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Reflections on Practice

PLUS – An Academic Mentorship Guide applying Overall Feedback Theories

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ABSTRACT

As undergraduates embark on their university journey, navigating academic courses is accompanied by a comprehensive pursuit of becoming well-rounded graduates. Despite this, feedback from courses often remains independent of academic mentorship. This paper introduces PLUS, an innovative academic mentorship paradigm designed to enhance students' academic prowess through personalised guidance. Building upon preliminary works, PLUS serves as a personalised feedback guide supported by feedback models and theories. This reflection focuses on the impact of mentors' feedback using the PLUS technique, addressing how academic mentors provide personalised guidance and whether students perceive the usefulness of this feedback. This reflection utilises survey methodology involving 20 software engineering students to analyse the impact of PLUS as a feedback guide. The survey results reveal unanimous agreement on its helpfulness and the benefits of mentors' feedback. The survey highlights the importance of regular check-ins between students and mentors, emphasising the effectiveness of the mentor-student relationship. Respondents noted the motivational aspects of PLUS, appreciating its structured approach to feedback. While pressure to perform well was identified as a weakness, respondents suggested focusing on outcomes rather than grades for improvement. In conclusion, the PLUS approach emerges as a powerful guide to effective feedback in academic mentorship in higher learning, fostering a collaborative and enriching academic environment in line with the empirical model for feedback.

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INTRODUCTION

When an undergraduate (UG) embarks on their university journey, they are not simply navigating individual courses; they are forging a comprehensive path towards becoming a well-rounded graduate. Each student is thoughtfully matched with an academic mentor who remains a guiding presence throughout their UG tenure. In some cases, the student might not even take any course taught by the mentor. Hence, in most higher institutions of learning, feedback from courses tends to be independent of academic mentorship. The questions that arise here are: how do academic mentors provide personalised guidance and feedback throughout students' academic degrees, and how do students perceive the usefulness of this feedback? This paper explores the questions using an innovative academic mentorship guide called PLUS that has been shown to be effective (Tan, 2021).

PLUS is an approach to methodically evaluate the strengths and areas for improvement, enabling students to set precise academic targets for each subject (Methodology section in this paper details the steps of using PLUS). Preliminary works on PLUS investigated the performance of the students based on educational psychology theories (Tan, 2021). PLUS operates as an instantiation of the zone of proximal development (ZPD) (Murray & Arroyo, 2002) and scaffolding principles (Beed et al., 1991) within the context of undergraduate academic mentorship. ZPD delineates the cognitive space between a student's current performance level and a higher threshold determined by a more adept collaborator, who, in the application of PLUS, is the mentor. Instructional scaffolding is the support provided by an instructor throughout the learning journey by systematically building the student's experiences and knowledge throughout the learning journey (Hammond & Gibbons, 2005). Face-to-face dialogues with mentors mirror the role of dialogical interaction in delivering scaffolded instructions (Palincsar, 1986). All these educational psychology elements are projected in PLUS as a guide for academic mentorship, and the key highlights of PLUS are listed below:

- **Personalised Guidance:** The core strength of PLUS lies in its emphasis on personalised guidance. PLUS uses the gap identified through ZPD between the mentor and mentee. Based on this, the academic advisor creates the instructional scaffolding according to the individual needs of the student. By tailoring the mentorship process to individual students' needs, the method effectively addresses their unique challenges and fosters a supportive learning environment.
- **Continuous Improvement:** The iterative nature of the PLUS table allows for ongoing assessment and adjustment. This continuous feedback loop enables students to understand their own strengths and weaknesses better and to refine their strategies and improve their performance incrementally, fostering a growth mindset.
- **Mentor-Mentee Relationship:** The study underscores the crucial role of a mentor in the academic development of students. Face-to-face discussions, as part of the PLUS approach, not only provide academic guidance but also offer emotional and psychological support, enhancing the overall mentor-mentee relationship. The approach not only focuses on academic performance but also on overall well-being to support their career goals.
- **Self-Regulation and Ownership:** The PLUS method encourages students to take ownership of their learning. By actively involving them in the goal-setting and evaluation process, it promotes self-regulation and independent learning, skills that are invaluable beyond their undergraduate studies.

The PLUS approach ingeniously minimises intervention while empowering students to gauge their strengths, identify weaknesses, and meticulously track their advancements during each semester. The feedback from mentors plays a role in the PLUS approach, as demonstrated in the earlier study, where face-to-face meetings brought an impact on the students' performance. However, how the students perceive the usefulness of the mentor's feedback through the PLUS approach remains unknown.

This work is an extension of the preliminary work for PLUS as a personalised feedback guide. The objective of this reflection is to ascertain and analyse the impact of the mentor's feedback using the PLUS technique through a survey with the students who had used the PLUS approach. We then provide an explanation of why the feedback from the PLUS approach works using proven feedback models and theories. There are specifics analysis performed to meet the objective of this reflection paper:

- How has the PLUS approach influenced the students' academic experience?
- In what ways does the mentor find the PLUS approach beneficial or challenging in providing feedback to the students?
- What personal insights has a mentor gained about mentorship through the PLUS approach?
- How have both students' and mentors' understanding of academic goal-setting evolved through the PLUS approach?

LITERATURE REVIEW

Generally, feedback can be considered as information to assist the students in knowing the gap between the actual level and the reference level of their studies (Ramaprasad, 1983). Specifically, formative feedback is information communicated to the learner intended to modify his or her thinking or behaviour to improve learning (Lipnevich & Panadero, 2021). Lipnevich et al. (2016) further defined instructional feedback as 'any information about a performance that learners can use to improve their performance or learning. Feedback might come from teachers, peers, or the task itself. It may include information on where the learner is, where the learner is going, or what steps should be taken and strategies employed to get there.' These definitions demonstrate the need to identify the zone of proximal development before any feedback can be provided, which is useful in an academic mentorship setting where consideration needs to be given to how feedback can be delivered to the students even when the mentor might not be teaching the students.

Providing feedback goes hand in hand with the zone of proximal development. Lipnevich et al. (2016) provide an empirical model of feedback (**Figure 1**) based on aspects such as level of performance, timelines, and accuracy. Teachers play the role to provide feedback, but in accordance with the student's ability, prior success, and receptivity to the feedback. Then it depends on the student's response and action. In a normal course environment where the student is enrolled in the course the teacher is teaching, this model is feasible. However, some adjustments are required to provide feedback in an academic mentorship setting where the perspective of academics goes beyond a course.

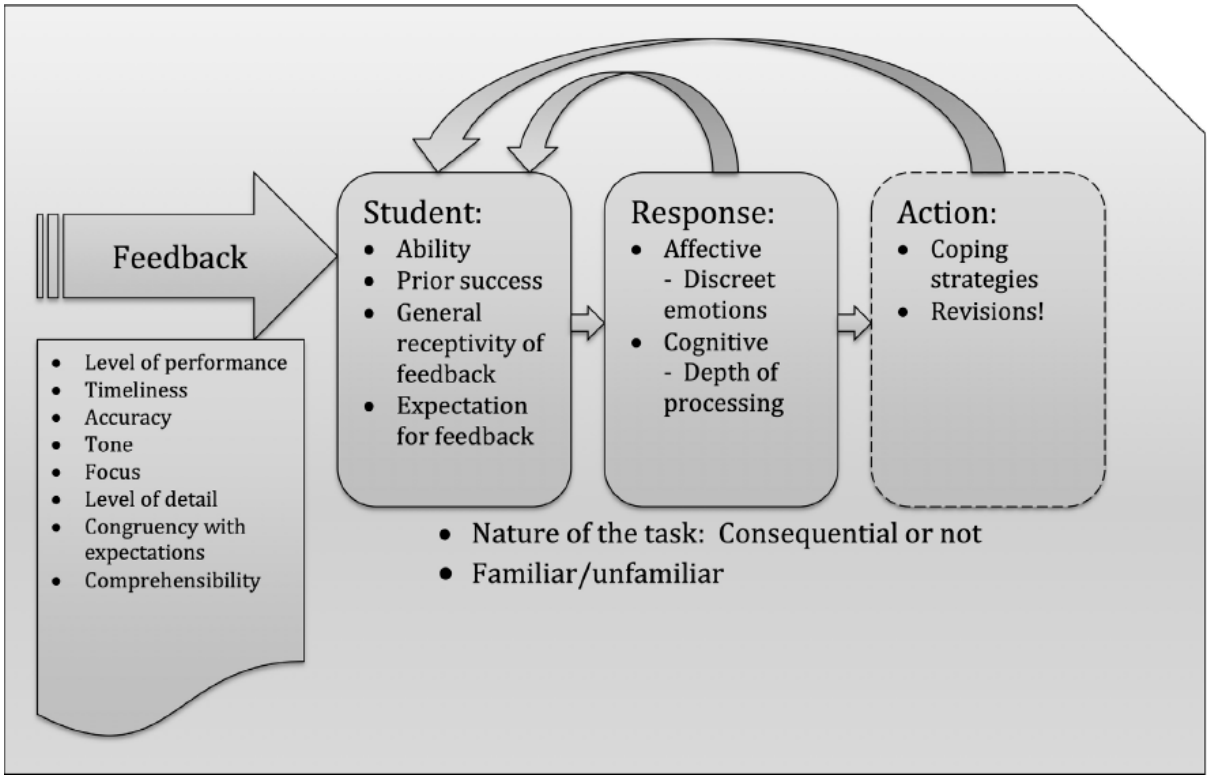


Figure 1. Lipnevich et al.'s (2016) empirical model on feedback.

Mandouit and Hattie (2023) and Carless (2022) emphasised the power of feedback from the learners' perspective. Mandouit and Hattie (2023) also highlighted that different feedback types have varying effects on learning, motivation, and emotions. They also raised the questions: 'What is done well?', 'Where to improve?', 'How to improve?', and 'What to do next time?' In addition, Henderson et al. (2019) listed 12 conditions that enable successful feedback in higher education that focus on three main aspects: capacity for feedback, designs for feedback and culture for feedback (**Figure 2**). Despite all this understanding, there is limited work for a structured academic mentorship feedback method available and PLUS attempts to overcome this.

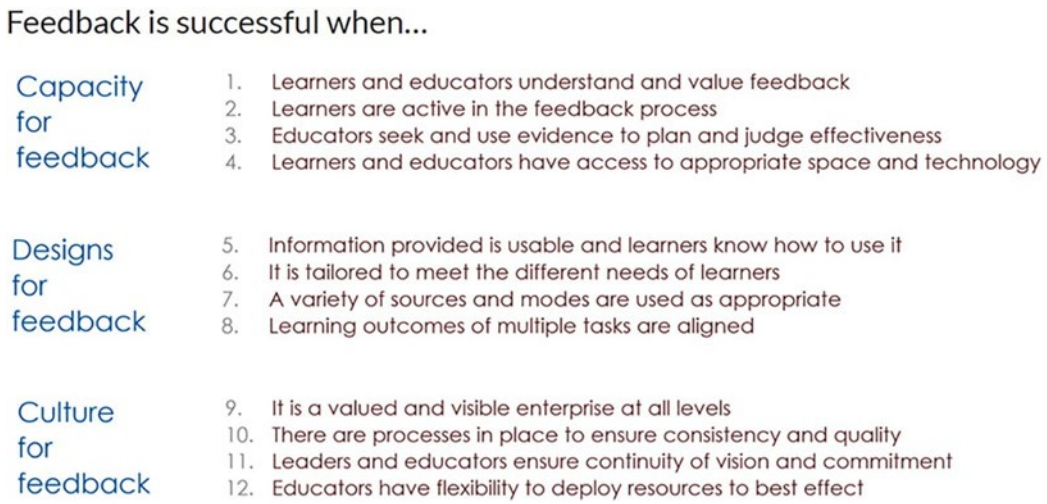
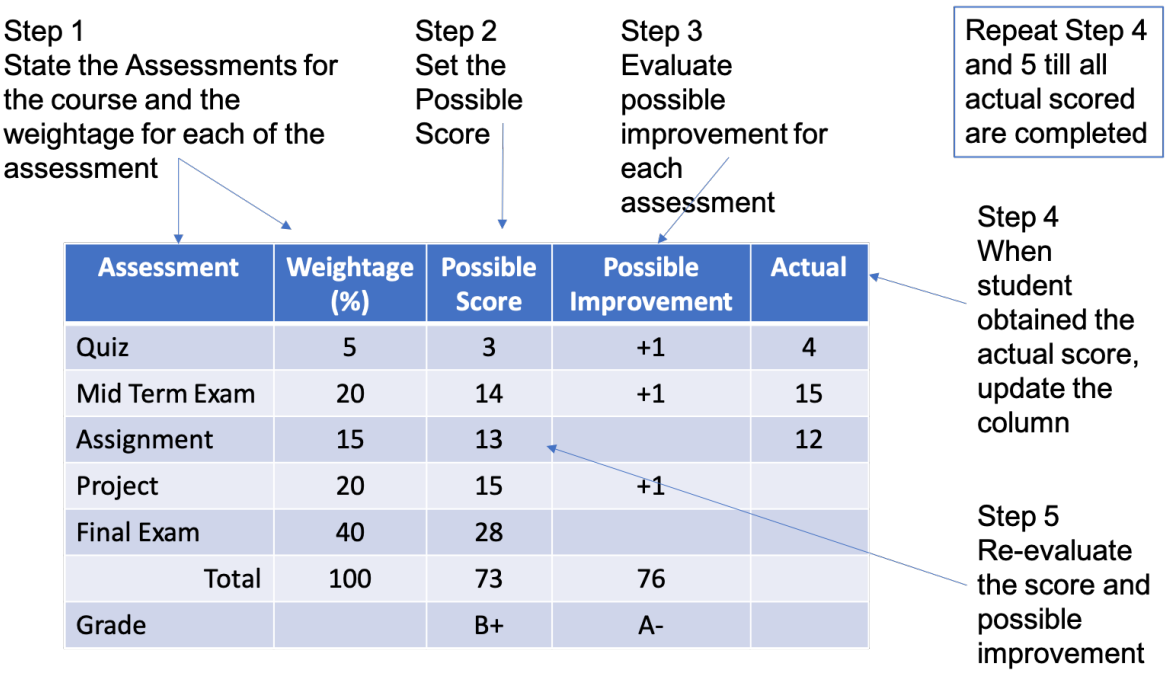


Figure 2. The 12 conditions that enable successful feedback in higher education (Henderson et al. 2019)

PLUS – An Academic Mentorship Approach

PLUS approach has been detailed in Tan (2021). Nevertheless, in this paper, the focus is on a guide for academic mentorship to provide feedback. The first step in the PLUS approach is to provide the mentee with a PLUS table (as shown in **Figure 3**), which consists of the five columns, namely course assessment, assessment weightage, possible score, possible improvement, and actual result. The student will write about a course he/she is taking. Then the student is required to list the assessments for that course in the assessment column, together with the weightage of those assessments in the Weightage column. The overall steps and an example of the inputs for the table are shown in **Figure 3**.



Assessment	Weightage (%)	Possible Score	Possible Improvement	Actual
Quiz	5	3	+1	4
Mid Term Exam	20	14	+1	15
Assignment	15	13		12
Project	20	15	+1	
Final Exam	40	28		
Total	100	73	76	
Grade		B+	A-	

Figure 3. Steps 1 to 5 of the PLUS approach with an example of scores

The next step is for the student to evaluate their own strength and weaknesses for the course. Then, based on this evaluation, the student will write the possible or target scores for each of the assessments within the weightage of the assessment. The student should be advised to take time for this process. This lets the student understand their own academic interest better and set a realistic score. Once all possible scores are added for all the assessments, the total and grade will be generated from the PLUS table. This step provides a guide to the academic advisor to provide feedback focusing on the student's interests, strengths and weaknesses.

The third step in PLUS is for the student to ask him/herself how hard the student is willing to work to improve the target possible score or grade obtained from Step 2. The student is advised to take time to consider also other components of personal development, such as well-being and socialising. It is not necessary to fill in this column if the student is satisfied with the target grade or is not ready to put in more effort. PLUS places the role of mentor to give the right motivation to the student. For this column, the student will write the possible additional improvement within the weightage of the assessment that he/she can and wants to achieve (refer to **Figure 3** for examples for this step). This addition rendered the name of the approach, PLUS.

When the student has obtained the actual score given by the lecturer of that course, which normally might not be the mentor, the student will update the PLUS table, as done in Step 4. The student then compared the actual mark with the targeted score and possible improvement set in Steps 2 and 3 in Step 5. If the actual mark is lower, the student will re-evaluate the possible improvement for those assessments yet to be submitted. This step lets the student re-evaluate their strength and weaknesses, especially after he/she has acquired more knowledge of the course. If there is a possible improvement that can be made, the student will adjust in the possible improvement column (refer to example in **Table 1**). PLUS now serves as a guide for continuous feedback from the mentor.

Table 1. Possible improvement (see sell in orange colour) after evaluation in Step 5 when actual scores are obtained

Assessment	Weightage (%)	Possible Score	Possible Improvement	Actual
Quiz	5	3	+1	4
Mid Term Exam	20	14	+1	15
Assignment	15	13		12
Project	20	15	+1	
Final Exam	40	28	+1	
Total	100	73	76	
	Grade	B+	A-	

These steps are repeated for all the courses taken for that semester. Based on the possible scores and improvement, the student can calculate the possible GPA for that semester. Mentor and mentee are advised to do Steps 1 to 3 at the start of the semester for all the courses and update the tables when actual scores are obtained. PLUS lets students set their own standard regardless of whether they are good or weaker students, while providing a feedback guide for the mentors.

METHODOLOGY

On top of the experience of mentoring undergraduate students, this reflection piece uses a survey to further garner the insights from the students' perspective. The survey captures demographic information of the respondents and consists of both quantitative and qualitative questions to answer the research question. The survey questions are attached in the **Appendix**. The survey questions attempt to address the research question: How has the PLUS approach influenced the students' academic experience? There were 20 respondents for the survey, all pursuing a Bachelor's degree in software engineering. All respondents were guided to use the PLUS approach (see the earlier section for details of PLUS); however, they were given the flexibility to use or not use it. 40% of respondents were in their third year of studies, 25% in their fourth year or final year, and another 25% in their second year, reflecting a diverse representation of academic levels. Additionally, 45% of the respondents showed an impressive Cumulative Grade Point Average (CGPA) exceeding 3.5, attesting to the academic prowess of the cohort.

RESULTS AND DISCUSSION

Based on insights from a survey involving 20 Bachelor's degree in software engineering students, this paper delves into the symbiotic relationship between the PLUS approach and mentor feedback.

A substantial 90% of the participants reported prior engagement with the PLUS approach, positioning it as a widely adopted strategy among this group of students. Upon reflection, this is in alignment with condition 1 – learners and educators understand and value feedback as one of the conditions that enable successful feedback as proposed by Henderson et al. (2019). The survey further revealed a balanced distribution in terms of usage duration, with 55% utilising the PLUS approach for 1 to 2 years and another 40% integrating it into their academic endeavours for 2 to 3 years. This trend suggests not only the popularity of PLUS but also its sustained relevance and utility over time. Another advantage of PLUS is that it does not depend on the results of the previous semester to provide guidance and support, especially to the new students.

A unanimous consensus emerged from the respondents, with 100% attesting to the helpfulness of the PLUS approach. The students used the PLUS table to set their own goals, and the mentor provided them with feedback. Rather than vague feedback about aiming for a grade such as 'B+' or 'Pass', the feedback specifically looks into their strengths and weaknesses for each assessment (i.e., Assignment, Quiz, Lab, Written Exam, and Project) across all courses they were taking that semester. By breaking down the assessments, mentors could provide feedback on how to deal with self-study and how to deal with assessments that required them to work in groups. When students added too much in the PLUS column but might not be comfortable working in a group, the mentor could advise them to re-evaluate their room for improvement.

PLUS lets students play an active role from the start to the end of the feedback process. This is in line with the work by Carless (2022): an effective feedback process requires students to actively generate, process and respond to feedback information. Upon reflection, too, this is in alignment with Henderson et al. (2019) proposed condition 2 — learners are active in the feedback process as one of the conditions that enable successful feedback in higher education.

When students receive their actual results for certain assessments, the mentor can provide feedback on how to further improve for existing assessments that have not been submitted, especially before the final examinations. Reflection on this, this follows condition 5 — educators seek and use evidence to plan and judge effectiveness — of the 12 conditions that enable successful feedback, proposed by Henderson et al. (2019). This gives the students room to strive harder. This finding underscores the positive impact of the PLUS framework on the academic journey of software engineering students. Additionally, a striking 100% of the participants found the mentor feedback to be beneficial, highlighting the significance of mentorship feedback in academic development. The feedback given by the mentor is dependent on the target that the students set for themselves. The feedback includes focusing on specific subjects, for example, the mentee scored low marks for quizzes which linked to certain course learning outcomes (CLO). The mentor will request the mentee to reflect, inquire how the mentee thinks they can improve, and the mentor can provide suggestions on how to

improve, too. This means that even though the mentor might not be teaching the mentees those courses, the mentor can advise them individually based on the students' capabilities and willingness to work hard in the subject (i.e., the PLUS aspect in the PLUS table). Furthermore, as the semester progresses, students can discuss their progress using the PLUS table, gaining additional valuable feedback from the mentor while learning more about the course. This can be explained through Nicol and McFarlane-Dick's (2006) theoretical framework for feedback regarding the needs to connect formative assessment with self-regulated learning. The PLUS table provides a guide for mentors to offer targeted, constructive feedback to their mentees. This structured approach not only enhances the quality of feedback but also facilitates a comprehensive understanding of the student's progress and challenges. This is also in alignment with condition 6 — it is tailored to meet the different needs of learners as one of the 12 conditions for successful feedback (Henderson et al., 2019).

While the benefits of mentor feedback and the PLUS approach were acknowledged, opinions varied on the optimal frequency of discussions between students and mentors. A significant majority (76.5%) believed that students should engage in PLUS-related discussions with their mentors at least once per semester. This underscores the importance of regular check-ins to ensure alignment, address concerns, and enhance the overall effectiveness of the mentor-student relationship. When comparison is made to the empirical feedback model by Lipnevich et al. (2016), PLUS provides a structured approach to feedback, but in a wider view of academic mentorship. When reflecting on the condition for successful feedback by Henderson et al. (2019), this fits condition 4 — learners and educators have access to appropriate space and technology.

When enquired about the benefits of PLUS, respondents' feedback can be summarised as follows: PLUS provided a clear target and helped them focus on achieving it. Students can improve one mark at a time, which helps them appreciate each mark. The approach, together with the feedback from the mentor, can be motivating, guiding them to discipline and improve their productivity. The weakness of PLUS, on the other hand, is that the respondents felt the pressure to do well based on the target they had set. On the possibility of improving PLUS, one respondent suggested focusing on the outcome rather than the marks or the grades.

CONCLUSIONS

Although research shows that feedback can influence students' achievement (Mandouit & Hattie, 2023), providing overall academic feedback can be overwhelming. Based on the survey conducted, the PLUS approach emerges as a powerful guide to effective feedback in academic mentorship for software engineering students, covering 6 out of 12 conditions that enable successful feedback as proposed by Henderson et al. (2019). PLUS is a valuable tool for both individual growth and mentorship dynamics. By leveraging the structured components of the PLUS approach, mentors can provide targeted feedback, fostering a collaborative and enriching academic environment. As students navigate the complexities of software engineering education, the PLUS approach stands as a beacon, illuminating the path to academic excellence through mentorship and effective feedback.

Based on the experience of working with over 50 students using the PLUS approach with diverse social and economic backgrounds and different levels of interest in the subject of

software engineering, implementing the PLUS approach in academic institutions requires careful planning and commitment from both mentors and students. This is supported by the work of Henderson et al. (2019), where three aspects are required for feedback to be successful: capacity for feedback, design for feedback and culture for feedback. Training faculty members in the PLUS methodology is essential to ensure they can effectively guide their mentees. Additionally, integrating the PLUS approach into the broader curriculum can help institutionalise its benefits, making it a standard practice in academic mentorship. Regular feedback from students can help refine the approach, addressing any challenges they face and making the process more effective. Therefore, further research is required to fully understand the long-term impacts of the PLUS approach and explore its application across different disciplines and educational contexts.

ABOUT THE AUTHORS

Maybelline Goh Boon Ling is a Lecturer and researcher specialising in forest and plantation resources, with a strong focus on palms and tropical timber species. She holds a Bachelor of Science in Bioindustry, majoring in Plant Science, where her interests in plant physiology, sustainable agriculture and forestry first took shape. Building on this foundation, she pursued a master's degree in Forest Resource Management, conducting research on in vitro rooting of teak (Tectona grandis) and examining growth patterns that contribute to improved resource-use efficiency in plantation settings. Currently, she is pursuing her PhD, in which her research focuses on rice and nutrition, particularly the nutritional quality and health implications of rice-based diets in tropical populations.

Dr. Ping Ping Tan has dedicated over 15 years to the education and mentorship of undergraduate students. Her research expertise lies at the intersection of Natural Language Processing (NLP), human-computer interaction, and mobile learning, with a specific focus on developing assistive technologies and inclusive educational tools. Throughout her career, Dr. Tan has been a passionate advocate for undergraduate development, bridging the gap between theoretical computer science and practical, community-focused applications. Her work frequently involves supervising student-led projects, ranging from AI-powered software tools to mobile applications designed for children with special learning needs.

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Appendix

PLUS Feedback from Mentees

We want to know the feedback from our mentees whether the PLUS approach (Setting target marks) is effective and how we can further improve the approach to assist students.
(* Indicates required question)

1. What programme are you in? (Mark only one oval.)
    - Computational Science
    - Information Systems
    - Network Computing
    - Multimedia Computing
    - Software Engineering
2. What is your year of studies? * (Mark only one oval.)
    - Year1
    - Year 2
    - Year3
    - Year4
    - Year 5 and above
    - Graduated
3. What is your CGPA? * (Mark only one oval.)
    - below 2.0
    - 2.0- 2.5
    - 2.5- 3.0
    - 3.0 - 3.5
    - more than 3.5
4. Have you ever use the PLUS approach? (Mark only one oval.)
    - Yes
    - No
5. How long have you been using the PLUS approach? * (Mark only one oval.)
    - Only started using
    - 1 -2 yeasr
    - 2-3 years
    - more than 4 years
6. Do you find the PLUS approach helpful for your studies? * (Mark only one oval.)
    - Yes
    - No

7. Is the feedback from your mentor helpful when setting your target marks usingthe PLUS approach? * (Mark only one oval.)
    - Yes
    - No
8. What do you think is good about the PLUS approach

9. What do you think is bad about the PLUS approach?

10. How frequent should you discuss with your mentor about your target marks? (Mark only one oval.)
    - Not required
    - Once per semester
    - Twice per semester
    - Three or more times per semester

11. Without feedback from the mentors, do you encourage other students to use the PLUS approach? (Mark only one oval.)
    - Yes
    - No
12. How do you think PLUS can be improved?