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Educational Session

2401 - Paid Virtual Summer Research Experience: Belonging and Science Identity

Diversity and Inclusion, Partnerships and Collaboration

A paid virtual summer research experience was developed to address the research-gaps created by the COVID-19 pandemic. Students' sense of belonging and science identity were compared pre- and post-participation. Results indicate that the virtual summer research experience did not uniformly bolster students' science identity, however, pre- and post-results indicated that the experience facilitated perceptions of belonging due to notable faculty-student and peer-to-peer relationships. This session will inform future virtual research experience development.

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Paid Virtual Summer Research Experience: Belonging and Science Identity

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This project was generously funded by the NSF LSAMP #1712619 and 3M Foundation.



INTRODUCTION

- Lab-based research experiences are important for undergraduate students' academic success (Kuh et al., 2008), especially in STEM (Balster et al., 2010).
- Prospective and current transfer students are disproportionately affected by the limited availability of lab-based research experiences during the COVID-19 pandemic.
- We explored the role of a virtual summer research experience, hosted by the Louis Stokes North Star STEM Alliance, on student belonging and science identity.

METHODS

1. Students from two- and four-year institutions were recruited in summer 2020 and summer 2021. Students worked closely with faculty mentors on a research project.
2. Pre- and post-participation surveys were administered to obtain information on belonging and science identity.

RESULTS

(Standardized Means and SDs)

Table 1

Sense of Belonging Pre-Survey Scores

Year	Two-year Institution	Four-year Institution
2020		
2021	-0.77 (1.09)	-0.08 (1.06)

Table 2

Sense of Belonging Post-Survey Scores

Year	Two-year Institution	Four-year Institution
2020	0.44 (0.71)	-0.23 (0.95)
2021	0.5 (0.82)	0.84 (0.00)

Table 3

Science Identity Pre-Survey Scores

Year	Two-year Institution	Four-year Institution
2020	0.44 (0.84)	-0.13 (0.97)
2021	0.22 (0.69)	-0.42 (0.92)

Table 4

Science Identity Pre-Survey Scores

Year	Two-year Institution	Four-year Institution
2020	0.60 (0.56)	-0.17 (1.02)
2021	0.06 (1.55)	-0.05 (0.80)

Paid Virtual Summer Research may not replace the technical skills and confidence that students gain from in-person research engagements that provide critical experiences to support science identity.

However, Paid Virtual Summer Research appears to contribute to students' sense of belonging due to the close faculty-student and peer-to-peer relationships formed.

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Table 5

2020 and 2021 Participant Demographics

Institution Type	Year	
	2020	2021
N = 28		
Two-year	3 (11%)	9 (32%)
Four-year	12 (43%)	4 (14%)
Gender		
Man	4 (14%)	2 (7%)
Woman	11 (39%)	10 (36%)
Prefer not to say	0 (0%)	1 (4%)
Race/Ethnicity		
Asian	4 (14%)	4 (14%)
Black or African American	9 (32%)	6 (21%)
Hispanic or Latino	1 (4%)	2 (7%)
Not Listed	1 (4%)	0 (0%)
White	0 (0%)	1 (4%)

Table 6

Science Identity and Sense of Belonging Items

Items	Variable Description	Response Labels
SI1	I define myself as a science person	Strongly Disagree (1) - Strongly Agree (6)
SI2	I feel a strong attachment to science fields	Strongly Disagree (1) - Strongly Agree (6)
SoB1	I feel valued and appreciated by others	Disagree (1) - Agree (4)
SoB2	I fit in with others	Disagree (1) - Agree (4)
SoB3	I am supported by others	Disagree (1) - Agree (4)

Note: Scores are standardized to account for different item-response labels

Implications and Future Directions

- Students' perception that they are valued, fit in, and are supported may have been elicited from the presence of a tight-knit community of STEM peers who are representative of their backgrounds and their academic goals, as well as from the presence of supportive faculty that supported and affirmed their experiences.
- However, being unable to receive hands-on in-person research experience may have limited students' schema of themselves as legitimate scientists.
- Additional analyses will look at students' qualitative interview responses for more a nuanced understanding of the quantitative results.

Supplementary: References

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- Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *The Journal of Higher Education, 79*, 540-63.
- **Additional Readings:**
 - Duggan, M. H., & Pickering, J. W. (2008). Barriers to transfer student academic success and retention. *Journal of College Student Retention: Research, Theory, & Practice, 9*, 437-459.
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