

Starting STEM Inclusivity Early: A Workshop to Increase Undergraduate Teaching Assistants' Diversity Awareness



Cori Fata-Hartley¹, Michelle Larkins Jacques², Kendra Spence Cheruvelil^{1,2}, Donald Gillian-Daniel³, and Tessa Lowinske Desmond⁴ Lyman Briggs College¹, Department of Fisheries and Wildlife^{2,} Michigan State University; Delta Program in Research Teaching and Learning, University of Wisconsin-Madison³; Committee on Ethnic Studies, Harvard University⁴

1. INTRODUCITON

Purpose: Lyman Briggs College (LBC) is a residential college for students studying science and society at Michigan State University (http://www.lbc.msu.edu/). Recent LBC initiatives are aimed at creating an inclusive learning environment that will increase the success and retention of underrepresented students. Since undergraduate teaching assistants are a key component of the LBC teaching teams in Biology, Chemistry, Physics, and Math courses, this initiative focused on inclusivity training for these undergraduate STEM teaching assistants (TAs).

Methods: We developed, facilitated, and evaluated a diversity workshop for STEM undergraduate teaching assistants. The central goals of the workshop were to increase participant (1) understanding of diversity and (2) awareness of the relationship between diversity and teaching and learning.

Assessment: Participants completed pre-workshop and post-workshop surveys that included both multiple choice and free response questions.

Workshop Session	Activities and Goals	References Used in Development
Considering Diversity: How Students See Instructors (Worksheet & Discussion)	Encourage participants to develop self- awareness by considering how they will be viewed by students	•Miller, A. T. (2005). The multi-cultural lab: diversity issues in STEM classes,
Developing a Definition of Diversity: The Diversity Letter Game	Allow participants to construct their own understanding of diversity	•Diversity Resource Center TM http://imarketingsolutions.com/diversityres ources/rc sample/ice2.html
Diversity in the Classroom (Mini-lecture)	Engage participants in learning about the value of diversity and creating inclusive learning environments, including examples from the primary literature	 Handelsman, J. et al. (2007). <u>Scientific</u> Teaching, New York: W. H Freeman and Company. CIRTL Diversity Resources: http://www.cirtl.net/diversityresources
Unconscious Bias (Mini-lecture)	Make participants aware of the presence of unconscious bias by discussing examples from the primary literature	•Handelsman, J. et al. (2007). <u>Scientific</u> <u>Teaching</u> , New York: W. H Freeman and Company.
Case Studies in Inclusive Teaching (Discussion)	Discuss and analyze difficult teaching problems and solve in groups	•CIRTL Case Studies: http://www.cirtl.net/CaseStudies Case #2: Jeremy Geraci Case #7: Marie Louise Moreau
Learning with Disabilities (Mini-lecture & Discussion)	Expose participants to challenges faced by students with learning and physical disabilities Familiarize participants with resources available for persons with disabilities	 Opening Doors Diversity Project: http://cc.brockport.edu/ Whoopi: Back to Broadway: The 20th Anniversary Show, 2005 (segment on the challenges of a physically disabled character) MSU Resource Center for Persons with Disabilities: http://www.rcpd.msu.edu/ MSU Learning Resources Center: http://lrc.msu.edu/
Forming Diverse Teams (Exercise)	Encourage participants to consider the diverse characteristics of students by challenging them to form the 'most diverse group'.	•N/A
Diversity in Group Learning (Exercise)	Engage participants in a team building exercise which included analysis of their own interactions in terms of diversity and their use of constructive/destructive group	 Karl Smith Workshops http://www.ce.umn.edu/~smith/links.html CIRTL Diversity Resources Brunt .(1993). Facilitation Skills for Quality Improvement. Quality Enhancement

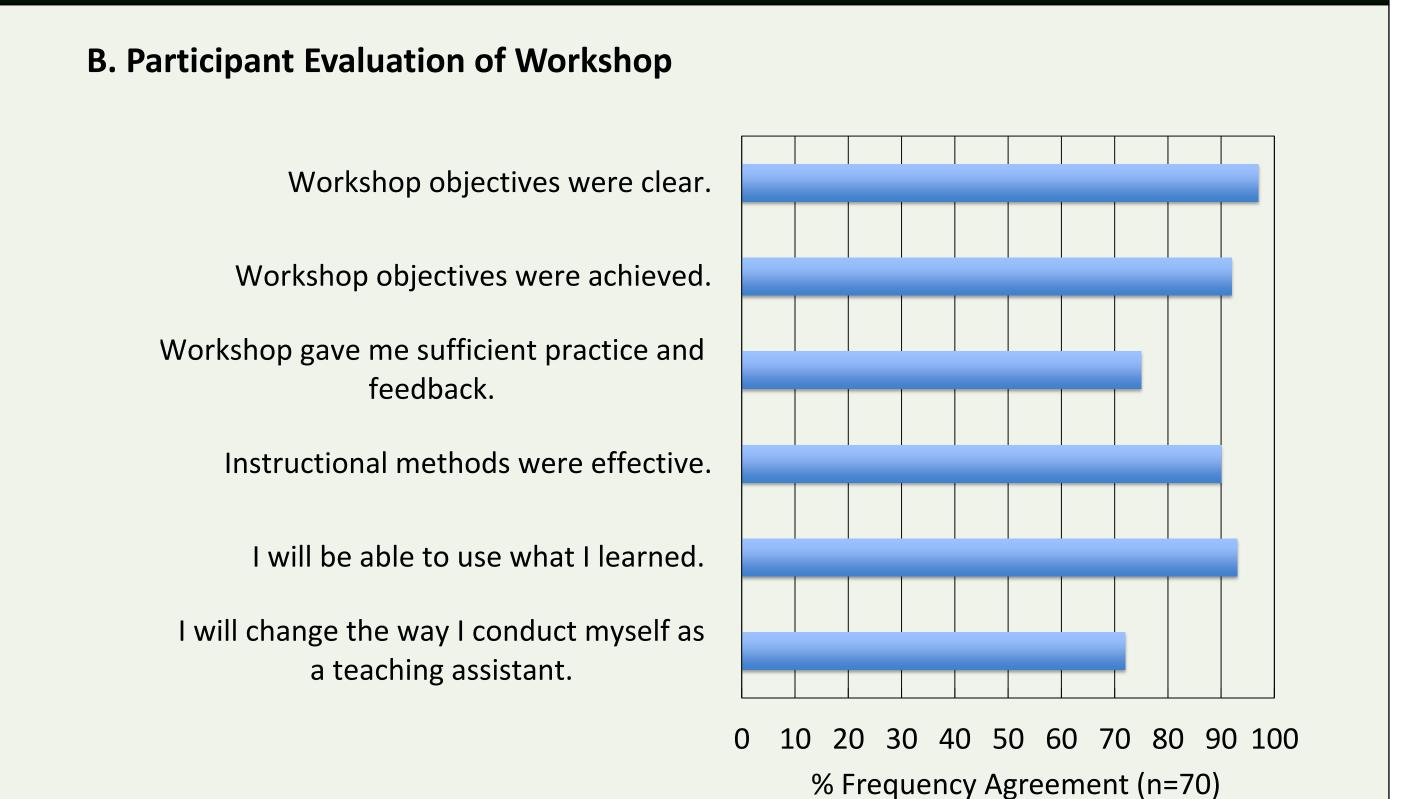
Strategies. Madison, WI

behaviors.

3. PARTICIPANTS AND POST-WORKSHOP ATTITUDES

A. Workshop Participant Demographics Gender Field of Study Male Biology Female Chemistry **Not Reported** History of Science Math Race/Ethnicity Physics White Asian Not Reported Hispanic or Latino Two or More Races Teaching Assistant Status Not reported Undergraduate

Graduate



(A) Participant demographic information was gathered from the post-workshop survey. (B) Participants evaluated the workshop by responding to Likert-scale items on the post-workshop survey. Percent frequency agreement reflects the frequency of 'strongly agree' and 'agree' responses.

4. QUALITATIVE ANALYSIS OF DIVERSITY AWARENESS

A. Diversity Definition

Response Category	Frequency of Response (n=70)
1. New, expanded definition of diversity	62.9%
i. More than legally protected charac	teristics 11.4%
ii. Includes characteristics such as lear personality traits, social differences	9 ,

Representative Responses

"Diversity includes differences in physical appearance, mental acumen, religious practices, learning style, emotional development level, ability to deal with situations (etc) as well as including the wide variety of 'intelligence' that does not only include academic."

"Variations in a individual, in terms of race, gender, intelligence, language, color, physical appearance, background, religions opinions, style of learning."

B. Role of Diversity in Teaching and Learning.

Response Category	Frequency of Response (n=70)
1. Relationship of diversity and learning	14.3%
2. Role of instructor in encouraging inclusivity	57.2%
3. New understanding of effect of diversity in o	classroom 31.4%
4. Specific activities to foster inclusivity	28.6%

Representative Responses

"I also learned diversity amongst students contributes to the learning environment."

"Ask questions to groups, don't single out, understand everyone is different and learns different, use different teaching styles, be patient."

""I didn't realize you must take into account how the students behave amongst themselves. For example, how they work together in groups"

"Exercises in recitation that require a diverse skill set, defined roles for active participation."

Responses to survey questions about the effect of the workshop were analyzed by an open coding process to identify common thematic areas and codify emergent patterns in the qualitative data. (A) A single category emerged from the responses describing participants' understanding of diversity (new, expanded definition); two subcategories (i, ii) provided further insight on how the definition had expanded. (B) Responses to questions about the relationship of diversity and teaching and ways to foster inclusivity fell into 4 categories (1-4) that reflected new ideas and understandings developed as a result of the workshop.

5. CONCLUSIONS AND FUTURE DIRECTIONS

•The Creating Inclusive Learning Environments Workshop is a valuable model for professional development of undergraduate STEM TAs. Participants were exposed to diversity and inclusivity issues that are not typically part of a STEM curriculum.

•Participants evaluated the workshop session positively, with a majority indicating that they would change the way they conduct themselves as a teaching assistant.

•A majority of participants described newly expanded definitions of diversity and were able to articulate the role of the instructor in creating an inclusive learning environment.

•More work is needed to help TAs develop their own understanding of how diversity enhances teaching and learning in science.

5. ACKNOWLEDGEMENTS

We acknowledge and thank the Lyman Briggs
College TAs for their participation in the workshop
and completion of the surveys (IRB #x10-776).
The authors thank Dr. Rique Campa for support
and helpful feedback.

•We also thank Kevin Johnston and Kent Workman for leading workshop sessions.

•This work was funded by CIRTL.