

# Nurturing Future-Ready Learners in the new normal through Physical Education lessons: Reflections from two Singapore PE Teachers

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**Abstract.** As Singapore moves into the endemic stage of managing COVID-19, there has been a greater emphasis on blended learning in schools to minimise disruptions to learning. Our students need to be ready to face the rapidly changing world and thrive in collaborative learning environments while demonstrating resilience, inclusiveness, empathy and good decision-making skills. How do we nurture our students to become self-directed and reflective learners through PE? How do we create a culture of thinking and learning in PE? How do we develop character in PE? How do we leverage technology to personalize learning and provide authentic experiences for them. In this presentation, two Singapore PE teachers will share on how they design their lessons to nurture self-directed learners through practical strategies underpinned by assessment and feedback literacy. Observations include higher student engagement, positive and inclusive classroom culture and thinking players who deliberate on their actions, behaviour and choices.

**Keywords:** Self Directed Learners, Assessment Literacy, Inclusive Classroom Culture, ICT in PE, Character and Values Development

## 1 Introduction

In Singapore's education landscape, our mission remains to mould the future of our nation by providing a holistic education that develops and supports every learner to their full potential, nurturing them to become lifelong learners and good citizens, conscious of their responsibilities to their family, community and country. With the ever-evolving education landscape, educators constantly take on the role to rethink, reframe, relearn and redefine teaching and learning in a classroom that is both relevant and relatable to our learners.

We believe that every child wants to learn, and can learn; that every child wants to do well, and can do well. We believe that learning flourishes especially when our learners are in a caring and safe learning environment, when they are given opportunities to construct knowledge both

collaboratively and actively, when they are given opportunities to develop thinking skills and dispositions, and when assessment is used to address our learner's learning gaps in a meaningful way.

Adjusting to the global pandemic whilst maintaining the goals of Physical Education in the face of COVID-19 has not been an easy feat, but it has challenged the way in which we think, learn, and yet continue to unify us in our quest to thrive in the future. With our rapid technological advancement today, coupled with the economic, social, and environmental changes, the world presents many unprecedented challenges and opportunities for our learners. Yet, despite these uncertainties our learners may face, it is the core values - Respect, Responsibility, Resilience, Integrity, Care and Harmony that better guides our learners' motivations and actions, and will determine how they lead their lives in navigating the world of tomorrow.

In our quest to develop a future-ready generation with critical thinkers and adaptable learners, Singapore has taken a direction towards the meaningful implementation of Blended Learning in schools, affording students with a personal learning device to enrich our learners' educational experience by enabling them to benefit from multiple modes of learning, and to empower them to be self-directed learners. At the same time, we are working towards Full Subject Based banding as an ongoing effort to nurture the joy of learning and develop multiple pathways to cater to the different strengths and interests of our students.

The above initiatives undertaken by the Ministry of Singapore are just small steps toward developing a nation of lifelong learners who embrace learning as a way of life. The challenge is on the readiness of schools to enable our students to be future-ready learners who will co-create living, lifework and learning in Singapore (Ng, D., Wong, C.P. & Liu, S (2020).

## **2. Literature Review**

To help develop our students to be future ready learners and better guide teachers in delivering lessons that focus on the joy of learning, assessment literacy was introduced as one of the six key areas of practice for teachers in Singapore.

Assessment Literacy (AL) aims to enable teachers to look at assessment from a holistic perspective rather than merely exams or test scores. The hope is for teachers to develop their student's intrinsic motivation to learn and reduce the over-emphasis on exams or test scores through the purposeful design of assessment tasks that focus on learning and mastery. The other aim of AL is for teachers to strengthen their competencies in diagnosing and addressing learning gaps in their students.

Based on Stiggins work, assessment Literacy is a multidimensional concept that involves teachers, students and other stakeholders (Stiggins, 1991). From a sociocultural lens, the definition of assessment comes:

“Assessment literacy is a dynamic context dependent social practice that involves teachers articulating and negotiating classroom and cultural knowledge with one another and with learners, in the initiation, development and practice of assessment to achieve the learning goals of students.” (Willis et al., 2013, p.242).

Therefore, the sociocultural lens of assessment is important for PE practitioners as a key component of PE lessons in the development of social aspects.

To help our teachers and students develop their assessment literacy skills, formative assessment is one way of helping teachers and students make sense of assessment information and better utilize these information to help address their learning gaps and make improvements in their learning. Formative assessment is a process where teachers and students gather relevant information during lessons that provide feedback on teaching and learning. If implemented well, formative assessment processes help to improve teaching practice and student achievement.

There are 5 practical strategies or practices for effective formative assessment based on Dylan Wiliam. The 5 practical strategies or practices are:

1. Clarifying, understanding, and sharing learning intentions
2. Engineering effective classroom discussions, tasks and activities that elicit evidence of learning
3. Providing feedback that moves learners forward
4. Activating students as learning resources for one another
5. Activating students as owners of their own learning

A key aspect of nurturing future ready learners is the level of involvement among learners in their learning. Watkins (2005) encourages us to think about what we have done to involve the role of learners in the learning process. Are our learners driving their own learning proactively? Are they taking greater ownership of their own learning?

*“Students are crew, not passengers.” (Watkins, 2005, Pg35)*

Formative assessment practices ranges from assessing our learners’ progress, to understanding their learning gaps, to taking steps to address their learning needs. The challenge is to involve our students in the assessment process in a PE classroom. How can teachers effectively integrate formative assessment practices in a PE classroom in an engaging and meaningful way?

Taking into consideration the broad shifts in the education system in Singapore which includes full subject based banding, joy of learning, reduced emphasis on exams and test scores, the implication is that teachers are expected to cope with a diverse group of learners with widely varying learning profiles and learning needs. With our goal of nurturing a diverse group of

students to be self directed learners and learners for life, there is a need for an intentional design to get students more actively involved in assessment during lessons.

Dylan's five practices of assessment includes the need to involve students in the formative assessment process. Two key practices that reflect the greater involvement of students in assessment are the need to activate students as learning resources for one another and activating students as owners of their own learning; which is similar to what Willis has advocated in his work for assessment literacy. Thus, there is a need to consider the role of students in assessment where their involvement in assessment is receiving more attention from researchers (e.g., Charteris & Thomas, 2017; Davari-Torshizi & Bahraman, 2019; Deeley & Bovill, 2017; Smith et al., 2013).

A simple way to involve students in assessment is through feedback practices. Carless & Bond, (2018) defined feedback as "a process through which learners make sense of information from various sources and use it to enhance their learning or learning strategies (p.1315). By developing student's capacity to collect relevant information of their performance, use these performance data or indicators as their feedback of their learning and take relevant action to address their learning needs (Carless & bond 2018), these actions will promote greater student agency and student voice in their learning.

Feedback is a crucial part of formative assessment. Dylan William mentioned that eliciting evidence and providing feedback are two key areas of practices in formative assessment. One of the ways to involve students in assessment or to raise their assessment literacy is to get them more involved in assessment through activating them as owners of their own learning and engaging them in the learning, more specifically the feedback process. How do we develop our students to gather relevant information on their learning and use this information to diagnose their learning gaps and improve? Apart from test and exam scores, how do we engage students in feedback during lessons?

Based on Chong 2021's social constructivist approach in feedback where it is seen as a interactive process, a dialogue between teachers and students, and Carless, 2016 proposal that feedback can also operate as an "inner dialogue or self monitoring", there are relevances in raising the feedback literacy of students especially in PE classes where there is a strong social component in PE lessons. To ensure effective and engaging assessment feedback dialogues, raising feedback literacy levels is crucial (Careless & Bould 2018). Students should develop the learning skills of those who knowhow to collect relevant information on their learning and use these information to improve their learning, mastery of skills at an individual level or collectively as a team.

Careless & Bould 2018 defines student feedback literacy as "the understanding, capacities and dispositions needed to make sense of information and use it to enhance work or learning strategies." (p.1316).

Therefore, as PE practitioners, how do we implement these formative assessment strategies in PE lessons effectively so that we can raise the student's ability to use feedback with the long

term goal of developing them to be future ready learners. How do we get students to be more involved in their learning and to raise their level of feedback literacy? How do we engage students in feedback during PE Lessons?

More than addressing just the physical and/or psychomotor aspects of Physical Education, our PE lessons also stresses on the cognitive and affective development of our learners. How can we best incorporate character development in our PE lessons? How do we encourage peer to peer relatability? Bruner's Constructivist Theory (1966) of learning advocates for the emphasis of learning to be placed on the learners rather than the teacher. As the learner interacts with their environment, experience and reflects upon those experiences, they construct their own conceptualisations and solutions to problems. They learn by incorporating new learning experiences and information into their pre-existing knowledge and experiences. The affective learning in PE must be pursued as an intentional outcome rather than a hoped-for by-product.

Throughout history, academic and research psychologists have devoted more attention to cognitive qualities than affective qualities, focusing on empirical research of theories, concepts of intelligence and achievement for higher physical and cognitive performances (Thomas, 1997). Common to us would be Bloom's taxonomy of cognitive objectives (Bloom, 1965), and the six components that comprises this taxonomy of cognitive abilities include knowledge, comprehension, application, analysis, synthesis and evaluation. More than educating the body and mind, we believe in educating the heart through the design of our lessons. Character development is often viewed as an integral part in education, the composite of core values that defines every child, and the outward manifestation of those values (Matt, Kelli, Jeffrey 2004). As a PE educator and practitioner, it is paramount to integrate and apply the various values inculcation principles and practices into our PE lessons to increase the behavioural frequency of students demonstrating values such as respect, responsibility, resilience, integrity, care and harmony.

Krathwohl, Bloom & Masia (1964) shares about the taxonomy of affective qualities, which states the following five qualities:

1. To receive (i.e, a student is aware of or passively attending to certain events or stimuli, for example when a student is listening and being attentive to what others are saying),
2. To respond (i.e., a student complies to requests by attending or reacting to certain events or stimuli, for example when a student is obeying class rules, complying with a teacher's requests, and participating in class activities as expected),
3. To value (i.e., a student displays behaviors consistent with one or more beliefs or attitudes in situations where she or he is not forced to comply or obey, and is convicted to demonstrate fair play and values of sportsmanship during competitive games),
4. To organize (i.e., a student is committed to a set of values and displays or

communicates his or her beliefs or values in other ways), and

5. To characterization (i.e., a student's total behavior is consistent with the values she or he internalized, - for example when a student displays consistency between his feelings, thoughts, and behaviors).

Characterization is what we work towards in the intentional design of our assessment and feedback learning processes. Whilst it is a challenge to measure the affective qualities, the process of observations, peer discussions, reflections, conflict mediation and goal setting is invaluable to our students' learning. It creates a safe learning environment for our students to come into contact with their inner beliefs and values, seek to understand the perspectives of others and deconflict any differences they share. Hence, it is crucial to involve and engage our students in the process of meaningful assessment and feedback practices to prepare them to be future ready and of good character.

### **3. Problem Statement**

As Singapore moves into the endemic stage of managing COVID-19, there has been a greater emphasis on blended learning in schools to minimise disruptions to learning. Our students need to be ready to face the rapidly changing world and thrive in collaborative learning environments while demonstrating resilience, inclusiveness, empathy and good decision-making skills.

How do we nurture our students to become self-directed and reflective learners through PE? How do we create a culture of thinking and learning in PE? How do we develop character in PE? Would the use of an affective assessment and/or feedback tool help learners learn, reflect and respond with positive behaviours during PE lessons and competition?

Specifically to two schools in Singapore of similar profiles, we have three areas of concerns:

- (1) Highly competitive nature of students who adopts a win-at-all-cost attitude and struggles with conflict management
- (2) Mental model of Physical Education lessons as 'Play' rather than meaningful learning and acquisition of attitude/skills/knowledge.
- (3) Lack of ownership and motivation in learning.

### **4. Methods And Approaches**

In this project, two Singapore PE teachers explored various formative strategies to increase student's involvement in learning where students play a role in generating information that provides feedback on their learning and performance.

#### **Psychomotor & Cognitive Domain**

A key approach is to equip students with the ability to collect relevant performance data such as complete passes, shots on targets appropriate to the games taught. The students will be given opportunities to share their observations and reflect on their personal, self or team's performance during skills practice, small-sided game or full-modified games.

### Affective & Cognitive Domain

An interactive process, a progressive outcome to characterize positive values, and investing towards a positive and inclusive classroom culture is our ultimate goal. In our study, we explored the Learn-Reflect-Respond approach to develop in our students self-awareness, the learned value of inclusiveness, as well as conflict management and resolution skills. We employed a learner-centric approach through collaborative and interactive efforts to enable our students in authentic learning and empower them to be the change-makers they can be.

### Subjects

The participants in this project were students from two secondary schools of mixed gender across a range of learning profiles from Secondary 1 - 5, aged 12 to 16 years old. Some of the games taught in school were frisbee, netball, badminton, football, and tchoukball.

## 5. Data Analysis & Results

### Psychomotor and Cognitive Domain:

In the area of psychomotor and cognitive domain, evidence on student's work are randomly selected to illustrate what has happened in PE lessons. The student's work is also a reflection of the teacher's role in getting students more active in the learning process. Each unit of games' teaching spans across 8 to 10 weeks for each unit.

Figure A: Sample of Secondary 4 student's collection of relevant data in mini whiteboards after a frisbee lesson



While teaching the game of ultimate frisbee, students are required to collect relevant

performance data such as complete and incomplete passes. Students who were in charge of collecting performance data were called "Coaches". Routines were set to ensure that "coaches" could perform their tasks.

One of the ways to get our students more involved in generating feedback for their personal and team performance is to get them to place the mini whiteboard on the field to allow students to discuss their performance.

After a few lessons, more competent students suggested collecting other performance data, such as the number of assists and points scored, as they wanted a more holistic view of their performance. Other suggestions for performance data include the number of interceptions and blocks.

Name	✓	✗	○
Divan	✓	✗	○
Rohan	✓	✗	○
Akram	✓	✗	○
Ijaz	✓	✗	○
Amir	✓	✗	○
Muhammad	✓	✗	○
Jasper	✓	✗	○
Nawaf	✓	✗	○

Name	✓	✗	○
Divan	○	✗	○
Rohan	✓	✗	○
Akram	✓	✗	○
Ijaz	✓	✗	○
Rohan	✓	✗	○
Jasper	✓	✗	○
Nawaf	✓	✗	○

ESS Football, Sec 3

Shooting Skill Challenge

Figure B: Sample of Secondary 3 student's collection of relevant data after a football lesson

**Learning Intention**

① Shots on target (Shots) Affects the goal

**Success Criteria**

① No. of points scored

**Learning Task**

① Shooty back 110  
② Small side game  
③ Modified full game

Respect Responsibility

**Shots**

0-2	2-3	4-5	6-8	9-10	>10
●	●●	●●●	●●●●	●●●●●	●●●●●●

**Learning Intention**

① Attacking the goal  
② Shooting

**Success Criteria**

① 8/10 Successful shots  
② Good shooting technique  
B: balance  
C: flow  
D: yes  
F: feet / follow through

**Learning Task**

① 10 shot skill challenge  
② 3x2 or 3x3 small-sided game  
③ Modified full game

③ Change roles  
C: consistency  
T: teamwork  
C: competition

**Shots @ goal**

0-2	2-3	4-5	6-8	9-10
●	●●	●●●	●●●●	●●●●●

YR 2022, Lesson Enactment  
"Fast & Effective Assessment"

Figure C: Sample of Secondary 1 student's collection of relevant data after a Netball lesson



Learning Intention		Learning Task		Scores	
① U/H High serve O/H clear		① Assessment Task ② Modified game		U/H HIGH SERVE	
Success Criteria				GIRLS	
① 4 to 5/10				0-2	3-4
				5-6	7-10
				Abigail Korice	Shantel Renee Nadine Daphne Carmy Megan Jasmine
				Believe Liam/An Katie Orlando Christina	Zoe Suzie Bashyah
SCORES U/H HIGH SERVE					
BOYS	0-2	3-4	5-6	7-10	
	Spencer Jonathan Aaz Gurren Proden Ryan	Chen Kelvin London Anton	Jays	Jemaine? Evangeline Jordan	

Figure D: Sample of Secondary 1 student's collection of performance data after Badminton lesson

Above are samples of student's work in monitoring their learning process through the collection of relevant performance data based on the lesson objective(s) for the day. Examples of data collection are the number of successful execution of skills such as passing, shooting in sports and games.

### Affective & Cognitive

In our endeavor to build a positive school culture where we envision our students to engage and enjoy the process of a self-refereeing game, we decided to conduct the designed Tchoukball module for our Secondary Ones. Values inculcation takes time, and is worth the investment to develop students of good character. Taking this into consideration, we designed our Tchoukball module to span across 12 weeks, where our students experience the five spirit score components individually before they are introduced to the full spirit score assessment sheet. To provide a platform for our students to demonstrate their learning and engage in an authentic learning experience, students will participate in an intra-class and inter-class competition for application and learning.

Figure E: Overview of Secondary 1 PE Tchoukball Curriculum process and application platforms





Figure F: Timeline and learning process of the five spirit score components

The teacher's knowledge and understanding of the class profile is critical in the process of the deliberate planning of student groups. Students will be pre-assigned to groups, and will have to learn to work one with another over a series of at least 4 to 5 lessons. Teachers may choose to keep the groupings the same throughout, depending on the rationale and learning outcome he/she wants to focus on and achieve. Below are examples of the Check-In Cards that every group will collaboratively work on to deepen their understanding of the spirit score component, and to agree upon a common consensus as a reference point for their future observations and feedback.

Class: 1E4		Date: 12/8/2022				
Your Team Number: 1		Spirit Score		Your Opponent's Team Number: 2		
Category/Scoring	0: Poor	1: Not Good	2: Good (normal) score	3: Very Good	4: Excellent	Score
Fouls and body contact	<ul style="list-style-type: none"> <li>They stood in the path of players even after being told about it.</li> <li>They made several dangerous or reckless plays.</li> </ul>	<ul style="list-style-type: none"> <li>They did not make the effort to avoid contact or make way for oncoming players.</li> <li>There was at least one instance of dangerous or reckless play.</li> </ul>	<ul style="list-style-type: none"> <li>Nothing significant happened beyond accidental contact.</li> </ul>	<ul style="list-style-type: none"> <li>There was at least one clear case of purposeful contact avoidance.</li> </ul>	<ul style="list-style-type: none"> <li>There were several clear cases of thoughtful contact avoidance.</li> <li>They played in a manner that avoided the potential for both fouls and unnecessary body contact.</li> </ul>	<b>3</b>
Your Team Players' Name: Student A, Student B, Student C, Student D						
Your Opponent's Team Players Name: Student E, Student F, Student G, Student H						

Figure G: Sample of Check in cards for group discussions

For every spirit score component, students would have gone through the check-in discussions, learnt a new skill or concept and engage in a modified game which best illustrates the skills, concepts and values learnt. Groups are tasked to be a critical peer and give meaningful

feedback to their opponents based on the experience in the game. Groups discuss based on the spirit score component for that week, share their observations and provide suggestions on how to improve, and/or what they hope to see/experience in upcoming game sessions.

**SPIRIT SCORE (SS) SYSTEM**

Timeline	Five SS Components + Full Rubrics	Lesson Sequence	Process
T3 W1-2	1. Fouls & Body Contact	Lesson 1 Lesson 2	Check In Cards Spirit Score Feedback
T3 W3-4	2. Communication	Lesson 3 Lesson 4	Check In Cards Spirit Score Feedback
T3 W 5-6	3. Positive Attitude & Self-Control	Lesson 5 Lesson 6	Check In Cards Spirit Score Feedback
T3 W7-8	4. Fair-Mindedness	Lesson 7 Lesson 8	Check In Cards Spirit Score Feedback
T3 W9-10	5. Rules Knowledge	Lesson 9 Lesson 10	Check In Cards Spirit Score Feedback
T4 W1-2	Full Rubrics	Lesson 11 Lesson 12	Full Rubrics Full rubrics

Figure H: Sample of a Post Tchoukball game group discussion to provide a score based on the categorical rubrics [Spirit Score Component: Fouls & Body Contact]

Class: 1E4 Date: 19/8/2022

Your Team Number: 1 **Spirit Score** Your Opponent's Team Number: 3

Category/Scoring	0: Poor	1: Not Good	2: Good (normal) score	3: Very Good	4: Excellent	Score
<b>Communication</b>	<ul style="list-style-type: none"> <li>They refused to discuss/outcomes and insist on making their own calls.</li> <li>Their body language were frequently rude or aggressive.</li> <li>They frequently used offensive language.</li> </ul>	<ul style="list-style-type: none"> <li>They refused to discuss calls/outcomes.</li> <li>There were a few instances when their body language was rude or aggressive.</li> </ul>	<ul style="list-style-type: none"> <li>They listened and communicated respectfully.</li> <li>They explained their point of view clearly.</li> <li>The reserves/other players helped when asked.</li> </ul>	<ul style="list-style-type: none"> <li>They listened and communicated their point of view clearly and calmly most of the time.</li> <li>They brought up issues and general concerns as early as possible.</li> </ul>	<ul style="list-style-type: none"> <li>They communicated very effectively and made us feel comfortable discussing the game.</li> <li>They consistently listened and communicated their point of view clearly and calmly.</li> </ul>	<b>1</b>

Your Team Players' Name: Student A, Student B, Student C, Student D

Your Opponent's Team Players Name: Student I, Student J, Student K, Student L

Figure I: Sample of a Post Tchoukball game reflection and sharing to provide opponents critical feedback for learning [Spirit Score Component: Fouls & Body Contact]

NOTABLE EVENTS / COMMENTS FOR LEARNING!	
<p><b>Notable Events / Comments:</b> They could have communicated more as I only see Student K communicating to his/her teammates while the rest were just standing around mostly wondering what to do. -Student A</p>	<p><b>Notable Events / Comments:</b> In today's game, there wasn't a lot of communication involving both sides of the opponents. Scoring was messy and it was tough to decide on the final score. Both teams had their own thoughts. Let's discuss properly before the game in future so we can enjoy the game better. -Student B</p>
<p><b>Notable Events / Comments:</b> There were many solo plays and lacked the communication. There were many passes that failed due to a lack of communication rather than the lack of skills. -Student C</p>	<p><b>Notable Events / Comments:</b> When we tried to explain to them why a score was made, a foul was made, or that the scores were counted wrongly, they did not care and did not want to discuss or agree with us. They insisted on their scores and continued in the game. -Student D</p>
<p><b>Notable Events / Comments:</b> We felt that considering their own teammates into the game is very important as this includes everyone and also finding out the strengths and weaknesses of each team member, helping them and turning to them for help when in need. Also, listening to your teammates and opponents helps to improve the atmosphere and helps everyone learn from each other. -Student A,B,C,D</p>	<p><b>Notable Events / Comments:</b></p>

Figure J: Sample of a Post Tchoukball game group discussion to provide a score based on the categorical rubrics  
[Spirit Score Component: Communication]

Your Team Number: <u>1</u>		Spirit Score		Your Opponent's Team Number: <u>4</u>		
Category/Scoring	0: Poor	1: Not Good	2: Good (normal) score	3: Very Good	4: Excellent	Score
Positive Attitude and self-control	<ul style="list-style-type: none"> <li>They were rude to their own teammates, opponents, officials and/or spectators.</li> <li>Physical confrontation occurred on/off the field.</li> <li>They actively celebrated mistakes to humiliate players.</li> <li>They consistently showed poor self-control.</li> </ul>	<ul style="list-style-type: none"> <li>They actively celebrated mistakes to humiliate players.</li> <li>They only passed to the better players and excluded some players.</li> <li>There were 1-2 instances where they clearly showed poor self-control. (eg kicking cones/shouting at teammates for mistakes made)</li> </ul>	<ul style="list-style-type: none"> <li>They were polite to their teammates, opponents, officials and/or spectators.</li> <li>The team left an overall good impression before, during and after the game.</li> </ul>	<ul style="list-style-type: none"> <li>They included all players in the game.</li> <li>They complimented us on a good play or celebrated good plays by either team in a positive manner.</li> <li>There were 1-2 instances where they clearly showed very good self-control. (eg restraint after missing a crucial shot).</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate excellent self-control on the field during potentially stressful situations.</li> <li>Consistently complimented or celebrated good plays from both sides in a positive manner.</li> </ul>	<b>2</b>
<p>Your Team Players' Name: Student A, Student B, Student C, Student D</p> <p>Your Opponent's Team Players Name: Student M, Student N, Student O, Student P</p>						

Figure K: Sample of a Post Tchoukball game reflection and sharing to provide opponents critical feedback for learning [Spirit Score Component: Communication]

NOTABLE EVENTS / COMMENTS FOR LEARNING!	
<p><b>Notable Events / Comments:</b> In today's game, all the group members were included. Even though sometimes, their group members was playing around with their friends, the group got back together to complete the task given. They complimented us on the good play in a positive way and gave us feedback on how we could improve. -Student A</p>	<p><b>Notable Events / Comments:</b> Everyone displayed positive attitude and self-control except for Student M, who was a little irritated because his/her teammates kept dropping the ball. Student M can learn to be more patient towards others during the game. -Student B</p>
<p><b>Notable Events / Comments:</b> They took the initiative to do the sportsmanship handshake with us before and after the game. They were encouraging most of the time, except for a few times when they really wanted to score. -Student C</p>	<p><b>Notable Events / Comments:</b> Student P did not scold or blame his/her teammate for making mistakes, but encouraged them and kept passing to them until they got better. He felt like an encouraging coach to his friends. -Student D</p>
<p><b>Notable Events / Comments:</b> Everyone makes mistakes. Not everyone is so good at the start, but can slowly learn. It's important to help one another, encourage one another, and we hope to be able to better self-control especially when we are losing too. -Student A, B, C, D</p>	<p><b>Notable Events / Comments:</b></p>

Figure L: Sample of a Post Tchoukball game group discussion to provide a score based on the categorical rubrics  
[Spirit Score Component: Positive attitude & Self-Control]

Figure M: Sample of a Post Tchoukball game reflection and sharing to provide opponents critical feedback for learning [Spirit Score Component: Positive attitude & Self-Control]

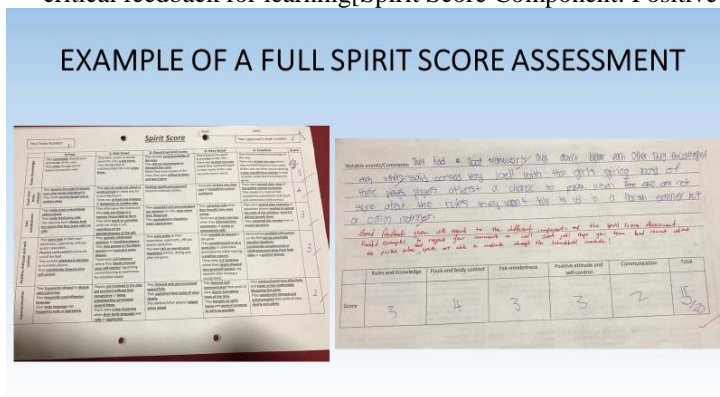


Figure O: Sample of the Full Spirit Score Assessment at the end of the Tchoukball module  
[All five spirit score components combined]

Feedback is a complex process, and can be made more complex with the different students' responses. Hence, our teachers' facilitation is key to enabling our students through the learning process. The samples of students' feedback and discussion artifacts above suggests that our students' involvement in the cognitive and affective process of learning is critical to their

cognitive and character development, both through the direct involvement and interactive process between peers. Hence, we believe in a process-driven curriculum that provides every learner a safe platform to learn, unlearn and re-learn to become a better version of themselves. Additionally, our students hold a key role to build and uphold positive peer support relations one with another through positive peer helping and influencing efforts in our PE classroom.

## **6. Discussion & Findings**

Observations about students' behaviour in class are as follows.

1. Higher engagement and involvement level of students in monitoring and evaluating their performance at various task(s).
2. Higher quality of dialogue and conversations on their performance in practices and games.
3. Stronger peer-peer relations due to increased opportunities for peer bonding efforts (Peers work together in a pair or group to monitor their peers' performance in a practice task and/or groups' performance in a small-sided game through observation, data collection and analysis).
4. Higher motivation levels towards learning and performance.
5. Higher cognitive and behavioural engagement in understanding and acting upon feedback given. Positive change in behaviour leading to improved peer relations and performance during skills practice or game play.

While the opportunity to increase a student's level of involvement in their learning seems to be an exciting endeavour, there are practical considerations to consider when designing and implementing an effective and engaging lesson based on strategies involving formative assessment and raising student feedback literacy. PE Practitioners should carefully consider the practical implementation of formative assessment strategies.

The effective implementation of a PE lesson, where students are required to take greater responsibility for their learning, requires deliberate planning, including student's readiness in PE lessons to logistics and administrative support.

We also need to be mindful that formative assessment strategies do not compromise the Academic Learning Time (ALT) (Harrison, 1987) in PE, which provides students with opportunities to acquire movement skills. Any strategy to collect data for learning has to be effective and engaging.

We have explored two frameworks to guide us in our design of formative assessment based lessons. One way is using the STEP framework for Physical Education or Sports lessons by Kiuppis, 2018, aimed at providing a supportive learning environment and meeting the needs of students from diverse learning needs through modification of space, task equipment and people. The STEP framework helps PE teachers to design age-appropriate learning tasks for students

based on their learning needs and physical proficiency skills.

Another framework explored was PEEP (People, Environment, Equipment, Process). We have found it helpful to use the framework of PEEP, where the original intent is to identify hazards as part of the risk assessment workflow. We adapted the PEEP framework to guide the planning of formative assessment based lessons.

**PEOPLE:** One key consideration in designing effective formative assessment tasks is the readiness of students and teachers to take on a learner's stance towards physical education where students are actively involved in monitoring, analysing and evaluating their data to address their learning needs. Another critical consideration is teachers' competencies to effectively incorporate formative assessment-based lessons where the teachers can provide feedback that moves learners forward, activating students as learning resources for one another and owners of their learning.

**ENVIRONMENT:** Another consideration factor is the learning culture one hopes to build within the class and school. What is a student's perception of the subject? What are the school's perceptions of Physical Education? In the past, Physical Education lessons were often seen as playtime instead of learning new skills to lead an active and healthy lifestyle, where the physical domain was often emphasized more than that of the cognitive and affective domains. In today's world, PE has evolved and shifted from mereplay to intentional sense-making, to its current state of intentional meaning-making and learning through play. Thus, ensuring an inclusive and positive classroom culture must be built in order to positively impact our students' motivation and provide a safe learning environment to effectively engage our students in formative assessment processes.

**EQUIPMENT:** In the deliberate design of the learning tasks, it is essential to think through how we can best modify and manipulate the tasks, constraints, space, etc. to create affordances and success for every child. Apart from the equipment for sports and games teaching, there is also a need to consider the resources or logistics required for students to effectively collect and collate data for evaluating their learning progress.

**PROCESS:** Lastly, what are the classroom routines put in place by the PE teacher to create a conducive learning environment? What are the learning and thinking routines to ensure that students in PE lessons are ready to do their part as self-directed and future-ready learners?

In summary, the table below captures the key planning considerations for formative assessment based lessons.

CATEGORY	DESCRIPTION
PEOPLE	<ul style="list-style-type: none"><li>• Student's readiness</li><li>• Teachers' competencies</li><li>• Grouping considerations</li></ul>

ENVIRONMENT	<ul style="list-style-type: none"> <li>• Classroom culture</li> <li>• School culture</li> <li>• Individual's perception of PE</li> </ul>
EQUIPMENT	<ul style="list-style-type: none"> <li>• Sports equipment</li> <li>• Learning resources</li> <li>• Logistics, stationeries etc</li> </ul>
PROCESS	<ul style="list-style-type: none"> <li>• Pedagogical approaches</li> <li>• Classroom Management</li> <li>• Learning and thinking routines</li> </ul>

## 7. Conclusion

Practical strategies underpinned by assessment and feedback literacy has positively impacted our students' motivation, behaviour and attitude in PE classes. Some observations include higher student engagement, positive and inclusive classroom culture and thinking players who deliberate on their actions, behaviour and choices. The evidence based on our student's work suggests that the intentional design and development of assessment and feedback processes in a PE classroom can improve student learning outcomes. It provides opportunities for an enriching learning experience whilst empowering our students to be future-ready learners who take ownership of their own learning.

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