



Meme Making

Reinforcing Knowledge by Applying a Memetic Learning Model

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Abstract

This project aimed to test whether making memes enhances confidence levels and knowledge retention from parent classes. The goal was to increase engagement in the PAL workshops across Chem 4, Chem 1A, Phys 5A, Math 30 and Math 31. Meme-making was an inclusive and interactive form of learning material. Students were expected to complete surveys on control and memetic learning weeks. The data collected shows that integrating a memetic learning model supported the students' information absorption.

Background

The memetic learning model is expected to work in conjunction with the traditional PAL model to reinforce the knowledge already gained through class, but to also put students in a situation where the knowledge they have learned is applied non-traditionally. Using a non-academic medium will force the students to figure out in which ways the knowledge from class can apply to a form of quick entertainment media.¹ These memes can be thought of as a complementary tool to traditional forms of educational communication and assessment.² Students have shown high approval of the method, as well as outside engagement with the learning material. This shows promise in use of a PAL setting, as PAL is already a complementary class to help facilitate deeper academic understanding of topics. This can be supplemented further by giving students an alternative method of interaction with in-class materials. Ultimately, memes, as a multimodal tool, has become an increasingly popular form of communication and has shown potential in helping students make meaning of material being taught.³

Methodology

Null hypothesis: There is no difference in the confidence reported in survey by the students in the intervention and control groups.

Alternative hypothesis: the confidences levels of students who made memes are greater than the ones who didn't make memes.

To observe if there is meaningful change in knowledge reinforcement, the involved facilitators proceeded as follows:

- Every other week 4-6 memes templates were be selected by the facilitator, and from these templates the students will create a meme pertaining to the subject of the PAL class. Students will apply in-class knowledge to non-class related material, reinforcing in class material.
- The experiment data was collected once a week with a survey, with the actual meme creation happening every other week.
- Every week a Qualtrics survey was given; during the meme weeks, the memes were submitted through the file upload in the Qualtrics survey.
- The survey measured how the students felt about the content covered in PAL classes with a slider (scale 1-100). It had a second slider which asked if making memes helped with reinforcing content (scale 1-100). For both sliders, a higher value is desirable.
- Non-meme weeks data was used as a control group, and the meme weeks data will be used as the experimental group. The values was compared to each other to see any differences in values of how they feel about content covered in the PAL session.

Data/Results

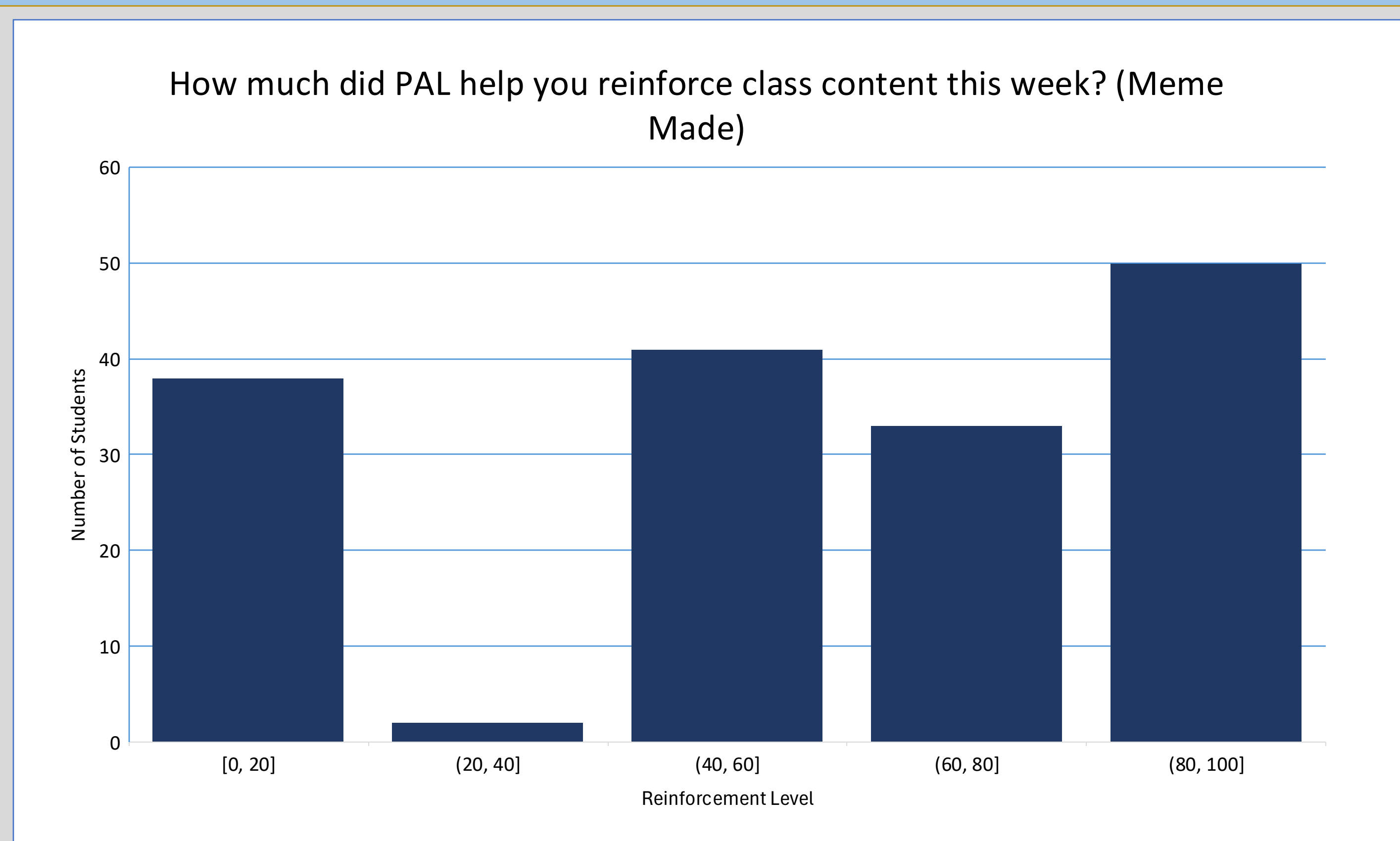


Figure 1. Student reinforcement scaled from 0-100 for weeks that a meme was made

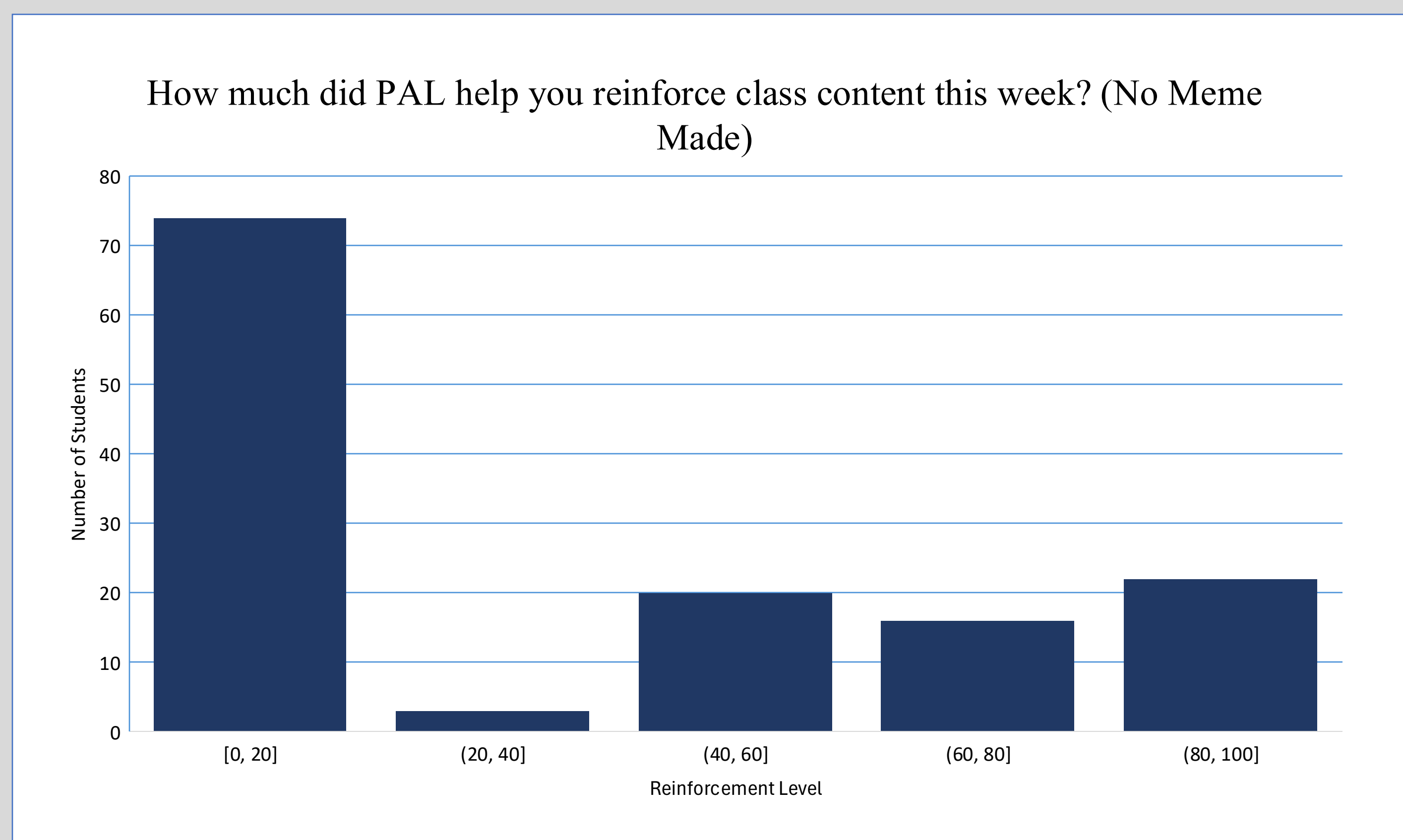


Figure 2. Student reinforcement scaled from 0-100 for weeks that a meme was not made

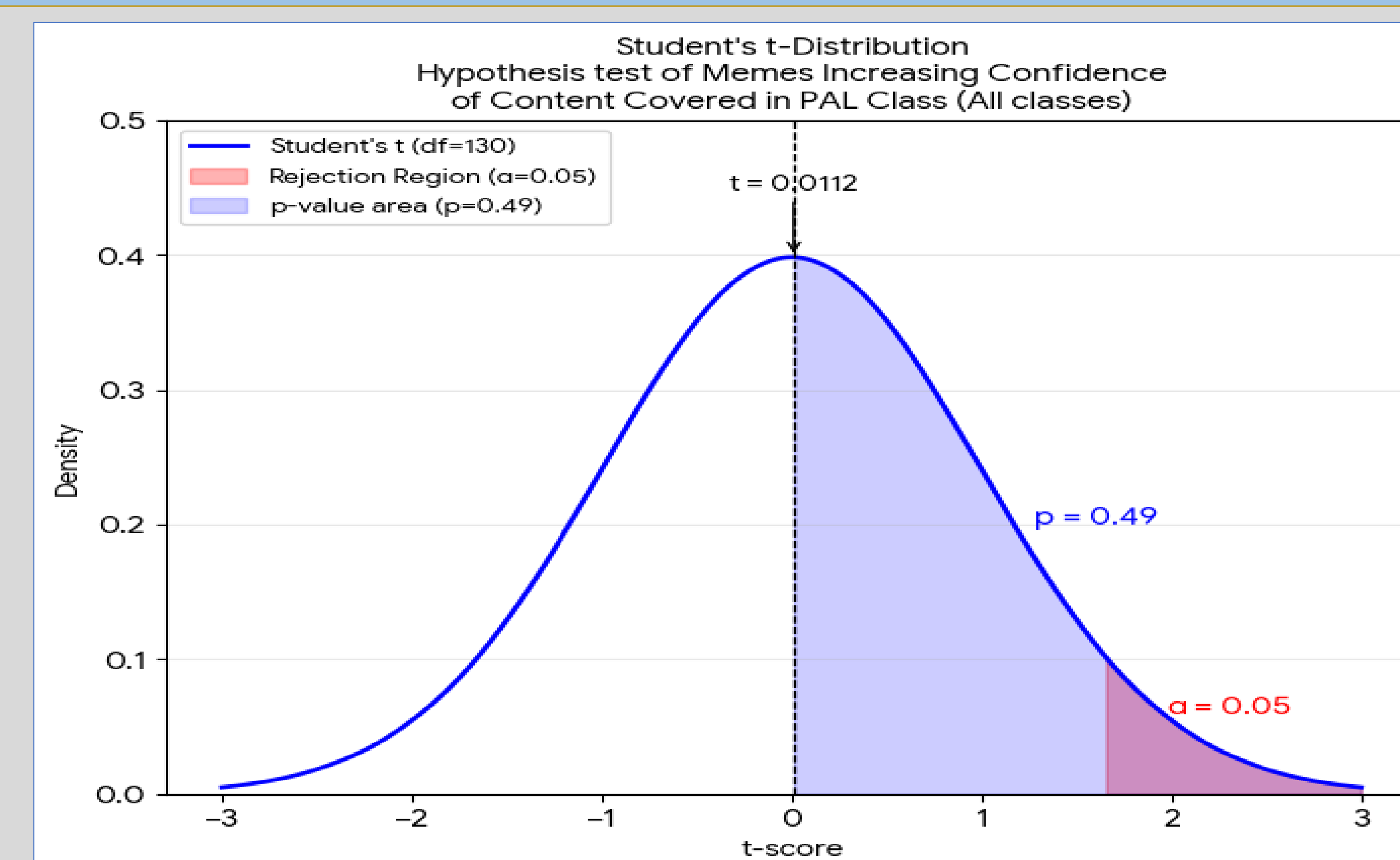


Figure 3. The one-tailed hypothesis test with two means for all students involved in the experiment showing the insignificant evidence to reject the null hypothesis for Q5.

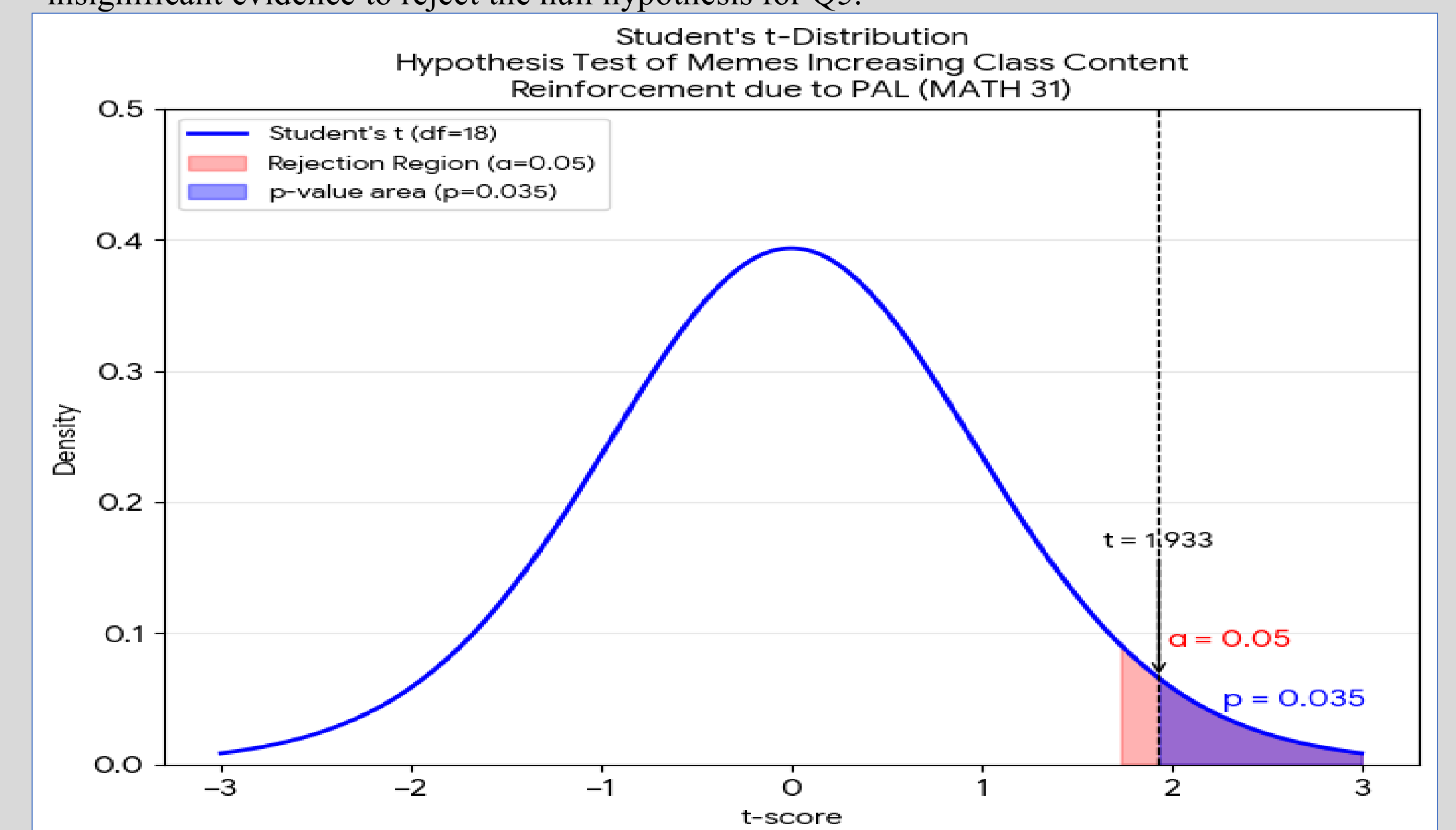


Figure 4. The one-tailed hypothesis test with two means specifically in MATH 31 showing the significant evidence to reject the null hypothesis for Q6.

Discussion

Using all the data in a one tailed hypothesis test with two means, the $P(t \geq 0.0112) = 0.4955$. This is much higher than the level of significance ($\alpha = 0.05$), which implies that we fail to reject the null hypothesis and there is no evidence that making memes heightens confidence of students within their classes. This is illustrated in Figure 3. However, looking at courses individually, we can say more about each course. We will not include data from Chem 4 or Chem 1A due to the sample sizes being too small (some as low as 3) and the evidence being insignificant.

MATH 30 (Calculus I): For both questions within the survey, MATH 30 had insignificant data to reject the null hypothesis with p-values greater than 0.05.

MATH 31 (Calculus II):

Q5: $P(t \geq 1.706) = 0.050$ which is equivalent to the level of significance ($\alpha = 0.05$). This shows that there is significant evidence to reject the null hypothesis. Thus, MATH 31 students had a higher confidence about content covered in PAL class during the weeks that they made memes relating to their class material.

Q6: $P(t \geq 1.933) = 0.035$ which is less than the level of significance ($\alpha = 0.05$). Thus, we can reject the null hypothesis and claim that MATH 31 students believed PAL reinforced their knowledge of class content when they made memes in class. This is represented in Figure 4.

PHYS 5A (General Physics: Mechanics, Heat, Sound):

Q5: $P(t \geq -2.06) = .97$. This is much larger than $\alpha = 0.05$ level of significance which implies that this data was not significant and that PHYS 5A students did not have a higher confidence with material covered in PAL class when they made memes.

Q6: $P(t \geq 0.944) = 0.182$. This is greater than $\alpha = 0.05$ so this data does not imply that students believed PAL reinforced their class content more in the weeks when they made memes.

Acknowledgements

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References

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