

INTRODUCTION

Dreamcatchers is a nonprofit after-school program for middle school students from low-income families in Palo Alto, aiming to enable all students to reach their potential. Their mission is to engage the next generation of leaders in helping underprivileged students thrive academically, socially, and physically.

At the start of the 2015-16 school year, a baseline survey with twelve questions was administered to all students with the intent of measuring student confidence in mathematics. Each question was answered on a scale from 1 (lowest) to 9 (highest). The same survey was administered 3 months later, in November. The following project attempts to analyze the measurable results of the Dreamcatchers program with regards to mathematical confidence.

DATA:

ID Number	Answer AUG	Answer NOV	Difference	M/F	City	Grade	School
4	3	2	-1	М	PA	6	JOR
5	8	8	0	F	EPA	6	JOR
6	2	4	2	F	EPA	7	JOR
7	6	6	0	F	EPA	6	JLS
12	4	7	3	F	EPA	8	JLS
14	2	1	-1	F	PA	8	TER
17	7	7	0	F	PA	7	TER
19	9	4	-5	М	PA	6	JOR
21	7	9	2	М	PA	7	JOR
22	3	8	5	F	PA	6	JLS
24	5	8	3	М	EPA	8	JLS
25	6	5	-1	М	PA	6	TER
27	5	8	3	М	PA	7	TER
31	9	9	0	М	EPA	7	TER
32	8	7	-1	М	EPA	8	JOR
33	6	5	-1	F	EPA	6	JOR
34	5	9	4	F	PA	7	TER
36	6	7	1	М	EPA	7	JOR
40	9	8	-1	М	PA	7	TER
42	9	7	-2	М	EPA	7	JOR
43	3	5	2	М	PA	8	JLS
44	3	6	3	М	PA	6	TER
49	9	9	0	М	EPA	7	JOR
53	9	6	-3	М	EPA	8	JLS
54	8	7	-1	М	EPA	7	JLS
55	6	4	-2	F	EPA	6	JOR
62	6	9	3	М	EPA	7	JLS
63	5	7	2	М	EPA	7	JOR

DESCRIPTIVE STATISTICS



DREAMCATCHERS SURVEY RESULTS 2015 - Question A3 Tanner Newell & Jeanette Andrews Palo Alto High School Social Justice Pathway & AAR Collaboration

QUESTION A3:



I often raise my hand to participate in class.

MATCHED PAIRS INFERENCE – ENTIRE GROUP

$H_o: \mu_d = 0$
$H_a: \mu_d > 0$
Parameter: μ_d = Mean difference in scores between s
Assumptions: $15 \le n < 30$
Name the test: One Sample T-Test
Test statistic: $T = 1.359$
<i>P</i> -value: <i>P</i> = 0.092
Since $P = 0.092$, which is greater than 0.05 we cann
There is not statistically significant evidence that the
between August and November.

MATCHED PAIRS INFERENCE BY GENDER

MALE

 $H_{o}: \mu_{d} = 0$ $H_{a}: \mu_{d} > 0$ Parameter: μ_d = Mean difference in male students' scores in August and November Assumptions: $15 \le n < 30$ Name the test: One Sample T-Test Test statistic: T = 0.407*P*-value: *P* = 0.344 Since P = 0.344, which is greater than 0.05 we cannot reject H_o. There is not statistically significant evidence that the mean difference in scores for question A3 increased for male students has increased between August and November. FEMALE $H_{o}: \mu_{d} = 0$ $H_{a}: \mu_{d} > 0$ Parameter: μ_d = Mean difference in female student's score between August and November for question

Assumptions: $15 \le n < 30$ Name the test: One Sample T-Test Test statistic: T = 1.341*P*-value: *P* = 0.106 Since P = 0.106, which is greater than 0.05 we cannot reject H_o. There is not statistically significant evidence that the scores of female students has increased between August and November.

MATCHED PAIRS INFERENCE BY CITY

PALO ALTO

 $H_{o}: \mu_{d} = 0$ $H_{a}: \mu_{d} > 0$ Parameter: μ_d = Mean difference in Palo Alto students' scores between August and November for question A3 Assumptions: $15 \le n < 30$ Name the test: One Sample T-Test Test statistic: T = 0.407*P*-value: *P* = 0.344 Since P = 0.344, which is greater than 0.05 we cannot reject H_o. There is not statistically significant evidence that the scores of students from Palo Alto has increased between August and November.

EAST PALO ALTO

 $H_{o}: \mu_{d} = 0$ $H_{a}: \mu_{d} > 0$ Parameter: μ_d = Mean difference in East Palo Alto students' scores between August and November for question A3 Assumptions: $15 \le n < 30$ Name the test: One Sample T-Test Test statistic: T = 1.022*P*-value: *P* = 0.164 Since P = 0.164, which is greater than 0.05 we cannot reject H_o. There is not statistically significant evidence that the scores of students from East Palo Alto has increased between August and November.

ACKNOWLEDGEMENTS

We would like to thank Barbara Sih Klausner, Dreamcatchers Executive Director, and Miguel Fittoria, Dreamcatchers Program Director. Your support and help in this collaborative endeavor has been invaluable and we are so grateful!

students' answers in August and November

not reject H_o. scores of the entire group has increased

MATCHED PAIRS INFERENCE BY GRADE LEVEL

SIXTH GRADE $H_{o}: \mu_{d} = 0$ $H_{a}: \mu_{d} > 0$

question A3 Assumptions: $15 \le n < 30$ Name the test: One Sample T-Test Test statistic: T = -0.232*P*-value: *P* = 0.589 Since P = 0.589, which is greater than 0.05 we cannot reject H_o. There is not statistically significant evidence that the scores of sixth grade students has increased between August and November.

SEVENTH GRADE

 $H_{o}: \mu_{d} = 0$ H_a: μ_d > 0 for question A3 Assumptions: $15 \le n < 30$ Name the test: One Sample T-Test Test statistic: T = 1.974*P*-value: *P* = 0.035 Since P = 0.035, which is less than 0.05 we can reject H_o. between August and November.

EIGHTH GRADE

 $H_{o}: \mu_{d} = 0$ $H_{a}: \mu_{d} > 0$ for question A3 Assumptions: $15 \le n < 30$ Name the test: One Sample T-Test Test statistic: T = 0.487*P*-value: *P* = 0.323 between August and November.

SUMMARY OF QUESTION A3

After a thorough analysis of Question A3, we have found there to be significant evidence to support an increase in mathematical confidence for **7th graders** participating in the Dreamcatchers program. After testing all other groups we found the 7th graders to be the only ones whose score had increased from August.







Parameter: μ_d = Mean difference in sixth grade students' scores between August and November for

Parameter: μ_d = Mean difference in seventh grade students' scores between August and November

There is statistically significant evidence that the score of the seventh graders has increased

Parameter: μ_d = Mean difference in eighth grade students' scores between August and November

Since P = 0.323 which is greater than 0.05 we cannot reject H_o. There is not statistically significant evidence that the scores of the eighth graders has increased

DREAMCATCHERS