreting, judging and creating information
	Media Literacy	The skills of interacting with different media to compare and contrast different representations of information
Thinking	Critical Thinking	The skills of critique of text, media, ideas and issues
	Creativity and Innovation	The skills of invention – developing original and novel ideas and products
	Transfer	Utilizing skills and knowledge in multiple contexts

Table 1: Skills Grouped Clustered

In the school, the ATL skills are mapped out according to the 6 units taught within the academic year. Teachers collaborate to decide which ATL skills should be the focus for each unit taught thus that the implementation would be optimal. As seen in the figure below, some ATL's may be repeated depending on the *unit of inquiry*. The programme is reviewed yearly to reflect and make possible changes on the focus of every unit.

		Programme of Inquiry 2021 - 2022			 	
Year 1						
Unit	Central Idea	Lines of Inquiry	Key Concepts	Related Concepts	ATL	Learner Profile & Attributes
<b>Unit 1</b> Who We Are	Awareness of our characteristics, abilities and interests informs our learning and development	1. Physical, social and emotional characteristics 2. Similarities and differences between ourselves and others 3. Our responsibilities towards personal development	Change Perspective Responsibilities	Value Growth Appreciation	Social skills Self-management skills	Balanced Caring Independence Respect
<b>Unit 2</b> Where We Are in Place and Time	Environments reflect the needs and values of the people who use them	1. Exploring, researching and recording findings about the environment around us 2. How our environment reflects our needs and values 3. Our responsibility to respect and care for our environment	Function Connection Responsibilities	Service Needs Interdependence	Communication skills Social skills	Communicators Knowledgeable Empathy Tolerance
<b>Unit 3</b> How The World Works	Understanding the way materials behave and interact determines how people use them	1. The properties of materials 2. How materials behave and interact 3. How different materials can be used	Form Function Change	Properties Behavior Transformation	Thinking skills Research skills	Inquirers Risk-takers Curiosity Enthusiasm
<b>Unit 4</b> How We Express Ourselves	People value important events through celebrations and traditions	1. Different celebrations and traditions 2. Why people celebrate certain events 3. Valuing different celebrations and traditions	Form Causation Perspective	Similarities Differences Pattern Beliefs	Communication skills Social skills	Communicators Open-minded Creativity Cooperation
<b>Unit 5</b> Sharing The Planet	People can establish practices in order to sustain and maintain the earth's resources	1. The types of resources found on earth 2. Different practices to maintain and sustain the earth's resources 3. Personal choices that can help to sustain the environment	Form Change Responsibility	Lifestyle Resources	Research skills Communication skills	Caring Principled Appreciation Integrity
<b>Unit 6</b> How We Organise Ourselves	The products we use go through a process prior to consumption	1. Types of food and drink 2. Where our food and drinks come from 3. How food and drinks are processed	Form Connection Change	Categories Source Process	Research skills Self-management skills	Thinkers Reflective Commitment Confidence

Figure 2: Year 1 Tunas Muda Programme of Inquiry

In order to develop the ATL skills necessary to become a self-regulated learner, metacognition is required. Metacognition means noticing present learning or thinking strategy use, analyzing, comparing, experimenting, gathering feedback, making changes and implementing new strategies (King, 2013). The development of metacognition in young students is shown or seen when they are aware of their learning process, the ability to plan goals, organize, process and reflect on how to develop and improve. These qualities also coincide with that of a self-regulated learner. As a young learner in primary 1, the student was provided with guidance to achieve metacognition through a guided step-by-step planning, processing and reflecting progress, which can be seen in appendix A.

### 1. Communication Skills

During our second unit of inquiry, where students explored how environments reflect the needs and values of the people who use them, students were asked to work together with a parent to use Google Maps and observe the environment around them. This was done by first asking students and parents to explore how Google Maps displays surrounding landmarks in the environment, before then asking them to list down 5 places they see around their house.

As seen in appendix B, this activity allowed students to develop their communication skills through collaboration with a parent using digital media.

## **2. Self - Management Skills**

In developing self-management skills, students were guided to reflect upon their progress to develop and improve. They monitored themselves and thought of how they had progressed through the learning engagements. In appendix C, the student answered questions relating to the unit of inquiry including how they felt about the development of the focused ATL skills.

## **3. Research Skills**

In appendix D, students demonstrated research skills through their presentations. Throughout the units of inquiry, the student presented information through a variety of media formats: *Toddle*, *Google Slides*, *Google Jamboard*, *Video/ voice recording*. The student had learned previously during daily Google Meet sessions how to present and use different applications that best suited them.

## **4. Thinking Skills**

In appendix E, thinking skills were developed by the student's ability to use a visible thinking routine, '*see, think, wonder*' to describe the materials of objects seen. This was done to gauge student knowledge of the unit of inquiry. In appendix F, the student tested a boat they created with a given problem. The student had to think of how to test generalizations and conclusions. In appendix G, the student made guesses by asking "what if," questions and generated testable hypotheses through visual arts. These are seen in their writing in black.

## **5. Social Skills**

In appendix H, the students worked together in a group using the *Google Breakout Room* to discuss roles and responsibilities for the summative assessment. The student managed to resolve conflicts and work collaboratively in teams, exercise leadership and took on a variety of roles within groups as well as listened actively to other perspectives and ideas. Each group in different breakout rooms were given agency and responsibility to manage themselves. As Google Jamboard allows multiple users, the student works together with their team to decide on the roles and pages for each person. This allows the opportunity for growth as well as confidence to take on a leadership role. The development of social skills is also seen during daily Google Meet sessions where the student works together to follow online class rules. See appendix I.

In the figure below, King (2013) provides a rubric to assess student development of the IB ATL skills for any learning experience or period of performance.

There are four levels of development of any ATL skill:

<b>Novice Watch</b>	<b>Learner Copy</b>	<b>Practitioner Do</b>	<b>Expert Teach</b>
Can identify the skill when others are using the skill	Can copy others performance of the skill	Is practicing and working towards being able to use the skill whenever needed	Uses the skill automatically and autonomously Could teach others the skill
High levels of scaffolding needed from teacher	Medium level of scaffolding needed	Less and less teacher scaffolding required	No teacher scaffolding required

These four levels of increasing skill proficiency can be broken down into a rubric of progress from a student's point of view. Students can then assess their own development of any ATL skill using the following self-assessment rubric.

<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>	<b>A+</b>
<b>Novice Watching</b>	<b>Learner Copying</b>	<b>Practitioner Doing</b>				<b>Expert Teaching</b>
		<b>Starting</b>	<b>Practising</b>	<b>Getting better</b>	<b>Got it!</b>	
I know what the use of the skill looks like when others are using it	I can copy someone else using the skill	I am starting to use the skill by myself	I am using the skill by myself in familiar situations	I am getting better at using the skill in unfamiliar situations	I am able to use the learning skill whenever I need to	I use the skill without needing to think it through first
I can break the skill down into steps	I use the skill one step at a time	I am still conscious of using the skill one step at a time	I am starting to put all the steps of the skill together	I can usually use the skill without referring to the way that I have done it in the past.	I can confidently use the skill without referring to the way that I have done it before	I am capable of teaching other students how to use the skill
When I try to use the skill myself I make lots of mistakes and ask lots of questions	I still make mistakes and ask for help but I am getting better at correcting my own mistakes	I can correct my mistakes with some help	I can correct my own mistakes	Any mistakes I make I can quickly correct	I can usually correct any mistakes automatically	I correct any mistakes I make automatically
I need lots of help to use the skill	I can use the skill in familiar situations with some help	I still need help to use the skill sometimes	I don't need help to use the skill in familiar situations anymore	I still need help to use the skill in unfamiliar situations sometimes	I hardly ever need help to use the skill anymore	I can use the skill in unfamiliar situations without any help from anyone else

Figure 3: Rubric to assess student ATL skills

Students are given a self assessment form after a learning experience to reflect on how they feel after they have done the task. This allows them to express their ideas and feelings on their learning process and provide them with an opportunity to improve if they feel the need as shown in appendix J.

### **Self - Regulated Learners (SRL)**

Academic self-regulation refers to self-generated thoughts, feelings and actions intended to attain specific educational goals, such as analyzing a reading assignment, preparing to take a test, or writing a paper (Zimmerman et al., 1996, p. 2). Students who are academically self-regulated are seen to be responsive, aware, and actively seek opportunities to learn. They are

not reactive to their learning outcomes, but rather proactively seek opportunities to learn (Zimmerman, 1989). They have developed skills to help them learn effectively, to motivate them to get started, and to manage setbacks and persevere when tasks become challenging. Self-regulated learners strive to reach their goals and actively listen and work towards finding their own way of learning.

During the pandemic, classrooms were brought home through a screen and parents played the role of a supporting teacher to assist their child during Google Meets. While some parents had a head start in learning how to use digital platforms and applications, those who were unable to assist their child because of their own jobs, had to wholly place their trust in the teachers online. Both parents and child encountered times of frustration and difficulty upon operating new applications and platforms for learning. That being said, teachers had to explore strategies to help and guide both parents and children throughout the learning process online, and continue to achieve goals placed for the academic year. Teachers had to come up with ideas and solutions to help students self-regulate and reach a stage where they were able to learn how to learn. Smart learners ultimately learn more with less effort once they discover the processes that work best for them, and this is where self-monitoring and other self-regulatory processes come into play (Zimmerman et al., 1996, p. 8). In figure 4, we can see the phases and processes of self-regulation according to Zimmerman and Moylan (2009).

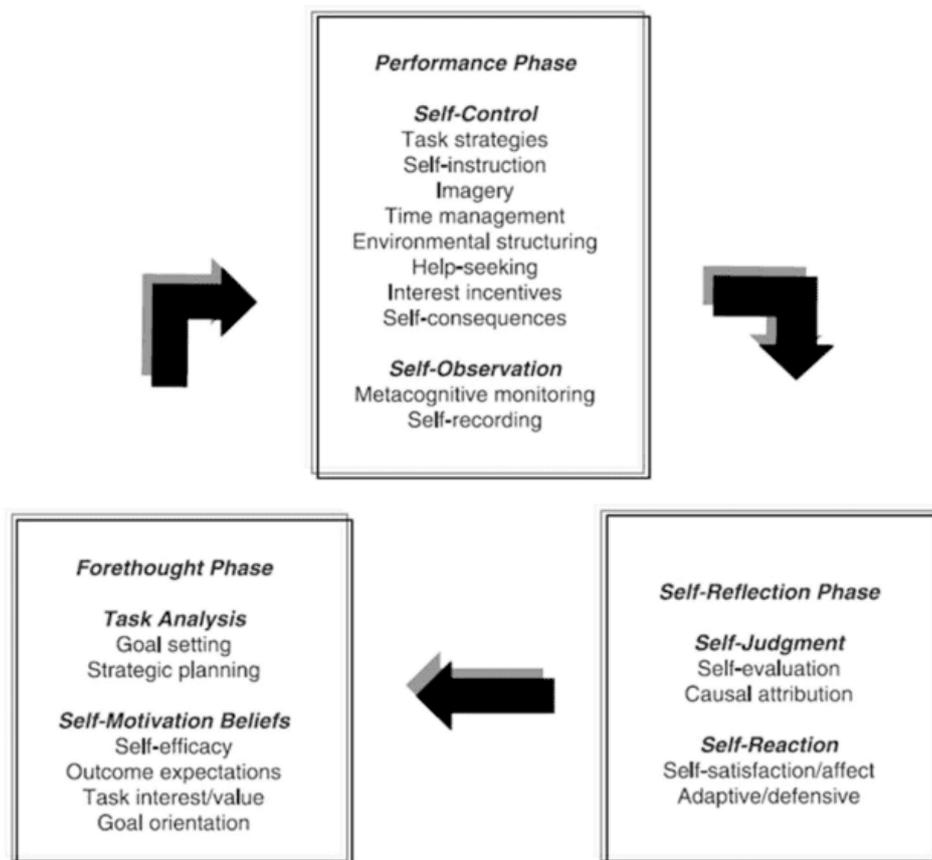


Figure 4: The phases and processes of self-regulation according to Zimmerman and Moylan (2009)

As seen in figure 4, the cyclical process includes 3 stages: the forethought phase, the performance phase and the self-reflection phase. In the initial stage, students set a goal and assess their ability to complete the task. In the classroom, students are provided with a ‘goal-setting contract’, to which they were guided through a series of feedback and discussions of goals they wish to achieve, as seen in figure 5. Students were also provided with a brainstorming template to guide them through the planning stage of goal-setting. This was found to be effective as students were seen to try their best to follow their plan. These goals include personal, social, emotional, as well as academic goals. Although this is seen as a general goal rather than a task oriented goal, it is a step towards providing students the skills needed to understand the process to which they can achieve the goal.



	Goals My Goals...	I will...	My Teachers Will...	My Parents Will...
 Personal, Social and Emotional Development	Respect everybody around me	Listen to others, follow classroom agreements and show respect	Remind Nico to follow classroom agreements, show respect and wait to be called during class time	Remind Nico to show respect and follow classroom agreements
 Academic Development	Have better handwriting	Practice writing neatly everyday	Encourage and remind Nico to practice handwriting everyday. Use the green book to write answers	Support and recheck his handwriting everyday
(Students' Signature)		(Teachers' Signature)		(Parent's Signature)

Figure 5: Student Goal Setting Contract

In the next phase of Zimmerman’s model, the performance phase, students observe their own learning process to achieve these goals. To aid this process, students are reminded by the goals that have been printed and placed on their desks. While the teachers’ role in this phase is to provide encouragement and guide the students in daily self-reflections. In the last phase of this model, students reflect on themselves to best decide how they have reached their goals. This self-reflection provides students with an opportunity to share whether they continued with their original plan (appendix J). These steps are recorded using a variety of methods, including anecdotal notes, videos, and screenshots. The application of this cyclical model empowers students to become self-regulated and independent.

### Self - Efficacy and Motivation

An integral component of self-regulation is self efficacy and motivation. For students to become self regulated learners, they must exhibit self motivation and self efficacy towards the task. Motivation is vital to a student’s desire to learn and engage during blended learning. When a student is motivated, they show more engagement in conversations and a greater willingness to learn. According to Bandura (1989), a heightened motivation is evident in their continuing tendency to set higher goals for themselves when they achieve earlier goals. On

the other hand, self efficacy is one's attitude towards a specific goal or task in a certain context, i.e. their perceived ability. When a student feels that they understand a certain concept when taught online, they become motivated and interested. Higher self-efficacy beliefs increase the use of self-regulation strategies (Pajares, 2008) and this can consequently lead to an increase in academic achievement (Bouffard-Bouchard, Parent, & Larivee, 1991; Schunk, 1984; Schunk & Hanson, 1985; Zimmerman & Martinez-Pons, 1990).

## **Digital Literacy**

With the modern era quickly accelerating into a digital one, it has never been more important for students to comprehend and make judgments about information they find online. The origins of the understanding of digital literacy can be traced back to Paul Gilster. According to Gilster (1997), digital literacy is about mastering ideas, not keystrokes, in other words, an extension to the ability to read and write. However, the interpretation of the reading depends on the reader. Therefore, digital literacy is built on general literacy and reading skills to help people understand how digital technology functions in an effective manner. According to the American Libraries Association's Digital Literacy Task Force (2011), a digitally literate person is someone who:

- possesses the variety of skills – technical and cognitive – required to find, understand, evaluate, create, and communicate digital information in a wide variety of formats;
- is able to use diverse technologies appropriately and effectively to retrieve information, interpret results, and judge the quality of that information;
- understands the relationship between technology, life-long learning, personal privacy, and stewardship of information;
- uses these skills and the appropriate technology to communicate and collaborate with peers, colleagues, family, and on occasion, the general public; and
- uses these skills to actively participate in civic society and contribute to a vibrant, informed, and engaged community.

During hybrid learning, the school decided to see the situation as an opportunity towards the inevitable future of the digital world. Teachers were provided opportunities to explore applications and were provided with professional development and ongoing feedback for management to consider.

Throughout hybrid learning, teachers would introduce a variety of applications and platforms in all areas of learning. For example, during mathematics, aside from realtime teaching and learning, applications used included Quizizz, Epic, Google Jamboard, Google Form and Google Polls. When the applications were being used, students would share their screen through Google Meet and be given opportunities to ask questions and help other students who need clarification.

Prior to students being introduced to these platforms and applications, a session for parents was also provided at the beginning of the academic year. During this session, parents were made aware of the applications and platforms used, as well as a step by step guide to use the platform Toddle.

Students would further explore platforms and applications during their online breaktimes when they were supervised in a Google Meet to socialize and share ideas and stories. They learnt how to converse and take turns to share. Gilster (1997) mentioned that digital literacy

is partly awareness of other people and our expanded ability to contact them to discuss issues and get help.



Figure 6: Digital Literacy Concept (JISC Digital Capacity Framework, 2015)

As seen in figure 6, the digital literacy concept demonstrates that interaction in the digital world requires more than just the ability to access applications, but understanding how to use them and what it means. Eshet (2002) emphasizes that digital literacy should be more than the ability to utilize various digital sources effectively.

Students became digitally literate throughout the pandemic because of the learning situation. Their ability to quickly learn and adapt made hybrid learning easier. During times of online learning, students also developed their self-management skills to manage setbacks (bad internet connection, frustrations), organize themselves, by selecting and using appropriate technology effectively and productively. While teachers ensure each student's ability to comprehend the technology or application before assigning learning engagements or assignments.

## Conclusion

By embedding the IB ATL skills in learning, students were empowered to become self-regulated learners. Using creative strategies and including the mapping of ATL skills, empowered self regulation in students, as well as opportunities to use different platforms and applications with guidance from teachers. Upon mastering a new application or platform, that is, being able to operate it independently, students demonstrated self efficacy and motivation. This resulted in students feeling a sense of accomplishment and an eagerness to self-regulate. The IB ATL skills provided teachers with a focus to teach the unit of inquiry with a strong backbone of one of the 5 skills. When a specific skill is targeted for a learning experience, teachers find it easier to teach the concept and students are more likely to engage and discuss. When students see the value in learning, they are more likely to plan and set goals (forethought phase). When goals are set, the student learning process is clearer and easier to

manage, and the teacher can mentor them in areas they might find challenging (performance phase). After a skill is attained, students who achieve the targeted skills and concepts, are more likely to self-reflect and celebrate their accomplishments.

During the length of hybrid learning, the student demonstrated empowerment towards becoming a self-regulated learner by showing awareness towards their learning process and self reflection. Given enough time to explore and use different applications and platforms daily during Google Meet sessions, the student becomes digitally literate. Their ability to use applications and navigate platforms independently further empowered them to become self regulated learners.

# Appendix

## Appendix A

Guided step by step planning, processing and reflecting progress



## Appendix B

Activity with parents to develop communication skills



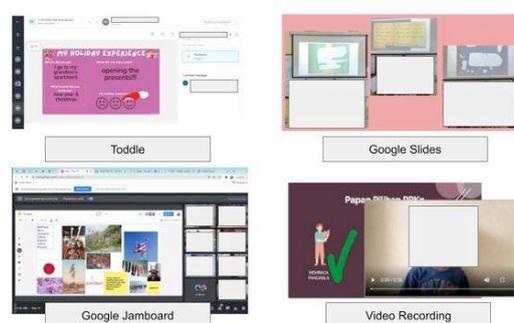
## Appendix C

Student's reflection to develop communication skills



## Appendix D

Demonstrate Research Skill through Presentation



## Appendix E

See, Think, Wonder Activity



## Appendix F

Demonstrate Thinking Skills



## Appendix G

Demonstrate Thinking Skills



## Appendix H

Demonstrate Social Skills



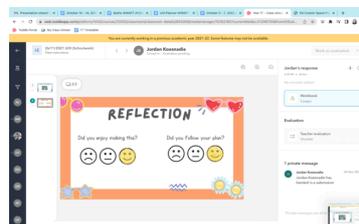
## Appendix I

### Online class and Jamboard Rules

Rules for Online Learning	Jamboard Rules
 No virtual backgrounds	1. Respect everyone's work
 Sshhh....	2. No scribbling on other friend's work
 mute your microphone	3. No deleting friend's work
 Listen	4. Listen to the teacher's instructions.
 Click raise hand to ask a question	
 Use the chat box wisely	

## Appendix J

### Online class and Jamboard Rules



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