Evaluation of DEIJ in Lectures of Junior Year Science Undergraduate Course

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Abstract

Diversity, equity, inclusion, and social justice, DEIJ, is important for both students and faculty as they improve learning outcomes and elicit professional competency respectively. DEIJ implementation increases whole classroom holistic development. In this article we are showing some results (like a model) from the integration of inclusive and equitable teaching within a 300 level interdisciplinary course, assessing the impact of the learning outcomes in group activities. Further, how much of DEIJ was influenced by these activities and interactions. We had previously developed a rubric which was able to score the DEIJ practices in group work. We developed a method, implemented the method, scored the DEIJ practices, collected information, organized data, represented, and finally analyzed data.

Introduction

As defined by Northwestern University, DEIJ is defined as follows, Diversity: diversity is often seen as the cultivation of differing traditions, backgrounds, and ideas. Diversity is an important tool for adapting course material to appropriate audiences when necessary. Diversity is essential when it comes to advancing learning environments and is useful for strengthening critical thinking among students and faculty. Equity: Equity involves addressing systemic injustices and practices that frequently impact students and faculty with marginalized backgrounds. Equity is a tool used to close gaps that often impact people from diverse backgrounds. Inclusion: Inclusion is about creating a space or a culture of community for people of all backgrounds. Inclusion specifically encourages students and faculty of marginalized groups to integrate their ideas and experiences into spaces in which they were historically not represented. Justice: Social justice is about making decisions that will equitably distribute resources and opportunities through institutions and person-person interactions. To ensure that all people from similar and differing backgrounds feel included, seen, and safe.

Methods

Bates College neurobiology course [BIO308A-NRSC308A] lectures were all examined with instructor permission using the rubric designed to evaluate the implementation of DEIJ for in-person and virtual learning environments (VLE). The learning objectives created by the instructor for this neurobiology course were for undergraduates to develop a comprehensive understanding of neuron morphology, physical principles used to explain electrical signaling, neuronal intracellular signaling, synaptic plasticity, and chemical properties of neuron proteins. To examine how DEIJ was used in cooperation with the learning objectives of said course three lecture recordings were viewed. The data collected from these evaluations was then organized into a Google document containing the size of the learning space, the number of students, the duration of the lecture, groups of students and how they were formed, and lastly, the topic being taught during the lecture. The scoring of DEIJ in each category described in the rubric shared in the reference list was also included in the Google document, as well as comments taken during each evaluation. The data from these recordings were then represented in the form of histograms using R studio to illustrate the integration of DEIJ in the examined lectures. A Google PowerPoint presentation was then created for further analysis and future presentations.

Results

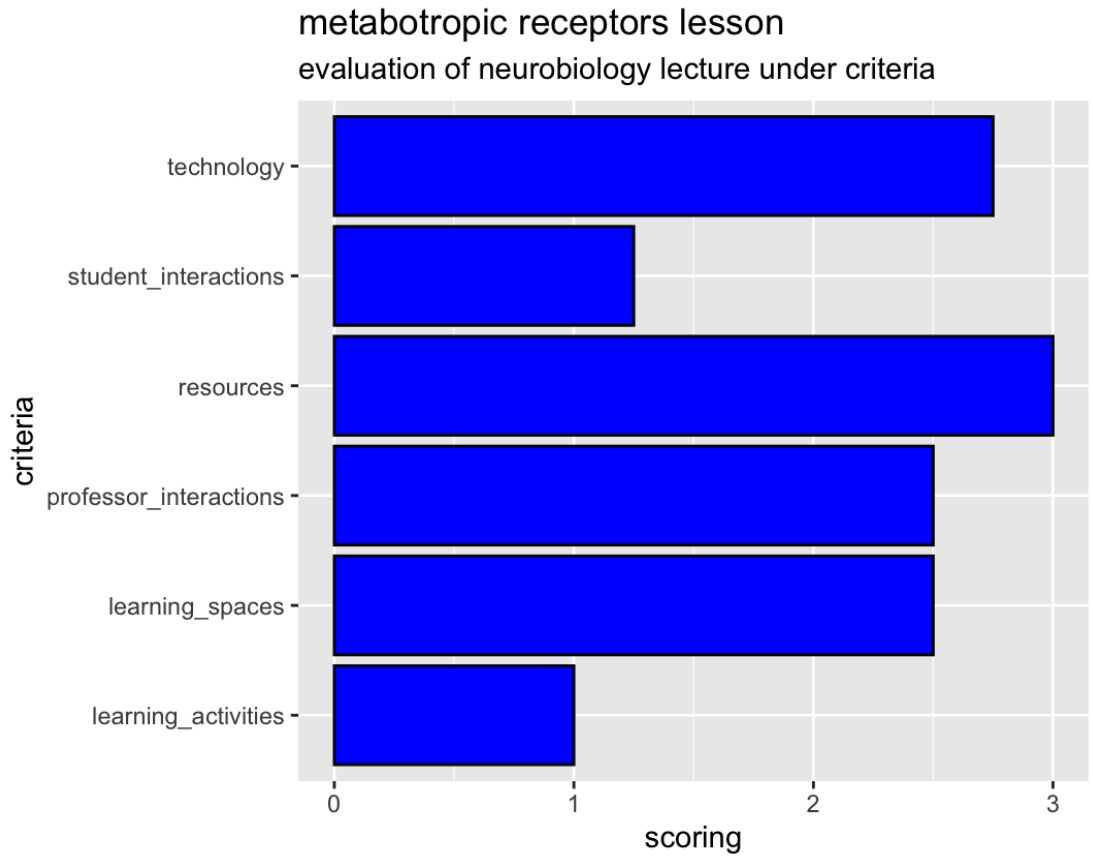

Figure 1. Above depicts lesson integration of technology, resources, professor interaction, and learning spaces showing a similar level of DEIJ implementation; student interactions and learning activities elicited lowest level of DEIJ levels. Overall the resources reflected the highest level of DEIJ and learning activities showed the least amount of DEIJ implementation.

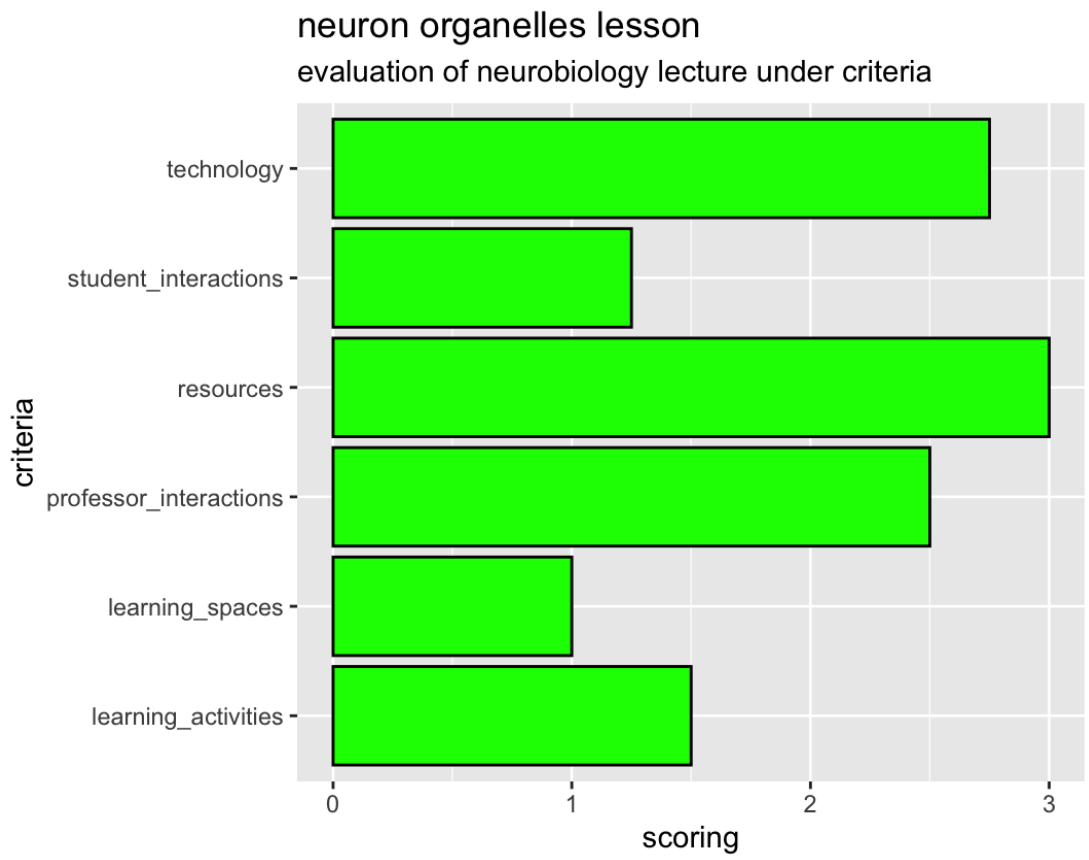

Figure 2. Above depicts lesson integration of technology, resources, and professor interaction, shows a similar level of DEIJ implementation; student interactions, learning activities, and learning spaces elicited the lowest level of DEIJ. Overall the resources reflected the highest level of DEIJ and learning spaces and student interactions showed the least amount of DEIJ implementation.

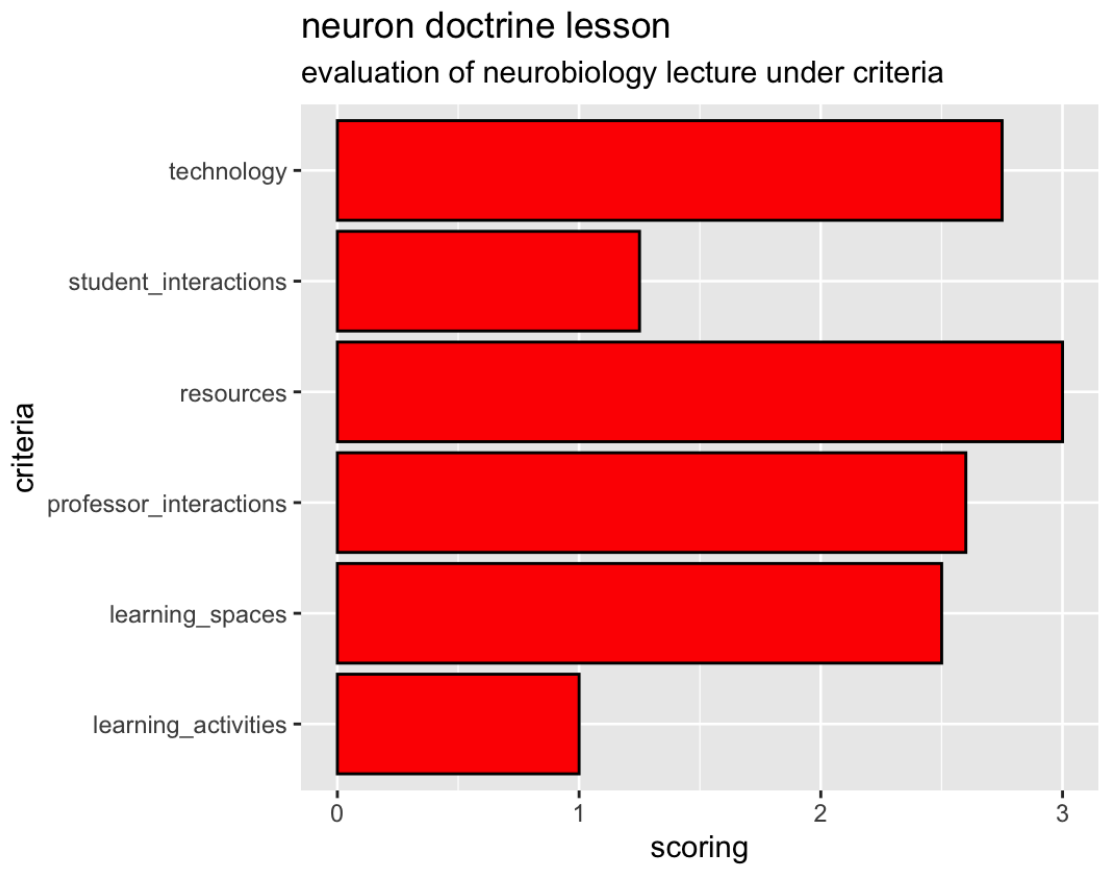

Figure 3. Above depicts that lesson integration of technology, resources, and professor interaction, shows a similar level of DEIJ implementation; student interactions and learning activities elicited the lowest level of DEIJ levels. Overall the resources given and technology used reflected the highest level of DEIJ and learning spaces and student interactions showed the least amount of DEIJ implementation.

Conclusion

Technology, resources, and professor-student interaction integration does not change within the DEIJ levels in all three lessons i.e. technology enhances the learning outcomes and maintains DEIJ practices because all the learners can actively participate with given tasks as they had previous exposure to the above-supporting learning system or they are able to quickly adapt to learning system provided to them at the time of execution of the activity.

Per lesson:

Within the lesson, the DEIJ levels were impacted due to the complexity and higher-order tasks which helped in the formation of better building groups (3), students developed identity, and they showed engagement and collaborated well. Further, the selection of topic and content taught in the lecture was explained and information delivery was appropriate for all learners which led to some DEIJ levels similar in Additional Support Learning System (ASLS).

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Future direction:

We are also sharing learning journal assignments and how the implementation of these resources can act as an example to enhance DEIJ Level in your courses. The DEIJ implementation has the potential to bring accelerating change to the lesson, course, department and institution so thoughtful planning can help to enhance the learning outcome to a greater extent.

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12. 108th Annual Meeting , South Dakota Academy of Science- https://sdaos.org - Oral Presentation - Speaker

    8:30-8:50 WHICH IS BEST: ONLINE, FACE TO FACE OR HYBRID EDUCATION? Pankaj Mehrotra, Black Hills State University, Spearfish, SD (via ZOOM)-
13. 109th Annual Meeting, South Dakota Academy of Science- https://sdaos.org - Oral Presentation - Speaker

    10:30 AM CST: WHICH IS THE BEST: TECHNOLOGY, RESOURCES OR ACTIVE LEARNING ACTIVITIES? Pankaj Mehrotra, Black Hills State University, Spearfish, SD

via ZOOM)-

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