

Project Ulu Pandan Stars

Group 7-22

Single Year Project

	Member Names	Class / Index
1	Tee Ren Jie (L)	4O124
2	Fan YuQiao	4O105
3	Lian Zihong Linus	4O110
4	Tay Teng Han Justin	4O123
5	Zhang Weijia	4O132



-Project-
Ulu Pandan Star

SECTION 1: OVERVIEW

Area of Concern

There has been growing concern about educational inequality in Singapore, to the extent that previous Minister of Education Mr Ong Ye Kung declared that “*Tackling inequality is national priority*”. CNA has pointed out that “*education and inequality are mutually reinforcing*”, and TODAYonline has similarly mentioned that “*meritocracy, arising from a belief in fairness, seems to have paradoxically resulted in systemic unfairness*”. This shows the need for tackling educational inequality, as it could potentially compromise underprivileged children’s future studies and impair upward social mobility.

Challenges Identified

With this in mind, our project works with the Ulu Pandan Stars Program (UPSTARS), which collaborates with youth volunteers to serve underprivileged children in Ulu Pandan. Though the Ministry of Education has implemented policies (such as the UPLIFT program) to address educational inequality, the challenge to provide a conducive learning environment and meaningful educational resources for underprivileged children (some of whom are disengaged and uninterested in studies) remains.

Underlying Problem

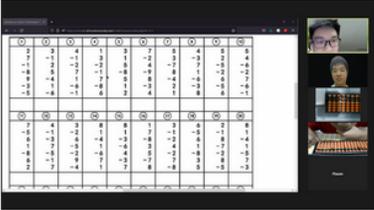
Given the current situation shows that students in UPSTARS have weak academic abilities due to low engagement and low interest in studies, how might we support them in their academics, make classes more engaging and meaningful, and help them find joy in their learning so that they can experience higher levels of academic success and self-confidence in the year of 2021 and beyond?

Section 2 : Action Plan

Due to Covid-19, we had a mixture of physical and online activities. We worked closely with UPStars to plan and execute our activities on both platforms.

Action Plan and Outcomes to Date

We executed the following initiatives using a 4-pronged approach to tackle the Underlying Problem. Most initiatives were implemented weekly during lessons to ensure consistency, thus increasing effectiveness of our initiatives.

Approach	Rationale	Initiatives (Time Frame indicated in Red)
Academic Engagement	<p>Make tuition sessions</p> <ul style="list-style-type: none"> ● Interesting ● Effective <p>So that students</p> <ul style="list-style-type: none"> ● Are more engaged ● Improve academically ● Develop passion for learning 	<p>1. <u>Spearheaded</u> new Abacus Course</p>  <p><i>Figure 1 : Tutors going through abacus worksheet (Chain addition) with student via a zoom meeting.</i></p>

Name	Owner	Last modified
Admin / FullAccess	me	Jun 12, 2021 me
Lesson 1	me	Jun 12, 2021 me
Lesson 2	me	Jun 12, 2021 me
Lesson 3	me	Jun 18, 2021 me
Lesson 4	me	Jul 9, 2021 me
Lesson 5	me	Jul 11, 2021 me
Lesson 6	me	Jul 16, 2021 me
Lesson 7	me	Jul 16, 2021 me
Lesson 8	me	Jul 16, 2021 me
Lesson 9	me	Jul 16, 2021 me
Lesson 10	me	Jul 16, 2021 me

Figure 2 : An overview of the number of lessons we have curated. There are comprehensive worksheets, videos and slides in the drive.

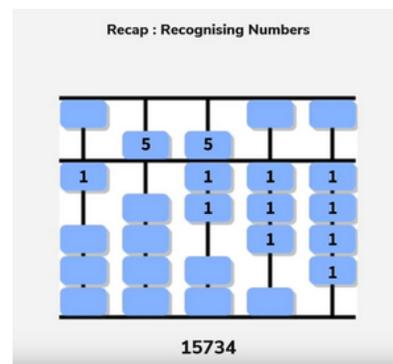


Figure 3 : An example of the content we go through in slides.

- Increase:
 - Focus, speed
 - Concentration
 - Logical thinking
- Target:
 - Students interested in Mathematics
- Tutor Training to reach greater audience

May – Current

2. Usage of

- Online simulators

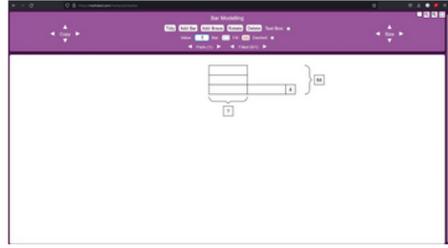


Figure 4 : Model making software used

- Science Demonstrations
 - Visualise concepts using models and diagrams
 - Reduce need to memorise facts and equations



Figure 5 : Induction Experiment

- Platforms :
 - GeoGebra
 - Brilliant
 - YouTube

March - Current

3. Improvement of existing learning resources

- Tailored to students' weaknesses
- More practice

		<ul style="list-style-type: none"> ● Application questions (link to daily life) ● Creative problem solving, 21st century skills <p> <small>Fraction Conceptual Tips</small> <small>1. Understanding the subject of the sentence.</small> <small>E.g. Apple is 1/3 of Oranges.</small> <small>Explanation: $\frac{1}{3}$ means A out of B. In the context of the example, it means that 1 out of 3 units of oranges is apple.</small> <small>If the numerator is constant, as the denominator increases, the fraction decreases. Think of it as 1 pizza, need to divide among more people.</small> <small>2. Comparing fractions (Bigger or smaller)</small> <small>Always try to convert the fractions to the same denominator to compare. Sometimes you cannot, so you should compare amongst <u>parts</u> of them.</small> <small>E.g.</small> <small>Which of the following fractions is the greatest? $\frac{2}{3} = \frac{4}{6}$ (More than $\frac{1}{2}$)</small> <small>$\frac{1}{2} = \frac{3}{6}$ (Less than $\frac{1}{2}$) (Reject)</small> <small>(1) $\frac{3}{5}$ $\frac{2}{3} = \frac{4}{6}$ (More than $\frac{1}{2}$)</small> <small>(2) $\frac{2}{7}$ $\frac{1}{2} = \frac{3}{6}$ (Less than $\frac{1}{2}$) (Reject)</small> <small>(3) $\frac{3}{4}$ Lastly, you just compare $\frac{2}{3}$ and $\frac{3}{4}$ which one is bigger?</small> <small>(4) $\frac{3}{8}$ $\frac{2}{3} = \frac{4}{6}$ & $\frac{3}{4} = \frac{6}{8}$ → $\frac{3}{4}$ is biggest</small> <small>E.g.</small> <small>Linda was given \$180. She spent $\frac{1}{3}$ of it on food and $\frac{2}{5}$ of it on transport. How much money did she have left?</small> <small>$\frac{1}{3} = \frac{2}{6}$ and $\frac{2}{5} = \frac{4}{10}$; This means, of 54 total units, 45 units was spent on transport, 6 units on food, leaving 3 units left.</small> <small>$\frac{3}{10} \times 180 = 10$</small> <small>How to understand this statement?</small> <small>Linda had total 54 units of money which equals to \$180. To find the 3 units, you need to find how much 1 unit contains ($\frac{180}{54}$), before multiplying by 3 to find 3 units worth. You get the same answer!</small> <small>3. Converting Percentage to Fraction to Decimal</small> </p> <p style="text-align: center;">Figure 6 : Fractions Notes</p> <p style="text-align: center;"><u>March - Current</u></p>
<p>Emotional Rapport¹</p>	<p>Establish meaningful tutor-student relationships to help students enjoy learning and increase their confidence level</p>	<p>1. Adopt a strength-based approach in teaching</p> <ul style="list-style-type: none"> ● Refine strong suits ● Commendation for hard work and focus ● Elevate student’s self-esteem <p><u>March - Current</u></p> <p>2. Confidence Building</p> <ul style="list-style-type: none"> ● Students share 3 things that they have learnt in front of the class

¹ Due to student’s privacy, there exists limited evidence for this section.

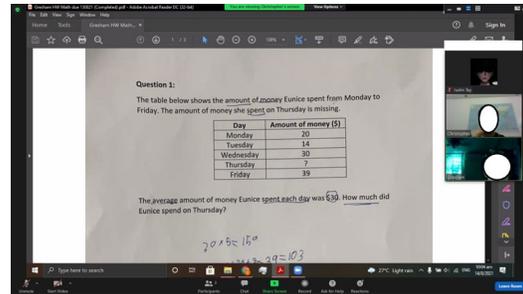


Figure 6: Student explaining his thoughts in front of the whole class.

- Train oratorical capabilities
- Increase confidence

March - Current

3. Journaling

- Pen down learning points (vocabulary, values)

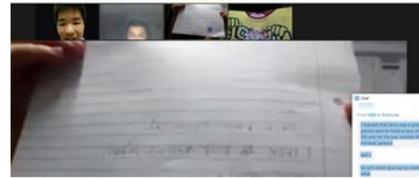


Figure 7 : Journaling

From k to Everyone:

I learned that terry was a great person and he lived a very short life and he life was smaller than Micheal Jackson

sad :(

he will never give up no matter what

Figure 8 : Reflection

- Reflect on how the learning points could be applied in their daily life

July - Current

Outreach

Raise awareness about educational inequality.

1. Postings on Instagram regarding

- (a) educational inequality
- (b) false stereotypes
- (c) activities carried out
- (d) volunteer recruitment

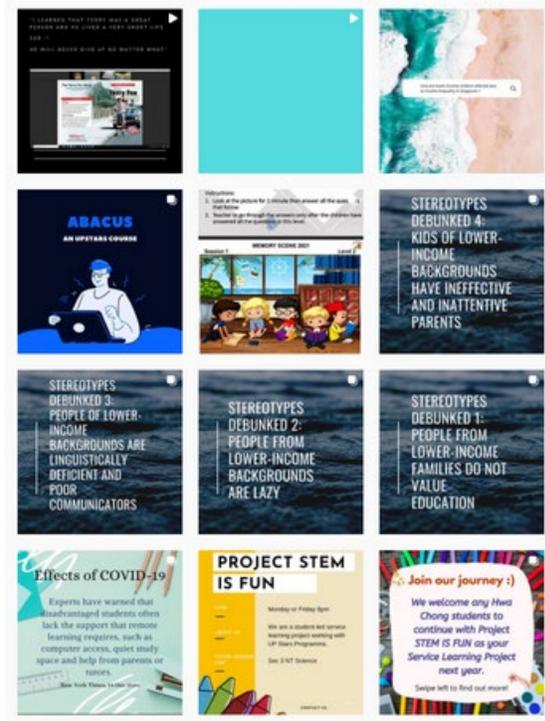


Figure 9 : Instagram

February - Current

2. Website to inform the public of our cause

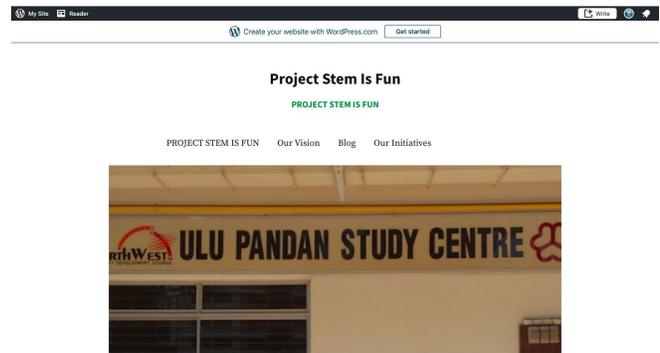
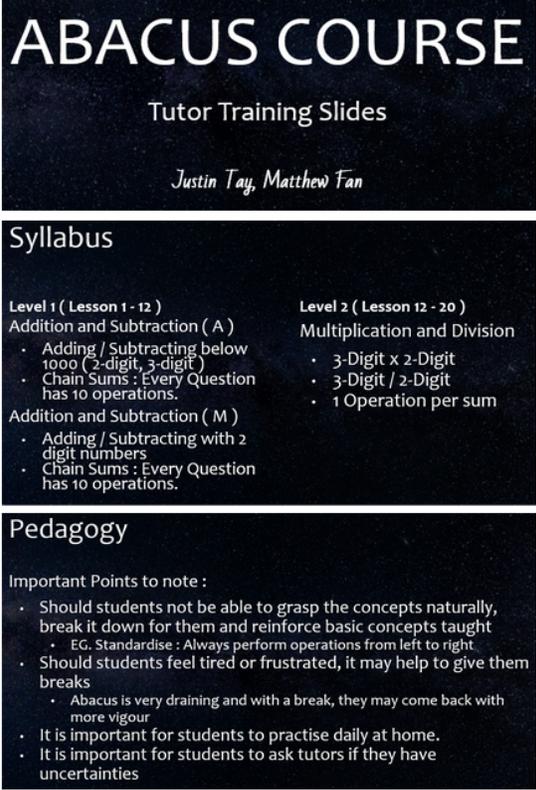


Figure 10: Website

<p>Continuity²</p>	<p>Ensure the sustainability of the project</p>	<p>1. Curated resources</p> <ul style="list-style-type: none"> ● Lesson outlines ● Worksheets ● Videos ● Slides <p>For these subjects:</p> <ul style="list-style-type: none"> ● Mathematics ● Science ● Abacus <p>Unrestricted Access by:</p> <ul style="list-style-type: none"> ● UPStars Tutors (Within class) ● Project team and future junior team <p><u>March - Current</u></p> <p>2. Digitalisation</p> <ul style="list-style-type: none"> ● Moodle Learning Management System (LMS) ● Materials available to everyone hoping to learn ● For both tutors & students <p><u>July - Current</u></p> <p>3. Post Lesson Reviews</p> <ul style="list-style-type: none"> ● Future tutors can understand the personalities, learning styles of students ● Helps current tutor to keep track of progress <p><u>March - Current</u></p>
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² Evidence of initiatives could be found under appendices

		<p>4. Tutor Training</p> <ul style="list-style-type: none"> ● Syllabus, examinations, pedagogy, established ● Training Slides ● Guide tutors when physical tuition resumes ● We have 1 tutor currently understanding how we use Moodle to enhance the Abacus Course  <p>The image shows three slides from a presentation titled 'ABACUS COURSE Tutor Training Slides' by Justin Tay and Matthew Fan. The first slide is the title slide. The second slide, titled 'Syllabus', lists two levels of content: Level 1 (Lesson 1-12) covering Addition and Subtraction (A) and (M), and Level 2 (Lesson 12-20) covering Multiplication and Division. The third slide, titled 'Pedagogy', lists important points to note for students, such as breaking down concepts naturally and practicing daily at home.</p> <p>Figure 10 : Abacus Training Slides</p> <p><u>July - Current</u></p>
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Future Initiatives

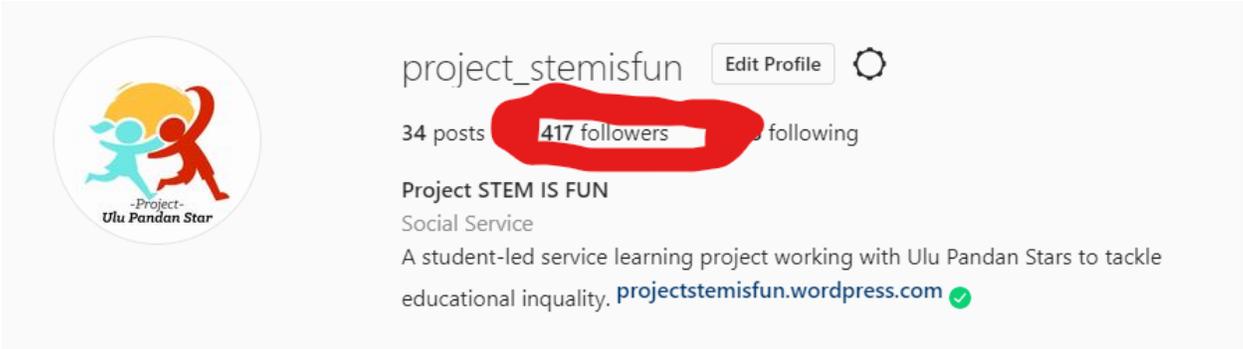
Recruit new tutors specialised in Abacus	Continuity
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Ensure smooth project handover ³	Continuity
Continue developing remaining Abacus lessons	Academic Engagement

Section 3 : Outcomes

Accomplishments

1. Abacus Course will be shared with other beneficiaries once it is completed, thus expanding our outreach.
 - a. Course has ~25 Lessons and will be completed by November 2021.
2. 417 Followers on Instagram



3. Improved students' grades and soft skills. Elevated passion for learning.

<p><u>Student G</u> Science, Math</p>	<ol style="list-style-type: none"> 1. Confidence level increased <ol style="list-style-type: none"> a. Able to present 3 things that he learnt to the class every week after a few months of practice b. Confidence and perseverance shown when tackling difficult questions. 2. Higher retention of knowledge <ol style="list-style-type: none"> a. Could use proper vocabulary to explain complex concepts 3. Improvement in grades <ol style="list-style-type: none"> a. 61/100 (2021)
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³ As part of our commitment, we are to continue the lessons until March of 2022.

	b. 55/100 (2020)
<u>Student A</u> Math, Abacus	<ol style="list-style-type: none"> 1. Increase in passion for Mathematics <ol style="list-style-type: none"> a. More attentive and enthusiastic 2. Improvement in speed and accuracy <ol style="list-style-type: none"> a. Understand shortcuts b. Improved time management 3. Visualisation of arithmetic skills <ol style="list-style-type: none"> a. Enhanced logical flow and efficiency 4. Improvement in grades <ol style="list-style-type: none"> a. 40/100 (Term 1) b. 71/100 (Term 2) c. 66/100 (Term 3)
<u>Student R</u> Abacus	<ol style="list-style-type: none"> 1. Increase in passion for Mathematics 2. Improved visualisation of arithmetic skills
<u>Student L</u> Reading	<ol style="list-style-type: none"> 1. Increased empathy and understanding of morals 2. Broadened vocabulary and increased passion for reading 3. Reading level⁷ increased from Purple to Gold over 0.5 year
<u>Student K</u> Reading	<ol style="list-style-type: none"> 1. Increased fluency in speech 2. Increase in self-esteem and confidence 3. Commendable increase in reading ability⁴ (Blue to Silver) over 1.5 year

4. Improvement of current resource platform

Reflections

- **Challenges:**

⁴ Reading level explained:

https://drive.google.com/drive/u/1/folders/1qeFDfMrkX4v54aL_O6HQqLpYic0nSu8T

- Interruptive work environment
- Difficulty adapting to new tutors
- Dejection after faring badly for tests
- **Solutions implemented:**
 - Enforced lesson rules
 - Use laptops, not phones
 - Correct posture
 - Turn on webcam
 - Tailored to their needs and Rapport Building
 - Weekly lesson reviews
 - Build long-lasting friendships
 - Shared personal experiences
 - Build rapport
 - Valuable suggestions as a senior
 - Constantly encourage positive attitude
- **Learning Points**
 - Empathise with others
 - Respect that different people have different needs
 - Provide a personalised learning experience
 - Teachers should inspire students to achieve more and dream big
 - Confidence enables students to be resilient and learn from mistakes
 - Need to nurture the joy of learning.
 - Creativity and Resilience in the Covid-19 Pandemic
 - Digitalisation
 - Refer to **Challenges**
 - Teamwork
 - Despite having different students, we have the same objectives. This allowed us to work together and provide constructive feedback during meetings.

Scope of Impact

Academic Engagement	<ol style="list-style-type: none">1. Students more focused and passionate about learning2. Increased understanding of subject(s), leading to improvement in grades3. Greater curiosity, explores beyond what is taught in school
Emotional Rapport	<ol style="list-style-type: none">1. Increased level of confidence and oratorical ability2. Enhanced learning attitudes
Publicity	<ol style="list-style-type: none">1. Instagram account achieving over 417 followers
Continuity	<ol style="list-style-type: none">1. Digitalisation<ol style="list-style-type: none">a. Set up and uploaded all resources to a new Moodle Courseb. Allowed all relevant personnel to access2. Resources curated could be accessed by multiple parties3. Comprehensive weekly Lesson Reviews help tutors track progress and understand the student.

Appendix A : Bibliography

1. Tham Yuen-C. (2018, May 16). Parliament: Tackling inequality is national priority, says Ong Ye Kung. The Straits Times. <https://www.straitstimes.com/politics/parliament-tackling-inequality-is-national-priority-says-ong-ye-kung>
2. Linda Lim. (2021, February 2). Commentary: Can education fix inequality in Singapore? If not, what can? CNA. <https://www.channelnewsasia.com/commentary/can-education-fix-growing-inequality-in-singapore-814696>
3. ONG YE KUNG. (2018, July 11). Dealing with two paradoxes of Singapore’s education system. TODAYonline. <https://www.todayonline.com/commentary/broad-agreement-meritocracy-and-inequality-key-developing-better-education-system>
4. Ng, C. (10 November, 2018). Commentary: A wake-up call, when a disadvantaged child gets 8 out of 100 for an exam. Published on Channel News Asia, 10 November 2018.
5. Wang, L.Y., Teng, S.S. Tan, C.S. (2014) Levelling up academically low progress students (NIE Working Paper Series No.3). Singapore: National Institute of Education. Retrieved from <https://repository.nie.edu.sg/handle/10497/17710>.
6. Senin, N., & Ng, I. Y. (2012). Educational aspirations of Malay youths from low- income families in Singapore. Asia Pacific Journal of Social Work and Development , 22 (4), 253-265. Retrieved from <https://www.tandfonline.com/doi/abs/10.1080/02185385.2012.739473?src=recsys&journalCode=rswd20>.
7. Strauss, V. (28 October, 2013). Five stereotypes about poor families and education. Published on The Washington Post, 28 October 2013.

Appendix B : Tutor Allocation

	Monday	Tuesday	Wednesday	Thursday	Saturday
Student A	Linus		YuQiao		YuQiao
	Mathematics		Abacus		Mathematics

Student G				Justin Mathematics	Justin Mathematics + Science
Student R			Justin Abacus		
Student L		Ren Jie + Weijia Reading			
Student K		Ren Jie + Weijia Reading			

Appendix C : Duty Allocation

Outreach	Linus
Academic Engagement:	<p>Abacus Course</p> <p>Justin: Resource Developer (Slides, Video) YuQiao: Resource Developer (Slides) Ren Jie: Resource Developer (Slides, Mental Cards) WeiJia: Resource Developer (Questions)</p> <p>Resource Development (Math, Science) and</p>

	<p>usage of online tools:</p> <p>All members of team</p>
Emotional Rapport	All members of team
Outreach	<p>Instagram</p> <p>Linus: Administrator, Content Developer Ren Jie: Administrator, Content Developer WeiJia: Content Developer</p>
Continuity	<p>Resource Platform</p> <p>All members of team</p> <p>Moodle</p> <p>Justin: Abacus Course Manager YuQiao: Abacus Course Manager</p> <p>Tutor Training and Handing-Over to Junior Team</p> <p>Ren Jie + WeiJia: Coordinate with future Junior Team Justin, YuQiao: Tutor Trainer</p>

[Appendix D : Resource Platform](#) (Click to view)

Most of the resources in the resource platform are original and curated by the project team. A portion of it comprises materials that we retrieved from online sources/are provided by our beneficiary. We share all suitable academic materials (not including publicity, administrative and past year resources) within our UPStars class. This Resource Platform is constantly managed and updated by us.

[Appendix E : Sample Lesson Review UPStars](#) (Click to view)

As mentioned above, lesson reviews are done every lesson so that tutors can engage in regular holistic assessments of students and to improve their teaching methods or suit the pedagogy to students' learning style to enhance their learning experience. Attached is a sample of Justin Tay's Lesson Review across the 5-6 months of engagement with 3 different students.

[Appendix F : Moodle](#) (Click to view)

Attached are images of our Moodle site (in collaboration with a larger team). We currently have around 10 "Leaders" (Volunteers with the leader position, 2 of us in the project team have this role) working on the site across various subjects. Due to administrative constraints, we are unable to give 3rd-parties access to our individual accounts and hence we will be providing screenshots of our site.

[Appendix G : Website](#) (Click to view)

Our project website, which informs the public of our cause and what we do to combat it.