



Self-Assessing Strengths

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Introduction

Students in the Peer Assisted Learning (PAL) program are exposed to academic habits and strategies that have been shown to help them succeed in their respective STEM classes. These strategies are implemented through the **PAL Model**, where students rely on group work and shared experience to complete PAL worksheets. These habits and strategies have been shown to **increase the academic performance of students** participating in the program (Shanbrom et al., 2023). However, the habits tend to diminish in daily usage by the students as the semester progresses, leading to a **noticeable decline** in the aforementioned results.

One possible explanation for this decline is that students may become less motivated to actively engage with these strategies after experiencing initial academic success, leading to decreased adherence over time (David et al., 2024). McLeod et al. (2009) explained that when students receive feedback from peers, it can be as effective as or more effective than feedback from professors. Andrade and Valcheva (2009) concluded that “**self-assessment helped [students] focus on key elements of an assignment, learn the material, increase the effectiveness in identifying strengths and weaknesses of their work, increase their motivation and mindfulness, and even decrease anxiety**”.

Another article indicated that self-assessment contributes to benefits such as better self-awareness and task planning (Khoiriyah and Roberts, 2025). We hope that self-assessment will push students to recognize what they need to do to improve as students, not in content, and how they follow the PAL model.

Methodology

During an 8-week period, PAL facilitators- working in Math 12, Math 29, Chem 1A, and Chem 24 presented their students with (1) weekly survey. In the first and last week the students were given a baseline survey.

- The purpose of the **baseline** is to demonstrate the progress of students' conduct throughout an entire semester of PAL.
- After students took the baseline survey, the facilitators presented a list of expectations that are shown in **Survey Questions** sections of this poster
- This list of survey questions was used to create the weekly reflection survey in which the students held themselves **accountable** for following PAL expectations on a scale of 1 (never) to 5 (always). Surveys started week 5 and ended week 12.
- The surveys given between the initial and final baseline allowed **repetition** and **conscious recognition** of the expectations that influenced the baseline outcome. The baseline questions are shown below:
 - I can collaborate without seeking immediate validation
 - I can maintain my focus throughout the entire class
 - I am comfortable discussing mistakes with others.
- Shortly after initial submission, they read what behavior was expected of them moving forward in their PAL class.

Results

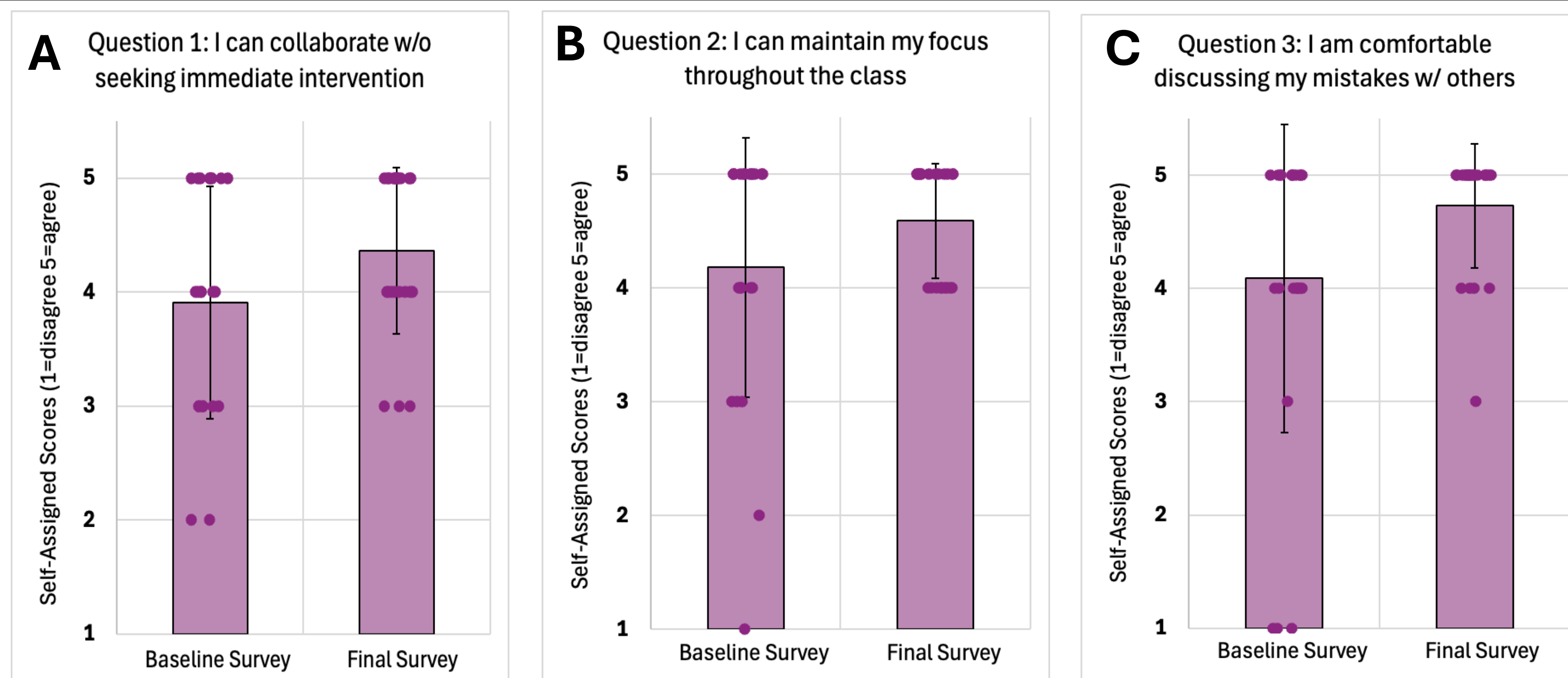


Figure 1. Changes in student self-assessment scores from baseline to final survey. (A) Students reported an increase in their ability to collaborate without seeking immediate intervention from baseline to final survey. This change was not significant, $p = 0.0959$. (B) Self-reported ability to maintain focus throughout the class showed a slight increase from baseline to final survey. This change was not significant, $p = 0.131$. (C) Students demonstrated a significant increase in comfort discussing mistakes with others from baseline to final survey, $p = 0.0351$. ($n=22$ following the same student's response from week 5 to week 13. Unpaired two-tailed Student's t-test used to calculate p-values).

Question Type	Baseline Survey		Final Survey		n-value	p-value
	1=disagree	5=agree	1=disagree	5=agree		
Collaboration w/o Seeking Immediate Intervention	3.91	4.36	4.36	4.73	22	0.0959
Maintain Focus Throughout the Class	4.18	4.59	4.59	4.73	22	0.131
Comfortable Discussing Mistakes w/ Others	4.09	4.73	4.73	4.73	22	0.0351

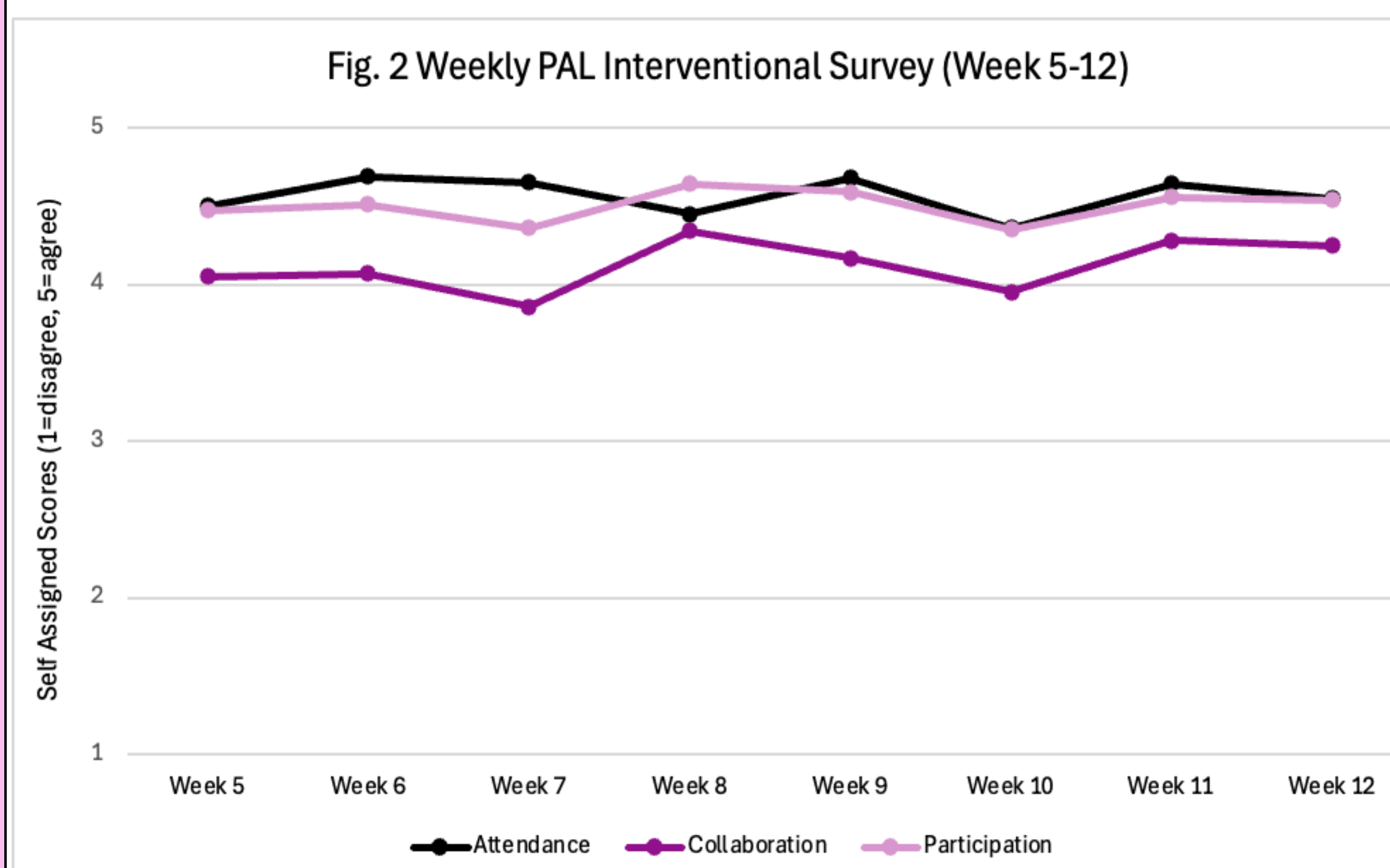


Figure 2. Weekly trends in student self-reported PAL behaviors (Weeks 5-12). Students completed weekly surveys reflecting on their PAL behaviors (Attendance, Collaboration, and Engagement). **Attendance** remained consistently high with minimal changes ($R^2=0.0171$). **Collaboration** showed a higher variability with no trend ($R^2=0.1962$). **Participation** remained relatively stable with mild variability ($R^2=0.0307$). (n -value varied weekly due to varying attendance and survey completion)

Week	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
n-value	20	42	40	22	41	39	36	20

Survey Questions

- I arrive on time to PAL class
- I ask questions to my group before asking the facilitator
- I treat mistakes as a point of discussion
- I continue working as a group while the facilitator is busy
- I do not use my phone during class
- I do not rely on my facilitator for validation of correct answers
- I shared the whiteboard with my peers

Discussion

There was improvement across all 3 questions from the baseline survey to the final survey as seen in *Figure 1*. Only Question 3 was statistically significant ($p = .0351$) meaning there is a correlation between the student's comfortability in PAL and the weekly self-reflections surveys. Because the sample size was small, ($n = 22$) we cannot determine if the weekly self-reflections had an impact on the students' performance in relation to Questions 1 and 2. In *Figure 2*, we categorized the 7 **Survey Questions** listed in the section above to fit into 3 groups:

- Attendance
- Collaboration
- Participation

Each of these categories showed mid-to-high variability but there was minimal to no change in the trend of each of the categories over the weeks.

Factors and Limitations

- There was no control group meaning we could not directly attribute the weekly self-reflections to the increase in the results from baseline to final survey. There are multiple aspects of each PAL classroom that could influence the survey results.
- Some data that was not included due to variety of problems including attendance in the PAL class, students adding/dropping the course, and more.

References

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